

MACROECONOMIC LEVELS OF ENERGY INDUSTRIES WITH NEW TECHNOLOGIES

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ABSTRACT

This article provides a theoretical explanation of the importance of energy sectors as the coal industry and their importance in the world. Development, especially in solving environmental problems and solving problems in the coal industry, which is considered one of the most important social problems in the world. The article also discusses the types of development analyses for the future in the coal industry, and how innovative new technologies can be organized to develop the industry and increase economic stability. Practical problems of industry development and innovative approaches for enterprises and factors influencing the activities of enterprises in the form of schematic results of forecast analyses and analytical indicators.

Keywords: Entrepreneurship, environmental issues, enterprises, innovation, enterprise analysis and monitoring, industry, economic stability

Introduction and Motivation

The high results achieved in the socio-economic development of the world, and for our country, too, are primarily evident in the results of economic stability and the fundamentally improved quality of the industry. In other words, the right choice of the path of independent development, a comprehensive economic policy strategy and the selfless work of our people are the most important and main factor in the formation of our economy on the right path and content. This is due to the expansion of their powers and increased level of responsibility for their economic situation. The quality of modern innovative and integrated digital management determines the effectiveness of enterprises. Therefore, attracting

the most modern equipment and technologies to industrial enterprises is considered one of the priorities today.

Research Methodology

The research criteria of the energy industry has evolved from high carbon to low carbon fuels (from coal to oil and natural gas), towards non-carbon (hydroelectric, geothermal, wind and solar). This intensive process reflected the evolution of civilization and industrialization. Today, among the most useful and classic energy resources, what are the prospects for the coal industry in the future by 2050, and what factors will have a big impact on the worldview and new technologies for coal mining, making the coal industry cleaner and more competitive and increasing its demand in the global market and Asia and Uzbekistan, and whether the technologies of capture are effective CO₂ for coal-fired power? Socio-economic development today leads to the most pressing environmental problems in the history of mankind. Global warming and the misuse of natural resources such as energy, soil and water, as well as increased production due to demand for consumer goods, contribute to humanity's unfair treatment of the environment and man will be at risk, but the fate of all living beings on our planet will be at risk.

Research Results

The author cites the expected changes in the industry in the Angren area of the Tashkent region under the influence of 5 factors. It should be taken into account that the PESTEL analysis includes an assessment of ESG criteria that are relevant in modern conditions. Environmental legislation has a significant impact on the development of infrastructure in the Angren region of the Tashkent region and the requirement from industrial companies to comply with environmental standards, which leads to changes in coal mining processes, increases costs and stimulates the development of environmentally friendly and energy-efficient technologies. Organizations and enterprises of the coal industry in the region, in cooperation with government agencies and specialized organizations of the environmental department in the field of environmental protection, help the construction industry comply with norms, requirements and standards, as well as adapt to the changing environmental situation and increase its environmental responsibility. Uzbekkumir JSC, which is the object of our

research, is no exception. That the analysis was carried out, expert assessments were received in 5 areas from the heads of structural divisions and various levels, as well as specialists from the economic and production departments of the company.

Analysis

Angren region of Tashkent is in the long term (5-30 years). The factors are divided into 5 groups: political, economic, technological, environmental and legal. At the next stage, data was collected for each factor. Limiting global warming today compared to pre-industrial levels would mean reducing carbon dioxide (CO₂) emissions by 47% from 1993 levels by 2035 emissions levels. We assume that this requires a rapid transition from traditional fossil fuels to renewable energy sources such as wind and solar and the use of space energy. Within this framework, demand for coal is expected to decrease by about 9% by 2035 compared to the pre-crisis level in 2024. Advanced economies will reduce demand by 13% compared to 2023. Russia and China are the largest consumers of coal in the near future and will peak around 2035, followed by a gradual decline after 2055. In the Asian regions, India and Southeast Asian countries will increase their demand for coal for energy and industrial use in the next decade. In our analyses conducted from worldwide sources of research universities and institutes, the opinions of various scientists in this field in a narrow area show that by 2035, global demand for black gold, such as coal from the bowels of the earth, may fall to 700 million tons of conventional fuel compared to 2023, and perhaps there may be more changes such as cataclysms or A new discovery in the energy sector and could lead to a rapid decline in global coal consumption.

