Social Policy and Innovation

SCIENTIFIC AND PRACTICAL JOURNAL

2024, 1

SOCIAL POLICY AND INNOVATION

SCIENTIFIC AND PRACTICAL JOURNAL
2024, 1

EDITORIAL BOARD

ISBN 978-601-7190-26-2

9 786017 190262

ISBN 978-601-7190-26-2

CONTENT

Gilbert F. Houngbo,
Director-General at International Labour Organization

International Scientific and Practical Conference
«Advancing social justice in the era of the knowledge economy and artificial intelligence»
(Astana, 4 September 2024)

First, let me thank the Government of Kazakhstan for its warm hospitality. It is a privilege to be able to speak to you today, particularly as I am the first ILO Director-General to visit your country.

I am also delighted that I can congratulate Kazakhstan in person for joining the Global Coalition for Social Justice. The Coalition is an important initiative. It will allow you to share your country's experience and good practices for building a future with greater social justice – including through the development of the knowledge economy and artificial intelligence, or AI. We at the ILO are looking forward to working with you on this.

Today's High-Level Conference is focusing on one of the most important issues facing the world of work today. It is also an issue on which Kazakhstan has already made important strides.

Under the leadership of President Tokayev, Kazakhstan has embraced the development of AI. You see it as an opportunity for inclusive and sustainable development at home, and a chance to position Kazakhstan as one of the key digital hubs in Eurasia. Your recently-adopted *Concept for AI Development for 2024-2029*, aims to support the widespread use of AI technologies in government and across the economy. Already this strategy has yielded concrete results, with significant progress in FinTech and e-government.

It is already clear that AI will bring great changes to the way we work. Some occupations and groups will be affected more than others. A recent ILO study suggested that there could be a significant impact on jobs involving clerical work, programming and writing skills. The consequences of changes like this are wide-ranging. Take for example those clerical jobs; we know that twice as many women work in clerical jobs as men.

However, the ILO study expects technical and other professional tasks to be less affected. Rather, it suggests that AI will augment this kind of work and increase productivity, rather than actually displacing jobs.

These trends, towards automation and augmentation, are more pronounced in high-income countries. Often, these are also the countries with the ability and resources to adapt rapidly. In contrast, low-income countries, with fewer resources to invest in new technology, could miss out on the productivity benefits of generative AI. This could widen the existing digital divide.

The question we must answer is - how are we to manage this digital transition to ensure that is equitable, inclusive and generates decent work for all?

Firstly, we need to identify the right, in-demand skills. This will require increased investment in adult learning, as well as specific, proactive, labour market policies to ensure that the benefits of these changes are shared equally.

Secondly, we need to protect workers from any negative fallout from the digital revolution. AI-related jobs must meet the standards for decent work. Both workers and employers must be involved in designing and implementing AI technologies. Here, I would like to stress the essential role of social dialogue. And, just as important - because they create the conditions for effective social dialogue - are freedom of association and the right to collective bargaining.

Thirdly, we must ensure that this transition is guided by the principles of social justice. For example, that productivity gains are equally shared, and that developing countries receive support to make the most of technology benefits.

Properly managed, technology can offer solutions to some of our existing labour issues. For instance, robotics and AI-based systems could undoubtedly help to reduce workers' accidents. Here in Kazakhstan an obvious example would be in reducing accidents in the mining industry.

While we are on this topic, let me take a moment to acknowledge the work of your Research Institute for Occupational Safety and Health, which is marking its 20th anniversary. The Institute has undertaken important research work throughout Kazakhstan and established valuable international partnerships. The *"Concept of Safe Work for 2024-2030"* it has developed fully ties in with the ILO's current cooperation to ensure safer work in Kazakhstan, including in the mining industry. We are looking forward to developing this work further.

We see a growing demand for more regulation of new technologies. Next year, the International Labour Conference will have its first standard-setting discussion on *"Decent work and the platform economy"*.

And later this month, at the UN's Summit of the Future, a Global Digital Compact is expected to be agreed, with the aim of creating an open, inclusive and secure digital future for all.

If we can do that we will avoid the dangers of deepening current divides divide. We will ensure that the knowledge economy and artificial intelligence become genuine steps forward in human development, and support a future with greater social justice and decent work for all.

Thank you.

