

KAZENERGY INSIDE



Bolat Akchulakov, General Director of KAZENERGY, Head of the Kazakhstan National Federation of UNESCO Clubs became a President of the Asia-Pacific Federation of UNESCO Clubs and Associations (AFUCA)



Ramazan Zhampiyisov, Executive Director of KAZENERGY was elected as a Vice-Chairman of the UNECE Committee on Sustainable Energy Bureau for two year term

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25TH SESSION OF SUSTAINABLE ENERGY COMMITTEE OF UN EUROPEAN ECONOMIC COMMISSION



Director B. Akchulakov, KAZENERGY Executive Director R. Zhampiyisov and Advisor to Astana International Finance Center Manager A. Kazybayev.

This session addressed the preparation process for a Ministerial Conference "Sustainable Energy Solution Tasks" and the 8th International UNECE Forum "Energy for Sustainable Development" scheduled to match the International specialized exhibition EXPO-2017 "Energy of the Future" in Astana, the capital of Kazakhstan. The Ministerial Conference will be held under the Forum for the first time and its importance is very high, said Bolat Akchulakov in his address emphasizing the role of global power and focusing on importance of sustainable devel-

opment of natural resources, renewable energy and adoption new technologies and energy efficiency. Ms. Aytzhanova continued with presenting the EXPO-2017 project and touching upon RoK President Nursultan Nazarbayev's initiative to set up the Green Technology Center in Astana, which will foster the development of environmentally clean technologies and help realize the green economy potential. The Kazakh delegation expressed hopes that UNECE Member States will contribute to further development of the Centre. Kazakhstan and UNECE are now jointly developing an extensive 4-day program of events scheduled for the next year. The Kazakhstan delegation focused on drafting of a Ministerial Declaration to be delivered as a result of intensive discussions between heads of agencies and to define a number of priority actions on

.On 28-30 2016 Geneva (Swiss Confederation) accommodated the 25th session of Sustainable Energy Committee under UN European Economic Commission, which was attended by Kazakhstan's delegation represented by Permanent RoK Representative to the UN office and other international organizations in Geneva Zh. Aitzhanova, KAZENERGY General

sustainable energy. Minister's agreements within this document will become the foundation for reaching a coherent, integral, coordinated and comprehensive policy in the area of energy, program implementation and solutions to global energy challenges.

Declaration's key provisions and Forum's outcomes will be incorporated in the EXPO Manifest of Values designed to consolidate proposals of governments, the private sector and businesses to deliver a new model of future energy.

The delegation from Kazakhstan proposed to conduct international consultations and joint effort on preparation of a high-level meeting. The member countries expressed an interest in participation and overall support to the preparation for the proposed conference and forum.

UNECE Executive Secretary Christian Friis Bach noted the importance of the upcoming conference and informed that UNDESA, five UN regional economic commissions, SE4ALL, IEA, IRENA and other international organizations had confirmed their cooperation.

The Geneva session also covered elections of members to the Bureau of the UNECE Committee on Sustainable Energy. KAZENERGY Executive Director Ramadan Zhampiyisov was elected Vice-Chairman of the Bureau for two years until the completion of the 27 Session. In addition, the Kazakh delegation held bilateral meetings with UNECE General Secretary and Chairman of Committee on Sustainable Energy Jürgen Keinhorst.

Opportunities and Prospects for Use of Liquefied Natural Gas in the Republic of Kazakhstan

Over recent years, the global market for liquefied natural gas (LNG) has been showing significant growth strengthening its impact on the global balance of energy. In the near future, the LNG sector will be viewed as one of the most competitive sectors. What are the benefits and efficiency of development of the LNG area? How profitable are the LNG projects for the country? These issues were discussed at the specialized workshop in Astana organized by KAZENERGY Association in cooperation with leading international companies Chemtex and Black & Veatch. The platform gathered representatives of the Ministry of Energy, governmental agencies, and various companies

Chemtex is a US based company with its in-house pool of research and technology and is known worldwide as a huge supplier of sophisticated technologies, engineering solutions, construction and support of the oil, gas and chemical projects, production of polyethylene, polyether fibers, etc. It has been operating for seventy years. The company has its offices in Wilmington (US), Beijing and Shanghai (China), and Bangalore (India). It has been almost fifteen years since Chemtex first started to cooperate with Black & Veatch, one of the leaders in engineering, construction, consulting in energy, water resources, and IT. Last year the company celebrated its 100th year of operation. The main office of Black & Veatch is based in Kansas City (USA) and has over ninety representative offices across the globe and is in the Forbes' top list of the largest private companies in the United States.

Kazakhstan, like the whole of the Central Asia, is a new and little known region for Chemtex and Black & Veatch. However, the leadership of the company is willing not to only offer our country projects related to introduction of the LNG equipment, but to also start working in the petrochemical industry, polyether production, etc. According to Sean Ma, global president of Chemtex, liquefied natural gas obtained by compressing followed by cooling is a product widely used virtually everywhere: in transport, food, heating and power. Moreover, LNG belongs to eco-friendly products with minimum environmental harm. As an example, workshop speakers refer to LNG projects in China, where plants in the resource-rich eastern part of the country are equipped with LNG installations and supply purified gas to the western regions (Shanghai, Guangzhou and other destinations). What Sean Ma is saying is that distances are not an issue. Gas is delivered not only by pipelines, but also by tankers. Over the recent decade, China has focused on addressing air pol-

lution using clean technologies. Leaders of Chemtex and Black & Veatch have noted that all of their technologies meet the standards of green energy.

Kazakhstan has large potential for gas use. Sulfur released from gas combustion can be used further in other processes. Even though coal continues to be one of the top fuels both in China and in Kazakhstan, LNG is an excellent option to replace diesel or gasoline for freight and public transport, and private automobiles as well to play a role in gasification of regions. There are prospects for use of LNG in Kazakhstan, but, as workshop participants believe, it is necessary to do thorough economic calculations for the projects. There is also a need to get the detailed understanding of the legislative framework of the Republic of Kazakhstan and to make relevant changes to it in relation to all aspects of production and use of LNG, as noted by the workshop participant from the Ministry of Energy.