1. The influence of the main factors on the forecast. Environmental concerns about reducing CO₂ emissions from coal-fired power plants, the decline in coal use in the energy sector due to the expansion of renewable energy sources and the cheap price of natural gas, and the policy of phasing out coal to achieve carbon neutrality are the three main factors that led to the decline in the coal market. The energy sector accounts for almost 37% of coal demand. The growing supply of renewable energy and natural gas has led to a diversification of sources of electricity generation. significantly reduced the use of coal in this sector. Coal is the largest source of CO₂ emissions and will be responsible for

approximately 27% of global CO₂ emissions from 2023 to 2050. Policy-driven changes significantly affect the use of coal worldwide. Perhaps it should be taken into account in our research that an integrated approach to managing the process of implementing resource-saving technologies involves systematic work in four main areas: optimizing the production structure, improving the technological system of the enterprise, modernizing the material and technical base of production, and using modern technologies. organizational and managerial innovations. An integrated approach involves systematic work in all areas of the introduction of resource-saving technologies. To achieve effective management of a coal mining industrial enterprise, first of all, it is necessary to clearly define the goals of management, as well as the means and methods of achieving them.

2. Development of new technologies in the coal industry. Potential technologies are emerging in the coal industry, such as hydraulic fracturing to improve methane content in coal seams; CO₂ capture, utilization and sequestration (CCUS) to reduce CO₂ emissions from coal combustion; technologies for converting fuels from coal to liquid and from coal to gas, improve fuel efficiency and reduce CO₂ emissions; Internet of Things, big data analytics, artificial intelligence, and automation to reduce operating costs and improve safety issues and production efficiency in the coal industry; and underground coal gasification (CCGT) to extract coal unsuitable for mining. In particular, UCG attempts have been underway for over a century and have not yet reached a commercial scale. The successful development and use of this technology will make the coal industry more competitive and increase its demand in the global market. The UCG operation consists of a series of injection and production wells drilled into the Coal seam; the coal ignites after a certain amount of air and/or oxygen is injected. Chemical reactions convert coal into synthesis gas by pyrolysis, gorenje, and gasification reactions in a manner similar to the processes in a surface gasifier. The produced synthesis gas is a mixture of predominantly carbon monoxide and hydrogen, which can be used as fuel for the production of electricity and raw materials for various chemical products (for example, hydrogen and ammonia). The impact of CCGT on the environment is relatively small compared to surface gasification, as serious disruptions to landscape and surface disposal of ash and coal waste are not necessary. A properly designed UCG site recognizes and resolves potential

contamination and groundwater subsidence issues; tests related to the integrity of the overlying rocks and highly cemented boreholes must be performed to avoid these issues.

3. CO₂ capture technologies for coal-fired power plants. The five main types of technologies for capturing CO₂ from chimney gas are proven. The average capture efficiency ranges from 30% to 70%. Cryogenic separation can provide the highest level of capture. EFFICIENCY is up to 78.9%. The CO₂ capture stage represents 50-70% of the total cost of CO₂ capture and sequestration. Economic analysis shows that 50-90 US dollars are needed for this. capture an average of one ton of CO₂ from flue gases (the average CO₂ concentration is about 2-13%). On the other hand, it costs between \$255 and \$1,350 to capture CO₂ directly from the air. It would be possible to commercialize the capture efficiency exceeding 70%. However, operators are unable to receive benefits under the current policy because of the high associated capital and operating costs. Capture methods include afterburning, pre-combustion, oxygen-fuel combustion, chemical cyclic combustion, and air. Afterburning technology is a mature technology, and has been widely used. Future CO₂ capture technologies are likely to focus on hybrid capture technologies such as integrated CO₂ capture and conversion.