Zhakupova S.K.,
Minister of Labor
and Social Protection
of the Population
of the Republic
of Kazakhstan

ARTIFICIAL INTELLIGENCE – A TOOL FOR DEVELOPING THE NATIONAL SOCIAL PROTECTION SYSTEM

The formation of a socially oriented state has become one of the main priorities of modern state social and economic policy. During the expanded government meeting held on February 7, 2024, the Head of State placed special emphasis on the condition of the social sector and the need to «increase the effectiveness and targeting of social assistance, which will help free up resources for targeted support of those in need.» The social assistance and support system in our country is undergoing significant reforms. Modern challenges necessitate institutional transformation in the social sphere.

One of the factors contributing to the harmonization of social and labor relations is artificial intelligence (AI), which enables transparency and accessibility of social services for citizens, especially for socially vulnerable groups. Under the auspices of the Ministry, a digital information ecosystem for social and labor relations is being progressively developed, integrating a vast array of data.

> ***«It is extremely important to continue the digitalization of the economy and ensure the widespread use of artificial intelligence technologies»***
>
> ***K.J. Tokayev,***
> ***President of the Republic of Kazakhstan***
> Extended meeting of the Government on February 7, 2024

At the direction of the Head of State, «each ministry must have a **digital transformation roadmap** for its sector, providing a **comprehensive vision** of the technologies that will be widely implemented in the areas under their supervision over the next five years. It is necessary to create a **foundational institutional environment for the development of artificial intelligence**, which can become a driving force for economic progress and the adoption of innovations».

Modern challenges define the main trends of global development and test the readiness of national economic systems for the widespread adoption of AI. The expert community has formed a positive outlook on the impact of technological progress on the global economy. According to Price Waterhouse Coopers (PWC), over 80% of enterprises will be using AI tools, leading to a global GDP increase of 14% by 2030. The McKinsey Global Institute offers its own assessment, predicting that by 2023, 50% of large companies will have implemented a full range of AI technologies. Overall, according to IMF experts, 60% of jobs will be based on the use of AI. Evaluations of AI growth potential from ongoing research allow for forecasts of an average annual growth rate in the AI market of 37%.

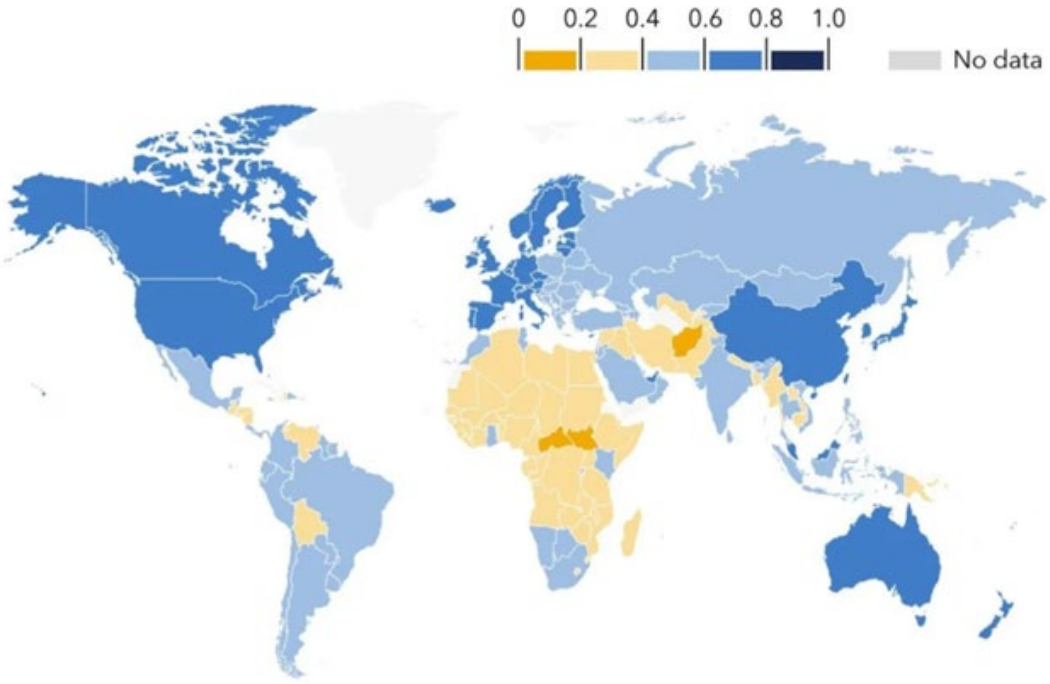


Figure – Global AI Readiness Index.
(according to the International Monetary Fund (IMF), April 2024)

Kazakhstan is aligned with the main digital transformation trends. AI technologies are being actively applied in the sphere of social and labor relations. The developed Digital Family Map (DFM), covering over 6 million families and more than 20 million people, reflects the real state of social well-being in the population and enables the development of forward-looking measures to improve the quality of life.