WE ALWAYS GO FORWARD

Dear readers, we kindly represent you the interview of Bolat Akchulakov, General Director of KAZENERGY Association for KAZSERVICE Magazine

Mr. Akchulakov, you have an extensive experience in the sector. You were the head of major oil and gas companies of the Republic, and you were Vice-Minister of Oil and Gas of Kazakhstan. Could you tell us how this experience helps you in the position of General Director of KAZENERGY Association?

Activities in the oil and gas sector and civil service are complementary. The former provides invaluable practical experience and knowledge, and the latter provides understanding of the mechanism and logic in the adoption of different state decisions. I believe it is undoubtedly a very useful way both for me personally and for accomplishment of the important function realized by KAZENERGY Association as a dialogue platform between business and government. Bringing together the mining and transportation, service and geophysical, uranium and other companies, KAZENERGY represents their interests during the interaction with governmental and public structures, which ensures a balance of interests between the state and energy companies, contributing to the sustainable development of oil and gas complex of the Republic.

The Association brings together the major players of the petroleum and energy sectors, including such companies as TCO, KPO, NCOC, CNPC-Aktobemunaigas. The Association has a coordination council for Kazakhstani content development. How are the measures for increasing the Kazakhstani content realized with



regard to large subsoil users?

Currently, the Association unites more than 80 petroleum and energy companies. Recently, this number has been increased with two new members: OMV Petrom S. A. and the China Petrochemical Corporation representation in the Republic of Kazakhstan. All the Association members take part in one or several coordination councils, which are permanent advisory and deliberative bodies.

Speaking of the Coordination Council for Science, Innovation and Local Content Development, it should be noted that its main objective is to study the issues of local content development and execute research and development (R&D) projects, monitor and participate in the development and implementation of policy documents of the industrial state bodies in the field of R&D and innovation projects. The Association's Coordination Council for local content is convened twice a year, which allows its members to include a question into the agenda for discussion and to conduct a detailed

study for its solution.

For KAZENERGY, the issues of expanding the range of Kazakhstani goods, works and services on the oil and gas market is one of the priorities, because there is a clear understanding of direct relationship between the qualitative and quantitative growth of local content and sustainable development of the oil and gas industry.

It is clear that for increasing the local content share, our companies need modernization and improvement of the efficiency of the existing manufacture, technology transfer, development of competent human resources.

Besides, issues are acute regarding the existing legislative and other administrative restrictions, proper understanding of project requirements, correct composition of applications filed by potential suppliers, pre-qualification and selection of projects, in particular, of the 3 major oil and gas operators: Tengizchevroil, Karachaganak Petroleum Operating B. V., North Caspian Operating Company N. V., using the new supplier database "Alash" etc. By the way, at the latest coordination council meeting, these oil and gas operators attended a detailed on-line presentation of the supplier database "Alash", which creates additional possibility for fast search of desired Kazakhstani products and services.

As it was already mentioned, the Association's Coordination Council pays great attention to the system of planning and organizing research and development projects for the domestic industry and mining sector. For example, in 2012, the Law "On subsoil and subsoil use" was amended, obliging subsoil users to allocate 1% of their gross annual income to research and development. It was assumed that this amendment would allow subsoil companies to increase the financing of R&D and stimulate the creation of new innovative enterprises capable to satisfy the existing requirements for high quality and price competitive products. Nevertheless, the mechanism

of financing and obtaining results is still controversial and ambiguous. In this regard, KAZENERGY is seeking ways to implement the research and development commitments, which requires a detailed study of the legal framework.

At the same time, I would note that the legislative amendments do bear fruits. Thus, the Association members, Chevron and Shell Kazakhstan Development B. V., opened laboratories in Western Kazakhstan for analyzing cores and fluids. BG in conjunction with OTM Consulting carried out extensive work on data collection and analysis of the infrastructure and scientific potential of Kazakh Universities and research organizations. The focus of this work was associated with the goals and objectives of Shell's roadmap. In turn, this work helped to make an independent assessment of Kazakhstani organizations' capacity to carry out R&D projects.



The Association also involved international experience to the solution of local content development issues. One of examples is the joint work conducted by PSA, LLC and the UK Ministry of Trade and Investment on establishing strong partnership between the supplier companies of Kazakhstan and the UK in the field of oil and gas.

In addition, for several years, KAZENERGY, together with the experts of the Association members and international experts of the World Petroleum Council, has been working on local content development in the context of integration processes such as accession of Kazakhstan to the Eurasian Economic Union and the World Trade Organization. Under the conditions of market integration, issues become increasingly acute regarding the competitiveness of domestic enterprises and further improvement of state policy in the field of local

content.

In this regard, the study of advanced foreign experience in this area is particularly interesting. Thus, on 31 October this year, the Association jointly with the World Petroleum Council will host an expert seminar for analyzing the main barriers to the local content development and elaborating recommendations for improving the state policy.

KAZENERGY has had educational programs successfully operating for many years. In September last year, the Association became an operator for selection of candidates entitled to receive tuition from the funds allocated in the framework of the North-Caspian and Karachaganak projects. Please tell us more about this program. For example, can the employees of oil service companies be trained under this program?

In the beginning of this year, in Almaty, KAZENERGY Association awarded 2015-2016 academic year tuition certificates during an official ceremony to 51 students of Kazakh-British Technical University and Satpayev Kazakh National Technical University and to 40 students of KIMEP University.

Training students at the expense of the KAZENERGY Association member companies became possible thanks to the educational project adopted in the framework of the Memorandum signed in September 2015 between the Ministry of Energy of the Republic of Kazakhstan, LLC "PSA", KAZENERGY Association, North Caspian Operating Company N.V. (NCOOC N.V.) and Karachaganak Petroleum Operating B. V. (KPO B. V.)

The aim of the project is to support talented students of the Republic of Kazakhstan, who oil, gas and energy specialties in full-time training departments, and to support professional development, training and retraining of Kazakhstani citizens in the North Caspian and Karachaganak projects.