Literature Review

A huge range of fundamental and practical research is devoted to the problems of education among foreign scientists who have conducted scientific research on the effective organization and management of the implementation and development of industrial production activities in the economy and the coal industry. The theoretical foundations, economic essence and scientific aspects of the economic potential of industrial enterprises were studied by such foreign economists as I. Ansoff, P. F. Drucker, R. Kaplan, The problem of increasing economic stability and growth potential of industrial enterprises of the Commonwealth of Independent States (CIS) V.M. Arkhipov, E.V. Zhoglina, R.V. H. Biryukov, and other scientists were engaged in R.I.Gimush, B.H.Muradov, S.M.Niyazov from economists of the Republic of Uzbekistan to study the problems of increasing the economic efficiency of the industrial complex and its material-technical technical base of G.Zh.Allaev, N.B.Alimukhamedov, Sh.Ya. Maksudova. A systematic study by the authors of

scientific articles and scientific and methodological developments has shown that, despite the importance of research in this field, a systematic study of scientific articles and scientific and methodological developments by scientists has shown that the market in our country is currently in a state of economic research on the introduction of effective methods for the effective development of enterprise activities, improvement organizational and economic mechanisms, The introduction of enterprise management methods and innovative cluster technologies and the creation of new methods and research in the field of industrial energy production and the coal industry have been widely used in their research papers.

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Conclusion

To date, there is a discussion in the scientific literature about whether the innovative breakthrough of new technologies and their introduction into production is for this world and will not cause major environmental problems and issues affecting humanity. On our part, based on the research, the following conclusions have been drawn, which are of theoretical and practical importance: the systematic approach was based on three areas of increasing the efficiency of coal enterprises' equipment, such as the use of machines for their intended purpose and productivity, qualitative and quantitative parameters of operation, reliability, technological and evaluation indicators, organization of production and labor. The principle of dividing the quarry territory into natural and technological zones according to the qualitative characteristics of the use of extracted rocks of the joint-stock company example as Uzbekistan in the Uzbekkumir industrial zone is based on the principle of achieving concentration of mining operations and control of technological volumes. In these separate sections, the technological schemes of cargo flows established the principle of completeness of the schemes of integrated mechanization of the development of deep quarries, which took into account little pollution from the environmental perspective. To increase the efficiency of using quarry georesources and justify

the choice of mechanization tools, taking into account the natural and technological zones of the mine, reducing the distance of existing excavator blocks in the quarry area, and the width of the working areas is very small and the height of the quarry. Consistency is ensured by reducing the actual part of the working area of the quarry by switching from an excavator input to a series-parallel excavator input. Using state information diagnostic systems equipped with additional modular functions, methods of research and evaluation of mining equipment technology have been developed, as well as diagnostic control methods that ensure the maximum possible service life of this equipment ensures the effectiveness of the maintenance system in terms of actual technical condition, aimed at preventing its failure in power supply conditions.

References:

1. Ансофф И. Новая корпоративная стратегия (The New Corporate Strategy). – Питер, 1999. – 416 с. – ISBN 5-314-00105-2, 0-471-62950-2.
2. Друкер П.Ф. Менеджмент. Вызовы XXI века – М.: «Манн, Иванов и Фербер», 2012- с. 256- ISBN 978-5-91657-365-7;
3. Каплан Р., Нортон Д. Организация, ориентированная на стратегию. Как в новой бизнес-среде преуспевают организации, применяющие сбалансированную систему показателей: пер.с англ.-М.:ЗАО «Олимп-Бизнес», 2005.-416 с.;
4. В.М. Архипов. Проектирование производственного потенциала объединений (теоретические аспекты) – Л.: Изд. ЛГУ, 2009. – С.75-89.
5. Е.В. Жоглина. Согласование механизмов управления развитием экономического потенциала: автореф. дис... канд. экон. наук: 08.00.05 / Жоглина Е.В. – Ставропол, 2008. – 26 с.
6. В. Х. Бирюков. Формирование механизмов устойчивого развития промышленного предприятия: автореф. дис. ...канд. экон. наук: 08.00.05. – Владимир, 2006. –22 с.
7. Р.И.Гимуш. Углубление экономических реформ в строительном комплексе Узбекистана. Монография Ташкент, 2006. 186 с.
8. Б.Х. Мурадов. Innovations in the economy and public sector: introduction to the problem, Журнал Young Scientist Research Journal Of Karakalpakstan, Том-2, NNUC, 2023/12/7. Страницы 301-308,