Digital Family Map

Level of well-being	Number of families	Population size
A (favorable)	247 343	1 093 205
B (satisfactory)	2 549 238	9 00 5099
C (adverse)	1 897 129	6 092 034
D (crisis)	1 304 233	3 205 219
E (emergency)	288 689	714 637
	6 286 632	**20 110 454**

The systematization and accessibility of information on working conditions have been ensured through the creation of the Digital Map of Enterprises (DME). This map is based on the integration of production and social risks of enterprises, analyzed across sectors and regions. The system monitors around 300,000 enterprises, including 12,000 small and medium-sized businesses, across more than 60 financial and economic data points, safety indicators, and other characteristics of labor relations.

The Digital Map of Enterprises integrates information on the terms of employment contracts, social contributions, and payments, providing a comprehensive picture of the socio-economic status of the workforce. In other words, integrating the data from the Digital Map of Enterprises and the Digital Family Map within a unified social and labor relations ecosystem creates a digital platform for monitoring workplaces and gives a more complete understanding of the level of social protection for citizens and their families.

In an online format, general information about the enterprise is available, including key production characteristics, such as assessments and the level of current and potential risks to which workers are exposed at their workplaces. The digitalization process has achieved transparency in the labor sphere,

resulting in a 15% reduction in the number of enterprises with a high level of occupational risk during the implementation period of the Digital Map of Enterprises.

By accumulating a vast array of data, the Digital Map of Enterprises (ЦКП) allows for real-time monitoring of working conditions and the level of social protection for employees. Currently, the digital format displays data on the number of workers employed in hazardous conditions—7% of the 1.6 million enterprises surveyed—as well as those under medical supervision, totaling 8,100 people, and those injured in workplace accidents, numbering 1,800 individuals. In total, labor inspectors have conducted 9,700 inspections.

Digital Ecosystem for Occupational Health and Safety (Digital map of enterprises)

The digital platform ensures the coordination between the Digital Map of Enterprises and the Digital Family Map, creating a more accurate representation of the population's socio-economic well-being. This, in turn, establishes objective conditions for making prompt decisions to adjust or eliminate social imbalances. The developing comprehensive digital system for enterprises will allow the full implementation of social guarantees enshrined in the Labor and Social Codes. The systematization of the entire spectrum of social and labor relations fosters an effective social dialogue between employees, employers, and the state, as the primary guarantor of citizens' interests.

The establishment of social dialogue is based on providing access to accurate and reliable statistical information for all stakeholders, including digital data users, about the actual situation in the workplace, current working conditions, and reports of incidents, accidents, and workplace injuries. These innovations are essential for making appropriate managerial decisions aimed at protecting the interests, lives, and health of workers. The harmonization and unification of databases contribute to the synchronization of state, sectoral, and departmental statistical information, creating conditions for effective control and supervision of working conditions and radically improving the quality of life for the working population.

A high level of informatization will create conditions for the rapid processing of information and ensure the necessary transparency in social and labor relations. The application of artificial intelligence in the social and labor sphere enables the synchronization of working conditions under individual employment contracts and collective agreements at enterprises. Information transparency in labor relations becomes a key factor in forming and concluding sectoral agreements that reflect the basic principles and conditions of social protection for workers in departmental enterprises. Thus, individual, collective, and sectoral working conditions for the employed population are integrated and form the basis of the General Agreement between the state, which protects the interests of the country's citizens, trade unions, and employers' associations[1].

The relevance of information is crucial for making timely and well-considered management decisions that meet the interests of all participants in social and production processes. The implementation of artificial intelligence tools in the occupational safety system contributes to the growth of economic efficiency in production.