All students that received certificates this year passed a 2-stage competitive selection. At the preliminary stage, KAZENERGY Association examined 593 applications, of which the Commission for selection of candidates selected 317 people for university and college tuitions provided at the expense of NCOOC N. V. and KPO B. V., of which

higher and postgraduate education tuitions were received by 283 people; technical, vocational and post-secondary education tuitions by 34 people.

During the selection of candidates, preference is given to candidates from poor, large and incomplete families, orphans and the disabled, who have been awarded Altyn Belgi (Excellence) badges, certificates with honors, Olympiad winners, and students enrolled in universities and colleges of Kazakhstan. The detailed conditions of participation in the contest, the procedure of submission and examination of documents of candidates and the list of necessary documents for participation in the competition are available on our website www.kazenergy.com.

In general, the support has been provided to students of educational institutions since 2014, when KAZENERGY Association and JSC "CNPC-Ay-Dan-Munai" signed the first cooperation memorandum on assistance in enrollment from among students of educational institutions that implement curricula of technical and professional, higher and postgraduate education with budgets in excess of 80 million KZT. During the 2014-2015 academic year, about 300 university and college students were trained in compliance with the "Rules for selection of applicants for education at the expense of subsoil user funds".

Currently, the applications for participation in the contest are accepted from 10 July to 30 August, in accordance with the approved plan for 2016. The information about educational grants is actively disseminated among candidates, universities, colleges and students. After all applications are received, the list of candidates meeting selection criteria will be submitted to the Commission within 30 days for the final selection of candidates. The results will be published on the website of KAZENERGY, as usual.

On 5 July this year, the final decision on investments in the project of future expansion (hereafter, PFE) of the Tengiz field was announced. What is your vision about the involvement of Kazakhstani companies in this project? How can KAZENERGY contribute to increasing the local content in this project?

The project of future expansion and the project of wellhead pressure management of (PFE-PWPM) are integrated projects that are realized simultaneously at the Tengiz oil field in order to increase the production and to maintain the productivity of the existing facilities. Being one of the ma-

major capital projects currently realized in the global energy industry, PFE-PWPM is designed for increasing the oil production at the Tengiz field by around 12 million tons per year. It means that the total production will grow to around 39 million tons of oil per year. The PFE facilities will not produce sulfur, because hydrogen-sulfide containing natural gas will be pumped back into the reservoir to maintain the reservoir pressure.

The facilities of the field will be designed and constructed with the use of advanced technologies to reduce emissions into the atmosphere.

As it is known, PFE-PWPM envisages construction and installation of the following new facilities: new oil producing wells and oil gathering systems, oil and gas processing installations; installations for re-injection of hydrogen-sulfide containing natural gas into the formation; installations for full-capacity utilization of the existing plants at the Tengiz field by lowering the pressure at the mouths of flowing wells and increasing the pressure at the entrance of the six existing production lines; auxiliary facilities and infrastructure needed for implementation of the project components.

The facilities will be built using large modules. Their production, assembly and pre-commissioning will be performed at production sites in Kazakhstan, South Korea and Italy. The work at Tengiz includes the assembly of modules and construction of the remaining facilities from component parts, which provides additional benefits for the economy of Kazakhstan by using local goods and services, attracting Kazakh workers, and local implementation.

The implementation of PFE-PWPM is a good opportunity for implementation of training programs, introduction of new technologies in the oil production of the country, development of capacities and capabilities of local enterprises. It has already been calculated that at the peak of the construction works, there will be about 20 thousand additional jobs created. The Kazakhstani suppliers are actively involved in the provision of designing work, supplies and manufacturing of modules for the PFE-PWPM. It is known that to date more than 1,600 local companies have been pre-selected. New opportunities are created in the field of designing and maintenance of high-tech equipment, construction and manufacture of modules. Local and foreign companies negotiate on the creation of joint enterprises for execution of design, module production and drilling operations.

What are your wishes to the Association of Service Companies of Kazakhstan and KAZSERVICE Magazine?

This year, Kazakhstan celebrates an important historical date – the 25th anniversary of Independence. In the past time, the country's economy has undergone dramatic changes and there has been some level of diversification. However, the oil and gas in-

dustry still plays the central role. The general view is that hydrocarbons and other energy resources in the coming decade will not lose their positions and will continue to be the focus of the latest innovative and technological developments, the best engineers and workers. It will be a powerful engine for development of related industries. Now Kazakhstan has around 200 oil service companies, the potential of which can and should be developed. In this regard, I would like to wish the participants of the oil and gas market success in implementing projects, well-grounded ambition in achieving good results, introduction of modern innovations and technologies that will enable the oilfield services market to become the most important area of the oil and gas market!

COORDINATING COUNCIL FOR HUMAN CAPITAL DEVELOPMENT

Coordinating Council for Human Capital Development of "KAZENERGY" Association held the meeting with representatives of the Ministry of Energy of RK, "Atameken" NCE RK, "Kasipkor" Holding" NJSC, KBTU, KAZENERGY member-companies

The participants listened to the interesting and informative report on the results of researching dual educational system and on the results of training the trainers of "Embamunaigas" JSC. The pilot project on dual educational system was firstly launched in 2015 by "KazMunayGas" NC at the low-profit field. Such method provides parallel immersion of students into the learning and practical environment. Thus, the student, except for the theory, receives knowledge during his work at the enterprise. KAZENERGY Association jointly with KazNU named after Al-Farabi upon agreement with KMG and EMG performed the analysis of forming the applied professional qualifications, professional self-consciousness of students trained under the dual system and the students trained under the similar specialties by traditional method. What are the differences between the student-practitioner and the student, who has not undergone an internship? We have found that understanding of

complex theory is easier achieved through the real work conditions at production facilities. The students actually have the opportunity to express themselves, and it allows the employer to assess the level of future specialists. Therefore, the chance to be employed is high in the long term. The students of dual program have clear understanding of the meaning of their profession and purposefully plan to work in their specialty, they develop an understanding of the professional hierarchy and responsibility. At the same time, great attention is paid to the training of trainers. Since last year, the trainings have been conducted for the workers of "Embamunaigas" JSC in Shymkent with participation of German experts. The agreement on organization of activities was achieved by KAZENERGY's initiative with "Atameken" NCE RK. Now NCE is working on "Trainer in production" qualification vocation. Also the Report on the activities of the Coordinating Council for Human Capital Development was presented and the members of the Working group of KAZENERGY Educational program were approved during the meeting. Another important question - development of Industrial frame for oil and gas qualifications. Candidates from the Association's member-companies to the working group for human capital development were presented to the Ministry of Energy of the Republic of Kazakh-

stan. Moreover, the list of professions with the breakdown by groups and types of professional activity, compiled by KAZENERGY and being the basis for the human capital development, was presented. It is planned to develop a new Industrial frame this year.

