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Drivers of the Growth of the Kazakhstan's Economy Under Conditions of Industrial Revolution

The authors have investigated the main factors and terms of industrially-innovative development of points of growth of industries of the real sector of the economy of the Republic under conditions of industrial revolution. Bases directions are presented of working out of compromise between technogenic activity of industries of mineral-raw material complex (MRMC) and quality of life providing in the regions of their distribution. SWOT-analysis was conducted of functioning of MRMC, on the bases of that the main directions of providing of ecological and economic efficiency are mine-out. The authors investigated the main factors and conditions of industrial-innovative development of the growth points of the branches of the real sector of the republic's economy in the context of the industrial revolution. Kazakhstan is known in the international arena as the initiator of many forums, summits and meetings that have a positive effect on the economic, political and cultural situation, both in our country and around the world. In addition, the chairmanship of Kazakhstan in various international organizations and alliances allows our country to put forward various global initiatives so that the opinion of our state is taken into account at the level of the world community.

Each state has several industries that are markers of economic growth. It is these areas of the economy that receive the most dynamic development, give a multiplicative effect to the entire financial market and create new jobs. A new quality of economic growth is a natural process of internal transformations of the economic system, the result of which is the acquisition by economic growth of new forms, properties and features based on the systematic accumulation of a certain quantitative reserve, measured in both economic and social components. In order for the economic system to meet strict modern criteria, it must be able to adapt to new, changing operating conditions, strive for the sustainability of its livelihoods, which is characterized by the ability of the system to resist external and internal influences. The basic directions for the development of a compromise between the technogenic activities of the branches of the mineral resource complex (MSC) and ensuring the quality of life in the regions of their deployment are presented. A SWOT analysis of the functioning of the MSCs was carried out, on the basis of which the main directions of ensuring ecological and economic efficiency were developed.

Key words: industrially-innovative development, raw mineral-material complex, oil and gas complex, nature management, guard of environment, ecological efficiency.

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Қазақстанның өнеркәсіптік революция жағдайында экономиканың өркендеу драйверлер

Авторлар өнеркәсіптік революция жағдайында республиканың экономикасының нақты секторының филиалдарының өсу нүктелерін индустриялық-инновациялық дамытудың негізгі факторлары мен жағдайларын зерттеді. Қазақстан халықаралық аренада біздің елімізде де, бүкіл әлемде де экономикалық, саяси және мәдени жағдайға оң әсер ететін форумдар, кездесулер мен кездесулердің бастамашысы ретінде танымал. Сонымен қатар, Қазақстанның түрлі халықаралық ұйымдар мен одақтарға төрағалық етуі біздің елімізге әлемдік қоғамдастықтың деңгейінде біздің мемлекетіміздің пікірін ескеру үшін түрлі жаһандық бастамаларды ұсынуға мүмкіндік береді. Әрбір мемлекетте экономикалық өсім көрсеткіштері болып табылатын бірнеше салалар бар. Экономиканың ең серпінді дамуын қамтамасыз ететін, бүкіл қаржы нарығына мультипликативті әсер беретін

және жаңа жұмыс орындарын ашатын осы салалар. Экономикалық өсудің жаңа сапасы экономикалық жүйенің ішкі өзгерістерінің табиғи процесі болып табылады, оның нәтижесі экономикалық және әлеуметтік компоненттерде өлшенетін белгілі бір сандық қордың жүйелі түрде жинақталуына негізделген жаңа нысандардың, қасиеттер мен ерекшеліктердің экономикалық өсімін алу болып табылады.