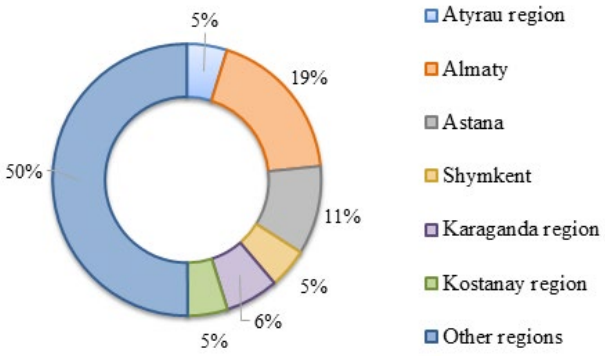
The developed mobile application, which operates remotely and provides an overview of the current state of working conditions, is synchronized with the enterprise's digital data. This allows for real-time access to up-to-date and accurate information from workplaces. The digital platform enables the monitoring of workplace safety levels, identifying the presence and severity of harmful and hazardous factors in the production environment, detecting the occurrence of emergencies and their consequences, accidents, injuries, poisonings, and obtaining other relevant data. Mobile personal

[1] *The General agreement*

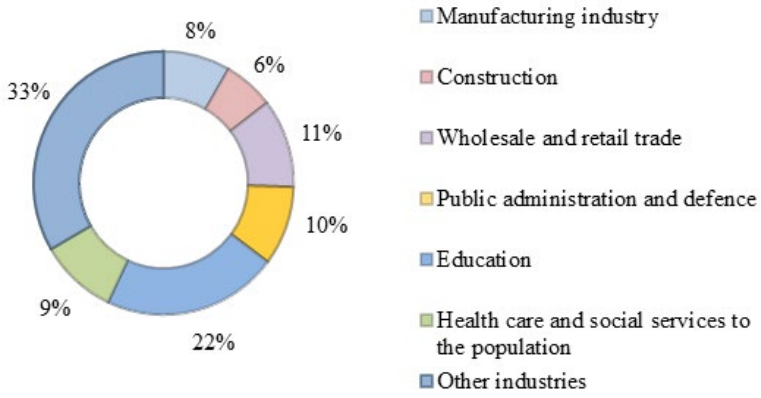
accounts for stakeholders, employers, and trade union representatives, created within the system, ensure the monitoring of occupational safety conditions, providing real-time data both for each workplace and for the enterprise as a whole.

The digitized information about the state of the production environment is integrated and forms the foundation for the functioning of the regional social barometer, which can promptly signal existing or potential negative phenomena at enterprises. Artificial intelligence analyzes current data from all enterprises incorporated into the system, synthesizes the information, and integrates it into a comprehensive picture of labor risks at the regional, sectoral, and macro levels. The system covers 3,741 large enterprises (33%) and 8,599 medium-sized enterprises (67%).

Distribution of the number of enterprises covered by monitoring by region



Distribution of the number of enterprises covered by monitoring by industry



The advantages of implementing artificial intelligence for managing occupational risks are tied to its analytical tools, which enable the development of optimal decision-making options and the forecasting of development scenarios. The results of data processing will be accessible to specialized organizations, management, and workers at enterprises.

Worldwide, there is a significant concern about the relatively high injury rates in industries related to thermal processing technologies. The risks associated with high temperatures and fire hazards are not considered in isolation but are included in the overall risk map of industrial enterprises, with assessments of their risk profiles. The system for digital control and monitoring of industrial risks, integrated with data from the Ministry of Emergency Situations, will ensure that fire inspectors have access to digital data on occupational safety and health.

The transparency in risk profiling of enterprises, along with the processing and analysis of data based on artificial intelligence, will serve as a foundation for developing and making effective decisions regarding the modernization of production. This will aim to reduce the risk of accidents, ensure maximum social protection for workers, prevent production interruptions, and ultimately lead to increased labor productivity and higher profitability.

The digitization of occupational risk assessment and the integration with other enterprise-related databases contribute to maximizing the scope of control and monitoring of business activities, thereby

achieving greater efficiency in occupational safety. Incoming data is integrated and centralized on relevant information resources, making the objective situation at production facilities as transparent as possible. Integrated information across all areas and types of social protection for the population is processed and reflected in analytical form online within the Ministry's unified information system.

The transparency of the comprehensive digital ecosystem of social and labor relations being developed implies the involvement of workers as key stakeholders in the information process. The results of monitoring and assessing hazardous and harmful factors in the production environment at each workplace will also be accessible to the workers themselves. This level of oversight will help reduce injury rates, occupational illnesses, and, ultimately, contribute to improving the quality of life for the working population.