Regarding the project of the Industrial agreement in oil and gas, oil refining and petrochemistry fields of RK for 2017-2019, it was decided to present the final document to the Ministry of Energy of RK after final agreements and adjustments by the end of this year. The participants of the Coordinating Council discussed the project between the Ministry of Health and Social Development of RK and IBRD on labour skills development and jobs stimulation.

The materials of the meeting of CC for HCD can be found here: <http://kazenergy.com/ru/association/soviets/2013-04-15-04-19-47/14240-2016-09-09-11-55-11.html>

NEW MEMBERS OF ASSOCIATION

KAZENERGY Association continues to grow. Kazakhstan Oil Refinery ("KOR" LLP) – one of the active Kazakh manufacturers, wholesale and retail supplier of different types of diesel fuel, gasoline and residual oil - has become a new member of

organization. The enterprise has its own network of reservoirs and production capacities in several regions of the country.

We should remind that earlier this year, "Yedil-Oral.kz" LLP, "KAZPETROL GROUP" LLP, representative office of China Petroleum Corporation in RK, OMV Petrom SA, "Rosatom Central Asia" LLP have joined the Association.



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ЗАВОД

Kulpash Konyrova, author

Development of liquefied natural gas market in Kazakhstan (LNG) requires both significant investments and incentives in the form of benefits, availability of cheap labor force and electrical power.

Parallels Between Kazakhstan & China

In the mid of September in Astana has been discussed the potential for LNG use in Kazakhstan. Following KAZENERGY's initiative Chemtex and Black & Veatch (specializing in the LNG area) presented their projects they had implemented across the globe. This discussion addressed both transfer of advanced LNG technology and construction of plants with various capacities adapted to the Kazakhstan conditions. One of key invited speakers, Head of Chemtex Group Sean Ma, while speaking of LNG benefits drew a parallel between China and Kazakhstan. "Economies of both countries are developing rapidly creating a high demand for energy. Both countries have embarked on a course of the development of clean technologies. Gas is environmentally clean fuel and cheaper than oil. Thirdly, gas fields in both countries are located in western regions while the basic demand for natural gas is in northern and southern regions with high population density. Therefore, authorities of both countries have to deal with gas supply to consumers", said Sean Ma. Indeed, available LNG production technologies provide for 600-time compression of the natural gas that comes out of the field followed by either railway or road transportation in special containers over long distances. "No wonder why LNG production is called a virtual gas pipeline. There is no need



in huge costs for the construction and laying of pipelines. For Kazakhstan, with its vast territory and large distances between settlements, the LNG market development would help to resolve many problems", said Kuanysh Sarsekeev, Deputy Director of Gas Industry Development Department under RoK Ministry of Energy. In particular, he emphasized that LNG would help solve the problem of gas supply to Astana, natural gas supply to scarcely populated and remote rural areas and villages as well as promote environmentally friendly fuel for public and private motor vehicles. Despite its obvious benefits LNG use in Kazakhstan is equal to zero. Sean Ma stated that LNG development in Kazakhstan is at the same level China was in 2005. LNG active use in China began a decade ago. To date, Chemtex alone and jointly with Black & Veatch has built 70 small- to moderate LNG Plants. There are no LNG plants in Kazakhstan at all. "So far, Kazakhstan has plans to build an LNG plant in Kostanay Region. According to Kuanysh Sarsekeyev, though the legislative framework for LNG development is in place in Kazakhstan, local laws prohibit flaring of associated gas in oil production. Secondly, according to law subsoil users are obliged to develop their natural gas

processing programs", said Kuanysh Sarsekeyev.

How Much?

The main question that concerned potential investors from oil-producing companies of Kazakhstan was how profitable it will be for them today to build an LNG plant. According to Mr. Sean Ma, Head of Chemtex Group, the cost of a moderate LNG plant (1 million cubic meters per day) is approximately US \$ 70 million. "This is an approximate cost because in China there is a cheap labour force and all equipment is manufactured in country. The cost of a similar facility, for example in USA, will be three times expensive", clarified Sean Ma. "LNG production is an energy consuming business. This fact should be taken into consideration". According to Sean Ma the electrical power cost ranges between 25 to 50 cents per LNG cubic meter. "Economical profit will depend on the power and feedstock cost", said Sean Ma. He also said: "To develop the LNG market any country of the world will require two factors. 1. Commitment to clean air. 2. Politician decision". Both factors are in place in Kazakhstan. But this not sufficient. When drawing parallels between Kazakhstan and China invited experts did not take into account a dramatic difference in the

population number (i.e. number of potential customers). Kazakhstan's population is 17 million, China's - over 2 billion. The customers number is a critical factor for how quickly a new plant that requires significant investments will payback.