Экономикалық жүйе қатаң заманауи критерийлерді қанағаттандыру үшін жаңа, өзгеретін жұмыс жағдайына бейімделуі, өмір сүрудің тұрақтылығын қамтамасыз етуге қабілетті болуы керек, бұл жүйенің сыртқы және ішкі әсеріне қарсы тұру қабілетін сипаттайды. Минералдық-шикізат кешенінің (МҚК) филиалдарының техногендік қызметі мен өңірлердегі өмір сүру сапасын қамтамасыз ету арасындағы ымырасыздықты дамытудың негізгі бағыттары ұсынылды. Экологиялық және экономикалық тиімділікті қамтамасыз етудің негізгі бағыттары әзірленді, оның негізінде МСК жұмыс істеуін SWOT талдау жүргізілді.

Түйін сөздер: индустриялық-инновациялық даму, минералдық-шикізат кешені, Мұнай-газ кешені, табиғатты пайдалану, қоршаған ортаны қорғау, экологиялық тиімділік.

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Драйверы роста экономики Казахстана в условиях промышленной революции

Авторами исследованы основные факторы и условия индустриально-инновационного развития точек роста отраслей реального сектора экономики республики в условиях индустриальной революции. Казахстан известен на международной арене как инициатор многих форумов, саммитов и совещаний, которые положительно влияют на экономическую, политическую и культурную ситуацию, как в нашей стране, так и во всем мире. Кроме того, председательство Казахстана в различных международных организациях и альянсах позволяет нашей стране выдвигать различные глобальные инициативы с тем, чтобы мнение нашего государства учитывалось на уровне мирового сообщества.

У каждого государства есть несколько отраслей, которые являются маркерами экономического роста. Именно эти области экономики получают наиболее динамичное развитие, придают мультипликативный эффект всему финансовому рынку и создают новые рабочие места. Новое качество экономического роста является закономерным процессом внутренних преобразований экономической системы, результатом которого становится приобретение экономическим ростом новых форм, свойств и черт на основе планомерного накопления определенного количественного задела, измеряемого как в экономических, так и социальных составляющих.

Для соответствия экономической системы жестким современным критериям она должна быть способна к адаптации к новым, изменившимся условиям функционирования, стремиться к устойчивости своей жизнедеятельности, что характеризуется способностью системы сопротивляться внешним и внутренним воздействиям. Представлены базовые направления выработки компромисса между техногенной деятельностью отраслей минерально-сырьевого комплекса (МСК) и обеспечением качества жизни в регионах их дислокации. Проведен SWOT-анализ функционирования МСК, на основе которого выработаны основные направления обеспечения эколого-экономической эффективности.

Ключевые слова: индустриально-инновационное развитие, минерально-сырьевой комплекс, нефтегазовый комплекс, природопользование, охрана окружающей среды, экологическая эффективность.

Introduction

To the main drivers of growth of national economy according to the directing vectors of industrial revolution and third modernization of Kazakhstan, are industries of the real sector of the economy, in particular, raw mineral-material complex. The achievement of high standard of living is possible provided that exception of negative factors, not corresponding to the model of sustainable development and transition to a green economy. The globalization of the world economy and the unification of national economies, the emerging integrating processes deserve increasing proportions. Forcing innovations, scientific progress leads to the mutual dependence of the elements of the economy that contributes to investment progress. The priority task of economic globalization is an increase in the scale and importance of the sphere of economy and finance, which is defined as a way of dividing and ranking economic resources. The advantages and advantages of globalization include the economy of production across the state, which ultimately stabilizes economic growth (Abenov A.A, 2016).

Literature review

However, implementation of the concept of long-term development of the country complicated by the wide spectrum of problems. The main industries of domestic economy are structurally deformed and not effective, negative impact on the environment (per unit of GDP) in our country by orders of magnitude greater than in advanced countries. In Kazakhstan

until now did not find application widespread in the developed countries, in particular, Japan practice of exclusion of the cost of sewage treatment plants from the taxable base of enterprises and provision of preferential targeted investment loans to improve the environment (Akishev D, 2017).