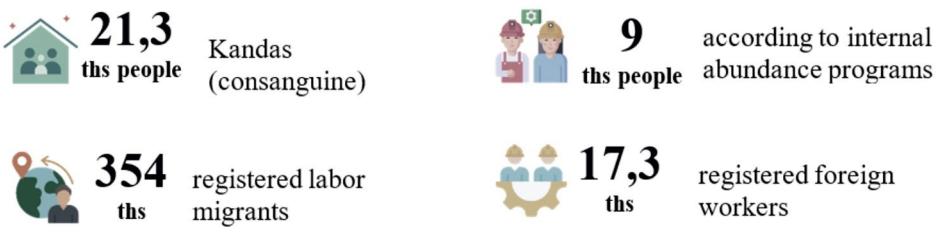
The informatization of labor contract relations is a key component of the broader application of artificial intelligence in the social and labor sphere. AI creates an objective foundation for declaring labor relations, including interactions between employees, employers, and representatives of trade unions and associations, thereby fostering social dialogue among all parties. This will make the process of providing social guarantees more understandable and accessible, ensuring that it is targeted and effective, while the quality of national social protection will strive to meet global standards.

The digitization of contractual relations between employees and employers will lead to transparency and clarity in interactions related to employment, wage payments, and the assignment of social benefits and special payments for hazardous and dangerous working conditions, including pension provisions and other social guarantees and benefits. All payroll operations, while maintaining confidentiality and restricted access, will be integrated into the HR Enbek information system through the use of cloud accounting technologies. This approach will align the financial and economic relationships between employers and employees with international standards.

The informatization of labor relations and the coordination between the platforms of the Ministry of Labor and Social Protection and the Ministry of Finance will simplify and optimize tax administration for businesses and citizens. A public labor contract will recognize citizens as platform-employed, exempting them from filing tax declarations. All official payments and social contributions will be integrated through the internet platform operator. Stakeholders interested in the accuracy and timeliness of payments will be able to track these operations in real-time. Additionally, the Digital Family Map has identified approximately 66,000 enterprises operating within the «shadow economy» sector.

The digital transparency of labor relations will become a driving force for attracting qualified personnel to the industrial regions of the country, including graduates from colleges and specialized universities. The ability to search for internships, professional practice placements, and job opportunities will be a crucial factor in rejuvenating the national technical intelligentsia, particularly among youth who are adept at using digital technologies and mobile applications. Government regulation of workforce availability in labor-deficient regions is also achieved through the planning and monitoring of migration processes. To support this, a dedicated digital platform has been created, enabling real-time access to information on the geographical distribution of the working population.

Digital platform for monitoring migration processes



The control of labor migration identifies both internal and external migration processes, allowing for the collection of structured information across various parameters, including qualification levels, professions, inbound and outbound migration, and other relevant indicators and criteria. The platform is integrated with data on employment contracts, enabling a comprehensive view of these migration dynamics.

To ensure and monitor risk situations at enterprises, each participant in this process must possess the necessary knowledge, skills, and competencies, validated by specific certificates and qualification documents. Therefore, a corresponding system for training, upgrading, and certifying the qualifications of occupational safety and healthspecialists at enterprises and government labor inspectors is essential. For this purpose, an online platform is being developed for training and knowledge assessment, hosted by the Republican Research Institute for occupational safety and health. This platform will also utilize artificial intelligence capabilities to enhance the learning and evaluation process.

The development of a comprehensive information system by the Ministry of Labor and Social Protection is part of the broader task of integrating the information systems of central and local government bodies. This includes the ministries of Emergency Situations, Industry and Construction, Agriculture, Finance, National Economy, Education, Science and Higher Education, as well as regional authorities. Coordinating the activities of these government bodies represents the most immediate opportunity to realize the benefits of artificial intelligence in public administration and planning.

In other words, AI will be integrated into all aspects of the development of social and labor relations. The employment information map, worker monitoring, and the digitalization of migration processes will create a human-centered, adaptive system for managing labor resources. The integration of the Digital Map of Enterprises, digital platforms for social partners and social security, together with the Digital Family Map, will enable the implementation of the principles of a socially-oriented state through transparency, targeted support, and accessibility of state social assistance.

By implementing social innovations based on artificial intelligence, we aim to create a digital ecosystem for social and labor relations. This will establish the foundation for a unified digital system of state planning and management, making a tangible contribution to the development of Digital Kazakhstan. All decisions and actions are focused on fulfilling the directives of the Head of State, aimed at achieving the primary goal of a socially-oriented state – «creating equal opportunities for all citizens and supporting those truly in need», further developing the labor market, enhancing well-being, and improving the quality of life for citizens.