State Support

However, Kazakhstani oil producers do not hide their interest in construction of LNG plants. They understand that LNG is a future. Well-thought approach to processing (liquefying) of associated gas may be quite profitable. At the same time they underline the need for specific support from the state in the form of privileges and subsidies. We can use an example of a small oil producing company - Karakudukmunay LLP. After the law prohibiting the flaring of associated gas this company was one of the first to have invested in construction of gas utilization unit in 2009. The project cost was 75 mln. USD. However, it has not paid off yet. And there are several reasons for that: 1. Low price for associated gas - as low as 3620 tenge per 1000 cubic meters (approximately 10 USD). The price is set by Ministry of Energy. 2. Primitive right to purchase is owned by national company Kaz-TransGas, which does not want to buy the gas at a higher price. The company is not able to sell gas to other clients at a more favorable price. Karakudukmunay experts indicate that with the current oil prices they cannot neglect low prices for gas as they did when oil prices were high. In addition, the volume of associated gas produced by such companies as Karakudukmunai is as small as 90 thousand cubic meters per day. As a result, subsoil users do not see any economic benefits from construction of even a small LNG plant. Kuanysh Sarsekeyev did not deny the fact of pricing issues: "This is a painful issue, but the



price for natural gas is established by the state law. We estimate the price limit, but this is a vicious circle. This issue requires additional reviewing and elaborating". As for construction of LNG plants - there is a solution for small companies. Well, it is not economically viable for small and middle companies to build LNG plants singly. "We propose them to consolidate based on the multi-well cluster principle. Subsoil users whose fields are located close to each other may join their efforts to build a small LNG plant", said Kuanysh Sarsekeyev. As for incentives and subsidies - needful amendments will be made to the legislation over time, he promised. "LNG is the next stage of development of any gas units. LNG boom is yet to come Kazakhstan. On a mid-term basis the state will be seeking ways to ensure that LNG is economically profitable business for any investor", summarized Arman Satimov, Advisor to KAZENERGY Chairman.

SCIENTIFIC AND TECHNICAL COUNCIL OF KAZENERGY

Scientific and Technical Council of KAZENERGY Association continues to acquaint industrial companies with scientific developments in oil and gas and energy sector



At the last meeting on July 29, representatives of Satpayev KazNTU, “KazMunayGas” Research Institute of Production and Drilling Technologies” LLP, other Russian and Kazakh companies presented their interesting reports on chemicals production, polymer flooding technology to increase oil recovery, pilot tests of new oil production technologies for nonuni-

form permeable strata, as well as formation of geological and geophysical database, sulfur wastes use in oil production in manufacturing road-building materials etc. were heard and discussed. We should note, that different developments managed by the scientific-research centers, laboratories of the enterprises are aimed at improvement and facilitation of the quality of work at production facilities and oilfields, and aimed at fighting against environmental problems. For instance, such oil and gas production and refining wastes as sulfur may be used for road surface. Sulfur asphalt-bitumen is more solid than conventional wear proof asphalt concrete, resistant to temperature drops. Wastes utilization issues will be solved by economically sound technologies. In this connection, the use of sulfur may become one of solutions, because simple burning and burial of wastes will lead to environment pollution.

“Mobile home” - an interesting project, which in future may become the best modern home or office for industry professionals, whose activities are connected with the movement across the territory (rotational works at oilfields, construction of oil and gas pipelines etc.) Light, transportable constructions may easily be transformed in size, they make it possible to use renewable energy.

TAX TASK FORCE UNDER ROK MINISTRY OF NATIONAL ECONOMY

KAZENERGY Association participated in Task Force sessions on creation of the Common Tax and Customs Code chaired by Minister of National Economy K.V. Bishembayev on 15 and 23 September 2016

These sessions covered concepts of subsoil user taxation reforms.

KAZENERGY recommended the following:

- add a direct effect in the RoK Tax Code on obtaining of privileges with respect to MET + the fifth criteria (deep wells);
- add a boundary dilution between exploration and pro-

duction contracts within one legal entity;

- cancel the commercial discovery bonus;
- introduce a special taxation procedure for the continental shelf of the Caspian Sea.

The Ministry of National Economy delivered McKinsey & Company’s presentation on transi-

tion to a taxation model based on the profit (financial result) (increase CIT, but cancel MET, rent tax on export and tax on excess profit for new subsoil use contracts).

Discussion of these proposals will be continued.



DUAL EDUCATION SYSTEM STUDY

Today, dual education has become an internationally successful practice of vocational education and training of qualified and practically trained personnel. It is a form of education that combines learning in educational organization, compulsory training periods and on-the-job practice ensuring jobs and compensation payments to students with the responsibility equally shared by the enterprise, the educational organization and the student.

Adoption of the dual education system in Kazakhstan was fostered by President Nazarbayev's statement on Kazakhstan's intention to implement the vocational education system based on German dual model during his visit to Germany in February 2012. In his Address to the Nation "Kazakhstan's way – 2050: one goal, one interests, one future" he instructed to build the core for the national system of dual vocational education.

One of dual education examples adopted the in the oil and gas industry is an experimental training facility located at Kulsary field operated by Embamunaygas (EMG) JSC.

Aiming to improve the professional competence of graduates in 2015 KazMunayGas (KMG) launched a pilot dual system project through EMG assets. KAZENERGY Association jointly with Al-Farabi Kazakh National University (KNU) studied a sustainable formation of applied professional qualifications, improvement in cognitive competence and professional consciousness of dual education students if compared with traditional students in similar disciplines to assess the dual system education and estimate investment efficiency into the dual education in the

oil and gas industry. This study was overseen by KAZENERGY and supervised by professors and a group of students from Department of Sociology and Social Work, Department of General and Applied Psychology and Economic Department. Each party (KAZENERGY, KMG, EMG, KazNU) expressed a voluntary professional interest in this non-profit research project. The goal of the study was to assess the students enrolled to the traditional system of education and dual education system students.

The study involved 78 undergraduate students (3-4 year) of the Atyrau Oil and Gas Institute



and APEC Petrotechnic: Target group - dual system students (39 respondents); Check group –traditional education system students (39 respondents).

Study findings include the general evaluation and prospects of the dual education, evaluation of education system goals attainment, forming of professional competence and review of employment opportunities.

One of education efficiency components was how the respondents assess their employment prospects in general and by their discipline. It should be mentioned that more than half the dual respondents (62.2%) were quite optimistic about finding a job in their discipline.

Table of respondents' answers to Will you be able to find a job in general and in your discipline (% out of respondent number in each group).