Materials and methods. According to experts the ecological condition of the territory of Kazakhstan is defined as critical. Intensive pollution of the environment continues. The decline in production is not accompanied by a decrease in pollution. Against the backdrop of worsening socio-economic conditions, the problem of ecological disadvantage becomes particularly acute. Negative consequences of ecological processes are characterized by considerable inertia; so, according to experts' forecasts, if even completely stop the emission of ozone-destroying substances, the accumulated quantity of them in the atmosphere will destroy the layer of ozone for decades (B.Aliyeva). Thus, the rehabilitation programs and actions of ecological and technological character are needed now, especially as a Republic, according to analysts, is delayed with the adoption of radical measures to improve and restore the ecological systems of the regions. For prevention of negative consequences of anthropological– and technogenic activities together with existent directions and actions in the field of environmental protection and quality of life development and realization of new approaches are needed, built-in long-term scientific-technical and industrial policy of the State (Atamenchuk, 2010).

Among environmentally disadvantaged domestic industries mineral-raw materials, mi-ning-and-metallurgical and fuel and energy complexes (MRMC, MMC, FEC) lead, their share is >45% of total pollution (Biyarova N.B).

Thus, 22 million tons from them is lost on land, about 7 million tons – in a sea and up to 16 million tons enter the atmosphere due to incomplete combustion of petroleum products during operation of automobile, aviation and diesel engines. At the modern methods of production ~ of 40-50% proven oil reserves and 20-40% proven natural gas reserves are not extracted from the bowels of the earth, 1-17% oil, gas and oil products are lost when producing, preparing, processing, transporting and using. More than 3 milliard tons of solid industrial waste and 500 km^3 wastewater are annually emitted into the atmosphere, water and soil in the world. Toxic contaminations include ~ 800 substances: mutagens, carcinogens, nervous and blood poisons, allergens and so on. Annually this industry forms over 25 million m^3 wastes, that, taking into account their high contamination, forms modern oil and gas industry technogenesis (Buyanov S, 2017).

We are talking about development of bases of optimal balance between the following components:

– economically effective functioning of industries and productions of MRMC;

– solution of social problems in mining regions (quality of life providing and welfare of the population increasing);

– environmentally-friendly use of natural resources (environmental protection) (Bovin A,A, 2009).

The increase of danger of ecological situation worsening at operating productions is explained by financial crises, violation of technological conditions, high wearing out of equipment etc. Force methods of observation of ecological safety of production (norms, laws, governed) save steady positions. For the effective solution of ecological problems of OGC it is necessary to create bases of innovative ecological management in this industry. In this case bringing out sources of environment pollution has a special meaning: geomechanical and hydrogeological breaks, atmosphere, natural water reservoirs and soils pollution. One of main sources of environment pollution are drilling operations. We worked out the model of ecological problems solution in the conditions of drilling operations, an also models of sustainable ecological compromise for the economically effective and ecologically safe functioning of OGC, in particular, pipeline transport influence of on environment, natural landscape saving, contamination of soils, natural water reservoirs (Barancheev V.P, 2017).

Results and Discussion. Based on this, important decisions and policy documents were adopted in Kazakhstan at the state level with the purpose of providing of sustainable and long-term character of socio-economic development (Volokina, 2017). The enterprises of FEC disturb about 20-23 thousand hectares of earth annually, while only < ⅓ from them are recultivated. Over 40% of the disturbed land falls to the share of the oil and gas complex (OGC), which is one of the most ecologically dangerous sectors of economy, because it is distinguished by the following: high earth-intencity; considerable polluting ability; high explosion and fire hazard of objects; the applied chemical reagents and also the extracted hydrocarbons and admixtures are high harsh; high risk and accidents, because the main production processes of oil and gas production occurs under high pressure; high corrosiveness of