9. С.М. Ниязов. Экономическое реформирование производственно-технической базы строительства.-Т.: Изд-во «Fan va texnologiya», 2010.-176с.
10. Г.Ж. Аллаева. Факторы повышения экономической эффективности при внедрении инновационных технологий на предприятиях тэк республики Узбекистан. Экономика и инновационные технологии, (3), 2016. с 123–129. извлечено от https://inlibrary.uz/index.php/economics_and_innovative/article/view/8791.
11. Н.Б. Алимукхамедова. Детерминанты развития бизнеса: важность микрофинансирования для стартапов. Международная конференция по бизнесу и технологиям, 2021 г.
12. Ш.Я. Максудова. Развитие и размещение машиностроительного комплекса Узбекской ССР с учетом экологических факторов [Текст] : автореф. дис. ...канд. экон. наук : 08.00.04 / Ш. Я. Максудова; №176. Академия наук Узбекской ССР Совет по изучению производительных сил (Ташкент). - Ташкент, 1991. - с 23.
13. Б.Х. Мурадов. Автономная солнечная электростанция для индивидуального использования. Моделирование в программном пакете LTspice. Повышающий преобразователь напряжения. Высшая школа Анхальта. Международная конференция по прикладным инновациям в ИТ (ИСАИТ). 2023 год.
14. Б.Х. Мурадов. Современное состояние развития предприятий угольной промышленности в производстве энергии и факторы, влияющие на них. «Современное состояние развития предприятий угольной промышленности в производстве энергии и факторы, влияющие на них». // II-Международная конференция сборник научных трудов. - Ташкент., ТошДТУ, 2022 год. 22-23 апреля Ташкент. Страница 484.
15. Б.Х. Мурадов. The role of innovative, digital, technological, economic and social systems, mining, industrialization and framework strategy "Uzbekistan - 2030", Журнал O‘zbekiston Respublikasi Transport vazirligi Toshkent davlat transport universiteti Transportda resurs tejankor texnologiyalar Xorijiy olimlari ishtirokidagi xalqaro ilmiy – texnika anjumani maqolalari to‘plami, 2023 yil 20-21 dekabr, Том-1. Страница 177.

16. Б.Х. Мурадов. Кўмир саноати корхоналарини ривожлантиришнинг замонавий ҳолати ва уларга таъсир этувчи омиллар. 2022/4/12. том 1. III-IV-шуба. Страницы 292-295. Андижон АндМИ, 2022. 6576.

17. Б.Х. Мурадов. Кўмир саноати корхоналарини ривожлантиришнинг ташкилий иқтисодий механизмларининг самарадордик кўрсаткичлари ва уларни баҳолаш. 2022/4/22. proceedings of the conference ii-international scientific and scientific-technical conference «problems and prospects of innovative technique and technology in agri-food chain» Part 2. Страницы 554.

18. Б.Х. Мурадов. Макро ва микроиқтисодётининг саноат корхоналарини ташкилий иқтисодий механизмларнинг ривожланишида экологияни ўрни керакми? "Роль инновационных методов и технологий в обеспечении экологической устойчивости" международный научный и научно-технический собрание. Том-1. Страница 161. 2022/9/11. Ташкент.

19. Б.Х. Мурадов. Стратегический менеджмент как прогрессивное направление организационно-экономических механизмов развития предприятия промышленных предприятий (на примере ао «Узбеккумир»). "Moliya bozorini rivojlantirishning ustuvor yo'nalishlari, zamonaviy tendensiyalari va istiqbollari" mavzusidagi Respublika ilmiy-amaliy konferensiyasi. 2022/11/25. Страницы 180-183. Тошкент ш.

20. Б.Х. Мурадов., David Teece. Monitoring and diagnostics of organizational and economic mechanisms of the industrial branch. Журнал Industrial Economics and management: materials of the III international scientific and practical conference on the topic of problems and solutions. Collection of articles and abstracts. Том 1. 2023/5/2. Страницы 51. Uzmu Tashkent.

21. Б.Х. Мурадов. Совершенствование социально экономического инструментария планирования производственной деятельности развития механизмов в угольных предприятиях для повышения ее эффективности. Современные инновационные технологии в области нефти и газа. республиканское научно-техническая конференция сборник. Том 1. 2023/5/12. Страницы 307. TDTU.