However, the study emphasizes the most critical issues of the higher education system impeding, in respondents' opinion, competitiveness of higher school and vocational school graduates at the labor market.

The traditional educational system students believe that the biggest issue in the higher education system is insufficient adaptation of vocational programs to market needs (56.1%). 34.1% of the respondents underlined inadequacy of mechanisms of interaction between the labor market and educational organizations.

The study also demonstrated that the dual system facilitates accumulation of work experience and positively effects on the following factors:

- 1) Forming of adequate self-rating;
- 2) Forming of adequate understanding of the work processes;
- 3) Identifying of hierarchy of professional values.
- 4) Lack of focus on formal aspects of labor activity;
- 5) Acknowledgment of responsibility for your work and life.

Dual system investment efficiency was estimated to understand the payback period. The dual system experience in the oil and gas industry is deemed as successful since the oil and gas industry is highly profitable.

Payback or a short period of return on investments is available thanks to a high output rate per employee. Profitability per employee is high the investments into such employee payback quickly.

Please follow this link to learn more about the study: <http://kazenergy.com/ru/actions/2012-01-23-09-38-11.html>

Kazakhstan adopted the national qualification system in February 2012 by adding a new chapter "National Qualification System (NQS) to the RoK Labor Code (the Labour Code) further transformed into Article 117 "Professional standards and qualification improvement", Chapter 9 "Professional training, re-training and qualification improvement" of the Labour Code dated 06.04.2016.

In 2013 the RoK Government Resolution approved the Phased National Qualification System Development Plan (the Plan). The Plan includes the set of activities associated with development of qualification systems, professional competence assessment and confirmation of specialist qualification compliance.

NQS core elements are:

National Qualification Framework (NQF);

Industry Qualification Framework (IQF);

Professional Standards (PS);

Professional competence assessment and confirmation of specialist qualification compliance (certification);

- educational programs.

On 16 March 2016 the National Tripartite Commission on Social Partnership and Regulation of Social and Labour Relations approved a new NQF defining a common scale of qualification levels of general professional competencies for developing of IQF and PS.

IQF classifies industry requirements and qualification of a specialist by levels depending of complexity of works and nature of knowledge, skills and competence applied.

Previously approved IQF for the oil and gas industry (Order of RoK Oil and Gas Ministry No. 184 dated 18.10.2013) has become void due to adoption of the new Labour Code, which states that the competence for IQF development has been assigned to competent state authorities and associations of employers in relevant areas of activities. IQF approval powers were transferred to Industry Commissions on Social Partnership and Regulation of Social and Labor Relations.

in June 2016. Ministries of Healthcare & Social Development, Education & Science and the RoK National Chamber of Entrepreneurs "Atameken" (NCE) jointly drafted and approved Methodical recommendations on development and issuance of industry qualification frameworks.

As per the MoM No. 2 dated 21 June 2016 of Industrial Commission on Social Partnership and Regulation of Social and Labor Relations in the Oil and Gas Industry it was resolved to create IQF Taskforce with participation of the Ministry of Energy (ME), KAZENERGY Association and trade unions.

Currently IQF is being drafted jointly with ME. IQF Taskforce session is scheduled for October 2016. RoK higher and vocational schools are also participating in the IQF drafting process. Pursuant to the above ME MoM Resolution, KAZENERGY provided the list of IQF Taskforce members representing KAZENERGY's Members, which was approved by the MoM of the Oil and Gas Industry Council dated 21.09.2016.

KAZENERGY also submitted proposals on the the IQF approval procedure to the draft 2017-2019 RoK Industry Agreement for Oil and Gas, Oil Processing and Petrochemical Industries.

Basic grounds to draft the IQF and professional standards are provided by the list of professions grouped by types and areas of occupation (the List). KAZENERGY made this list in 2015 based on Methodical Recommendations on Development and Issuance of Professional Standards and in-depth review of the industry and studies to identify basic production cycles, types of production (services) and areas of activities in the oil and gas industry. The list includes 6 areas of professional activities. Oil and Gas Exploration; Drilling of Oil and Gas Wells; Oil and Gas Production; Oil and Gas Transportation; Oil and Gas Processing (including Petrochemistry); and Sales of Crude Oil and Oil Products.

Information:

Article 117.2 of the Labour Code states that development, adoption, replacement and revision of professional standards shall be conducted by Association of Employers based on Industry Qualification Frameworks and approved by NCE as per the procedure established by the competent labour state authority.

In accordance with the Order of RoK Healthcare and Social Development Minister No. 1035 dated 29.08.2015 ON Approval of the Rules for Development, Adoption, Replacement and Revision of Professional Standards (As amended and supplemented as of 28.06.2016) professional standards shall be developed at the cost of Employers.

Pursuant to the Project "Development Labor Skills and Stimulation of Job Creation (Agreement between the RoK Government and International bank for Reconstruction Development (IBRD) bids for component 1 "formation of basis for National Qualification System" (the Component) are planned.

This Component will provide key elements of the national system in line with labour market demands:



Professional standards, educational programs, assessment and certification of qualifications.

Association of Employers, entities and other stakeholders may participate in drafting of professional standards.

KAZENERGY invites all stakeholders to cooperate since participation in PS drafting will be covered from funds borrowed from IBRD.

NCE-related materials are available over this link:

<http://kazenergy.com/ru/2012-09-05-04-11-04/2013-10-01-10-13-41.html>

LOCAL CONTENT DEVELOPMENT & INTEGRATION PROCESSES



WPC EXPERT WORKSHOP PROGRAMME

***31 October 2016, Astana, Kazakhstan
Palace of Independence***

Local content is the indicator of the level of technological, industrial and innovative development of the country, representing, in terms of value, the share of domestic goods, services and human resources, which are used by enterprises when carrying out their activities in this country.

Over the years of independence, the Republic of Kazakhstan has done significant work to develop local content, but to date the volume of production and procurement of domestic goods, works and services are negligible compared to the volume of imported goods and services.