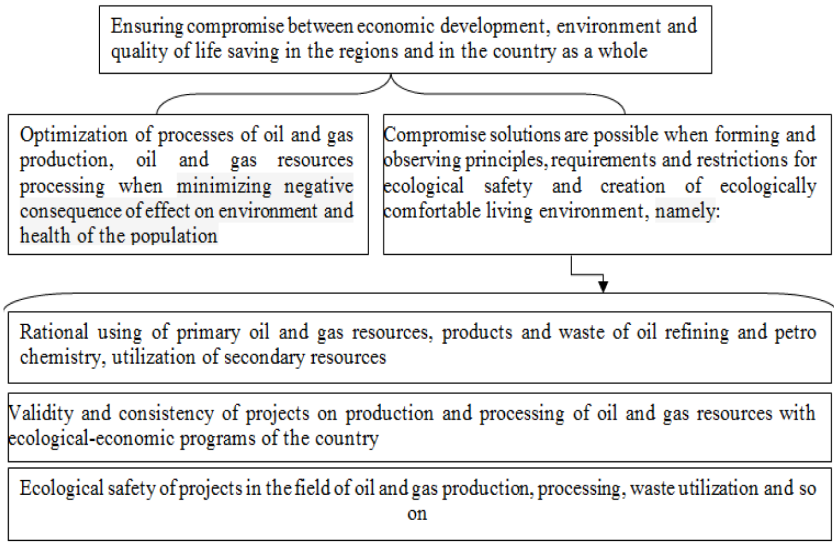

Figure. Ensuring the environmental and economic efficiency of OGC Developed by the authors

working fluids when equipment and pipeline systems operating (Khamidullina S.S., 2004)

Losses of oil in the world when its producing, processing and using exceed 45 million tons per year, that makes about 2% of its annual output. Unity and intercommunication of resource and nature protection relations are laid the foundation of state control of ecological relations, ecologization of industrial activity, observance of requirements of health care; to the main stages of that are: resource, nature protection and ecological. Thus there is a problem of studying of two opposite positions and search of compromise solution now and in the future (fig.):

Achievement of ecological efficiency of OGC it is possible when providing of optimal balance between the processes of satisfaction of necessities of economy and maintenance of naturally-resource potential, that is realized through: ecologization of production, state regulation and control of nature using, purposeful planning of nature using. Factors, that determine ecological efficiency of productions, it is possible to divide into economic, social, ecological. In the group of economic factors, the main are natural resources saving, achievable at the correct construction of raw material and power balances, perfection of account and control of the resources using of and others (Nazarbayev N, 2017). In accordance with the program of industrial revolution for the decreasing of resource intensity, modernization and reconstruction of operating productions are needed in OGC on the bases of target-oriented socially and the ecologically oriented complex innovative programs. There ecological orientation, in our opinion, will allow effectively solving problems of waste of production utilization, loss of valuable components prevention etc (Ovcharenro L. Yu, 2014).

The result of such co-operation is concerted and scientifically-substantiated development for evaluation of OGC efficiency (Butanov S, 2017. On this basis we are conduct SWOT-analysis of efficiency of OGC in Kazakhstasn (table. 1).

The analysis of the factors indicates, that, on the whole, the influence of indirect environmental factors is favorable. The greatest threat is represented by economic factors (Filatov V.V, Kulikova N.V, Konotopov 2014).

In this way:

– in the Republic there is sufficient potential for the greening of OGC's production facilities and enterprises;

– the resource competitiveness of the Republic of Kazakhstan are significant, but the degree of their use is still insufficient;

– the starting point for this is optimization of the relationship between economy and environment, to increase the points of contact between the economic and environmental interests of the enterprise, its stakeholders and society as a whole (Glukova M, 2017).

An increase of ecological efficiency of oil and gas production is a complex problem, a decision of which depends, first of all, on the general condition and the level of economy of the Republic of Kazakhstan development. In this connection the long-term state program of modernization and ecological re-equipment of OGC will stipulate the

decision of ecological problems of industry taking into account world standards, in particular: providing of improvement of the environment condition due to the ecologization of production; introduction of energy– and resource-saving technologies; introduction innovative systems of ecological management; development of approach of the systems on optimization of all industrial and technological cycles in industry (*exploration- boreholes preparing-drilling-production-transportation-processing-output of finished oil products – waste utilization-recultivation*); creation of the closed schemes of low-waste and ecologically safe production. It, in its turn, will allow to correct in time general strategy of development of industry, conduct preventive measures, remove defects, realize strengths (Nazarbayev N, 2012).

Table 1 – Matrix of SWOT-analysis of factors of OGC operation

Strengths	*Weaknesses*
Social and political stability; unique mineral resource base and a huge natural and resource potential in structure and scale; potential of MRMC development; scientific and innovative potential; presence of large enterprises in the field of OGC, fuel and energy complex, MRMC, etc.; high availability of territories for industrial development; favorable investment climate; the developed legislative base in the field of resource and bowels of the earth using; realization of the whole complex of works from exploration to marketing of oil products; high rates of growth in oil and gas condensate production; public awareness of environmental problems; the need for foundation of institution for ecology and environment protection, which should include mechanisms of authorities, high technologies, system of knowledge of the objective environmental hazards	Environmental degradation; running thin of mineral raw materials resources; the discrepancy between the rate of running thin of reserves and the increase in explored reserves; high resource and energy intensity of production; growth of the specific nature intensity of production; growth of technogenic pressure on the environment; adverse natural and climatic conditions; shortage of investment resources and budget financing; high wearing-out of equipment and communications (oil and gas pipelines, water sluice-ways); critical condition of production infrastructure; no depth of oil refining; low level of utilization of APG and other associated components; imperfection of waste control systems; a low share of participation of national companies in the development of oil and gas fields and raw materials processing; imperfection of the taxation system; high share of extractive industries and export-oriented economy; low innovative activity of enterprises; insufficient financing of the environmental sphere; low level of life quality
Opportunities	*Threats*
high level of demand for energy resources in world markets; presence of new promising oil and gas fields of high quality; limited world reserves of hydrocarbon resources; output of high-availability products; construction of processing facilities; socially-oriented policy of the state; growth of the innovation sector; forming of effective state energy-ecological strategy; creating stimulus for the development of green business; creation of integrated green industries in the field of waste management; increasing the depth of raw materials processing; achievement of the effect of decoupling (decrease in specific resource intensity and decreasing of negative environmental effects); state support for the development of priority sectors of the economy; growth of ecological culture, ecological thinking; growth of environmental responsibility	inefficient practices of execution and fragmented environmental legislation; decreasing of environmental safety; high degree of production hazards; risks of man-caused accidents and natural disasters; oil production in the ecologically vulnerable area of the Caspian shelf; low quality of extracted oils (high content of hydrogen sulfide, paraffin, etc.); conservation of the fuel and raw materials orientation of the industry development; low competitive advantages; shortage of qualified personnel; economic instability due to protracted world crises (fuel, ecological, water, crisis of biodiversity, food, financial and economic); depletion of the natural capital of the regions; huge risks and problems for future generations; possible negative consequences of decisions taken at the state and regional levels; Kazakhstan's transformation into a raw material appendage of the developing countries of North-East Asia and the world community; lack of an effective environmental strategy and state policy; disinterest of foreign companies in improving the ecological condition of the regions of the Republic of Kazakhstan; deterioration of the ecological situation in the country and regions

Conclusion

Environmental imperatives are presented as an important chance to change the product, technology, to increase the level of competence of personnel and management, etc. On this basis successful business leaders of neighboring and far-abroad countries build environmental management and assess the ecological efficiency of projects. In view

of this, it is necessary to develop the conditions for economically effective, socially oriented and environmentally safe use of the country's natural and resource potential, which should become the nucleus of our country's scientific, technical and industrial policies in the conditions of the industrial revolution and the next wave of modernization of our country's economy.

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