Moreover, the region is witnessing an active development of integration processes. Kazakhstan is a member of the Eurasian Economic Union, and in December 2015 the country became a member of the World Trade Organization. In this respect, the issues of maintaining competitiveness of domestic enterprises and further improvement of the state policy on local content become topical.

To ensure further sustainable development of the petroleum industry, the local enterprises need to modernize and add value to existing production, transfer technologies, and build a competent human resource pool. It is necessary to achieve a balance between stimulation of local content, supply chain, ensuring international competitiveness, and sustainable development of domestic production and human resources in the field of subsoil use. This situation is typical for many countries in the world. In this regard, a particular interest is the study of the world advanced experience and the development of international cooperation in this field with experts from member countries of the World Petroleum Council (hereinafter - WPC).

The WPC is the largest international organization representing the interests of the global oil and gas community. One of the main goals of the organization is building a dialogue between stakeholders to share experience and knowledge, to facilitate the provision of expert assessments and the development of recommendations for finding optimal solutions to key challenges in the oil and gas sector.

Thus, the Expert Workshop will be focused on both the analysis of main barriers and the joint elaboration of recommendations for improvement of the state policy in the field of local content development. This Workshop will be conducted as a regular expert meeting within the framework of the package of measures to develop cooperation with the WPC in the mentioned field. The outcomes, conclusions and suggestions on local content development in new environment will be summarized and presented at a special session of the XXII World Petroleum Congress in 2017 in Istanbul.

Agenda

- Global local content strategies: Protection of domestic producers and the needs of international operators
- Issues of the Subsoil Code and the tax legislation for local content development
- Issues of local content development – from the aspect of domestic producers (organization of production and business processes)
- Competition in the labor market
- Issues of forming a competitive market (database usage, information about the market in general, standards, etc.).

ROLE OF RENEWABLES IN A NEW ENERGY BALANCE OF KAZAKHSTAN

Arman Kashkinbekov,

Deputy General Director

Kazakhstan Renewable Energy Association

Current Status

Renewable energy industry in Kazakhstan is at the start-up stage. Its share in the total electrical power generation is as low as 0.6%. However, according to the approved Green Economy Transition Concept the Head of State anticipates this share to increase to 3% by 2020, 10% by 2030 and 50% by 2050.

In 2014 the Government approved the fixed tariff system: 34.61 KZT/kWh (excluding VAT) for solar stations; 22.68 KZT/kWh for wind stations; 16.71 KZT/kWh for small hydro power plants (hereinafter - HPP); and 32.23 tg/kWh for biogas plants.

Given the KZT/USD exchange rate at that time (182 tenge per dollar) these tariffs were attractive for investments enabling to start first large projects in this area and significantly increasing the interest of investors.

The list of the most remarkable projects includes a solar plant in Zhambyl region Burnoye Solar with the 50 MW capacity, wind farm in Ereimentau with the 45MW capacity and construction of the Astana solar plant to be considered as the first major project in terms of localization and local content in manufacture of solar panels.

The renewable energy sector went through serious turbulence a year later and continued to be shaking in 2016 after global energy prices had plummeted, primarily oil and gas, and the national budget began to experience considerable difficulties resulted in devaluation of the national currency against other leading world currencies (primarily the US dollar).

The collapse of tenge directly affected the investment attractiveness of the renewable energy industry both for foreign and local investors since it could no longer guarantee high return



on investment as most of the equipment had to be bought abroad.

New Law

In late April 2016 the Head of State signed the Law on Amendments to Some Legislative Acts of Kazakhstan on the Transition to the Green Economy, which embraced all necessary adjustments to restore an interest in the renewable energy industry. Alignment of fixed tariffs which had been in effect since 2014 with the devaluation rate in addition to earlier indexation to the annual change of consumer price index was its major provision. In addition, the newly amended law envisaged a common national plan for development and establishment of new renewable energy capacities in Kazakhstan across regions and timeframe and actual needs of the electrical power sector. This document is the most important and much anticipated by all market participants as it enables interested investors to clearly understand when, where and what kind of new energy production facilities are required.

Given a small share of renewable energy in the total electrical power generated in Kazakhstan it was decided to abstain from a mandatory use of batteries or accumulative units to stabilize the electrical power flow from renewable energy stations. The law also provides that the authorized body - the Ministry of Energy of the Republic of Kazakhstan - will develop and adopt a typical contract on connection to the grid of the national operator KEGOC and clear and understandable rules for

incorporation of energy producing organizations into a single list of the Ministry.

Previously, the RoK Government resolved to approve the list, which now has to be replaced by a new list of the Ministry of Energy. The goal is to get rid of projects existing only on paper and include real, economically and financially sound projects having the highest percentage to be realized in practice.

Currently, the Government through the Ministry of Energy that oversees the industry is elaborating the new law, which is expected to clarify new rules of the game for the industry, to be done by the end of 2016 - early 2017.

This state authority is also actively studying the international experience in organizing and conducting a system of so-called auctions designed to reduce the overall level of existing tariffs following the example of the United Arab Emirates and other countries. However, it may result in the need for a new legislative framework and rules at government level including additional investment incentives to support producers. The share of renewable energy in Kazakhstan is low now. However, the state of being so low also has many positive aspects as it allows to choose in a composed and well-thought manner a successful path of development based on a broad international experience avoiding big mistakes made by other governments and set a clear goal of transition of a large, economically and industrially powerful Kazakhstan to the most effective advanced green production and technologies.

Forthcoming International Exhibition Astana EXPO-2017 focusing on the Future Energy and recent Kazakhstan's signing of the Paris Agreement, a legal successor to the Kyoto Protocol, focusing on global reduction of greenhouse gas emissions, are powerful international factors for further development of renewable energy industry in Kazakhstan in order to meet accepted international obligations

Way Forward

Confident and consistent way forward, in my view, appears to be clear and practical and includes:

International Commitments

Fulfilment of all international commitments adopted and accepted by Kazakhstan including, first of all, the Paris Agreement.

Law Implementation

Start implementation of the law signed by the Head of State in April 2016 on transition to green economy as well as accurate execution of the Concept for the transition to a green economy by achieving specified objectives by 2020, 2030 and 2050.

International Experience

Rely on the best international practices in the area; State to create the most attractive conditions. We should not forget that leading countries have started to revise their renewable energy policies only after it has reached a considerable scale and importance. Too much experimentation with a start-up industry of renewable energy in Kazakhstan may serve a bad trick, something we need to avoid by any means.

Global trends

Clear understanding of global trends towards a significant reduction in the cost of production of materials and components for the renewable energy industry will lead to its large-scale dissemination. Kazakhstan must be prepared that can only be achieved through development of the industry that will ultimately effect on the estab-

lishment of the local production base. The Stone Age did not end because the world ran out of stones. The Oil Age will also have its historical end, perhaps in the foreseeable future.

Capacity Building

Train highly skilled experts at the state level. It is necessary to train managers for the renewable energy industry as well as technicians and engineers who will be vital to ensure the industry sustainable and long term development. The capacity building may start from schools through installation of solar panels, solar collectors and wind generation equipment at schools as part of robotics and technology classes following the example of the Chinese capital - Beijing.



the public money that can and are able to efficiently build and operate power facilities as well as have the necessary professional experience and financial and managerial resources.

Public Awareness

Large-scale public awareness campaign for broad layers of the population to explain global energy trends and substantiate adoption of renewable energy and technologies in the country.

Legal Framework Improvement

Continuously modernize and improve the investment climate through better legal framework that regulates the industry, adoption of new mechanisms for investors and awareness, consulting and legal assistance to be provided by Development Institutions and national companies.

Investments

Focus on attracting of private investors and investment by moving away from

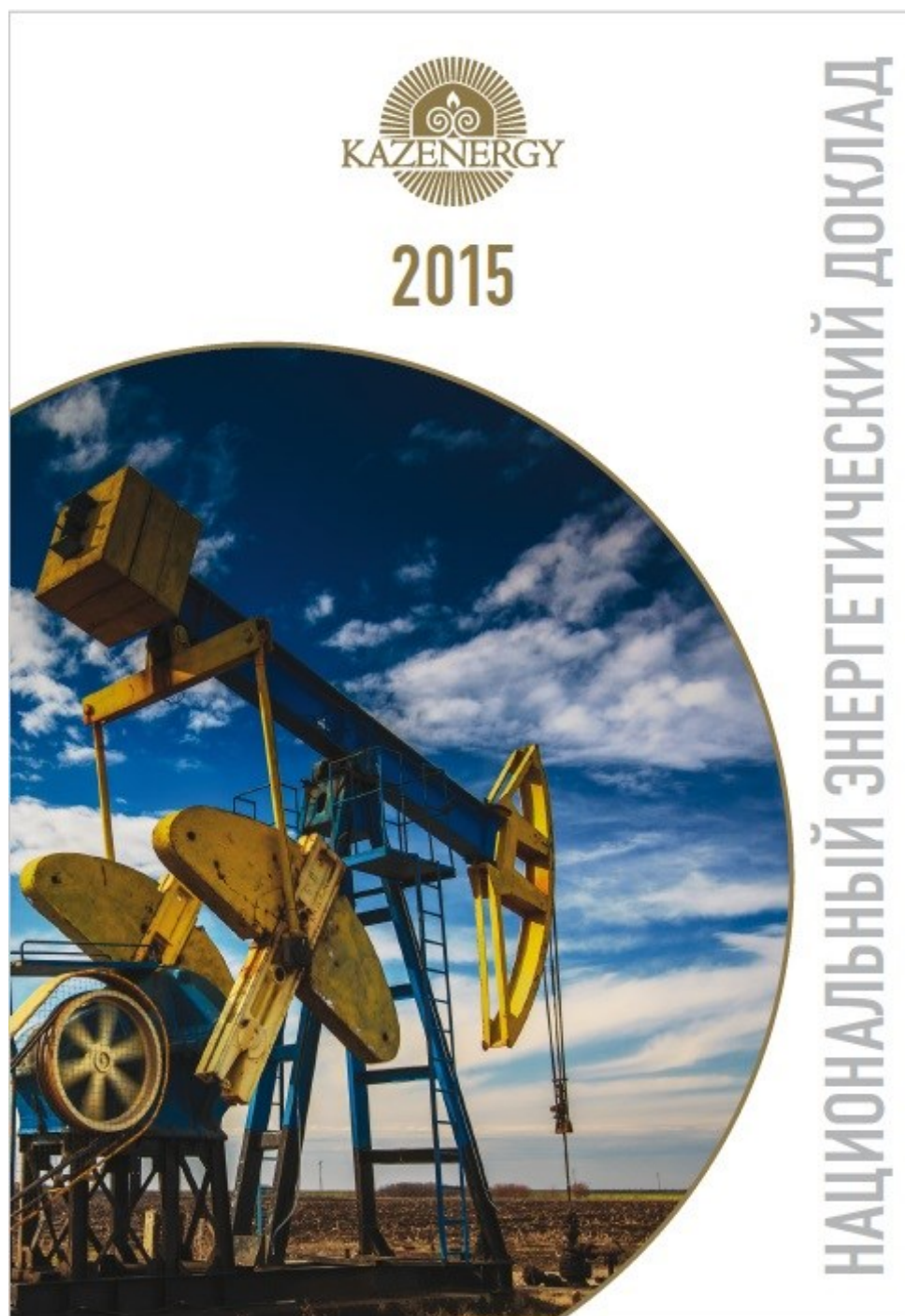
NATIONAL ENERGY REPORT 2015 AVAILABLE TO EVERYONE

Dear friends!

The 2nd issue of the National Energy Report, recently presented by KAZENERGY Association aroused much interest among the industry specialists, representatives of academia, state structures, students. The Association receives a large number of requests on the possibility to purchase this important analytical document.

In this connection, the Executive Committee of KAZENERGY decided to distribute the National Energy Report free of charge with electronic versions in Russian and English provided on our web-site www.kazenergy.com

We hope that the report's materials will be useful and will help to solve scientific and practical tasks for the benefit of our country!





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