Marcelo Abi-Ramia Caetano
Secretary General of the International
Social Security Association

issa
INTERNATIONAL SOCIAL SECURITY ASSOCIATION
ASSOCIATION INTERNATIONALE DE LA SÉCURITÉ SOCIALE
ASOCIACIÓN INTERNACIONAL DE LA SEGURIDAD SOCIAL
INTERNATIONALE VEREINIGUNG FÜR SOZIALE SICHERHEIT

Route des Morillons 4
Case postale 1
CH-1211 Geneva 22

T: +41 22 799 66 17
F: +41 22 799 85 09
E: issa@ilo.org | www.issa.int

Greetings of the Secretary General of the International Social Security Association (ISSA) Marcelo Abi-Ramia Caetano to the participants of the International Scientific and Practical Conference "Knowledge Economy and Social and Labour Sphere in the era of Artificial Intelligence"

As the Secretary General of the International Social Security Association (ISSA), it is a great honour for me to address to you and congratulate you on behalf of the members of the ISSA present in over 160 countries. This is a significant date – the 20th anniversary of the creation of the Republican Scientific Research Institute for Occupational Safety and Health.

Twenty years in the life of an organization is an important milestone and reflects the commitment of the State to the goals and development objectives of the society.

As an organization that gathers over 330 social security institutions worldwide, the ISSA takes a comprehensive view of social security, where Occupational Safety and Health is an important part of national social security systems.

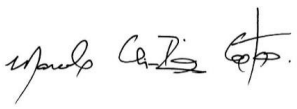
We all know that Occupational Safety and Health in Kazakhstan, a country with huge natural resources, including oil, gas, coal, reserves of non-ferrous and precious metals, has an important place in the national development strategy. Worldwide, employment in high-risk sectors, such as mining and the oil and gas industry, requires not only constant monitoring by the State, but also special scientific research in the field of Occupational Safety and Health. The establishment of the Republican Scientific Research Institute for Occupational Safety and Health in 2004 has become an important tool of the Government in addressing these challenges.

I am very pleased to witness nowadays our long-standing and productive cooperation with ISSA member organizations from Kazakhstan, in particular, with the Ministry of Labour and Social Protection of the Republic of Kazakhstan, with the State Social Insurance Fund and the Unified Accumulated Pension Fund, and I am sure that our cooperation will continue to contribute to strengthening the work of the national social security system of your country.

Over the 33 years of State independence, Kazakhstan has demonstrated significant achievements in the field of socio-economic development. The country's population is growing rapidly, and the gross domestic product per capita has increased significantly. The key to this success has undoubtedly been the efforts of the country to build a society of universal labour based on productive employment, high labour productivity and

inclusive economic growth. ISSA, as a global community of social security practitioners, welcomes your innovative practices in the field of digitalization of the social and labour sphere, such as a *Digital Family Card*, a *Digital Enterprise Card*, as well as an automated *Labour Risk Card* aimed at improving management efficiency and creating safer working conditions.

In conclusion, I would like to reiterate my congratulations on the 20th anniversary of the Republican Research Institute for Occupational Safety and express my gratitude for its contribution to the development of Occupational Safety and Health in the Republic of Kazakhstan. I would also like to take this opportunity to also congratulate Mr Almas Kurmanov, Director General of the Institute, on his joining as Vice-Chairman of the ISSA Technical Commission on Insurance Against Employment Accidents and Occupational Diseases and wish him further success and achievements in his important duties for the sake of the social protection.



Marcelo Abi-Ramia Caetano
Secretary General

Kurmanov A.M.,
Director General of the Republican Research Institute for Occupational Safety and Health, Candidate of Economic Sciences

SCIENCE AND INDUSTRY: UNITY OF GOALS AND INNOVATION OUTCOMES

It is difficult to overestimate the importance of innovation and research in the modern world for achieving sustainable development and social progress. Global competition among the world's largest powers for leadership is closely linked to significant technological changes and innovations. Competitive advantage is achieved through the implementation of a knowledge economy and breakthrough technologies in a context of limited resources. All major multinational corporations, including Apple, Microsoft, and Amazon, have achieved exponential growth thanks to innovation. Among the top 100 companies in the world by market capitalization growth, according to PwC's analysis, high-tech players dominate, with the United States, Saudi Arabia, and China leading in country rankings. It is worth noting that in 2023, the top 20 leaders included major corporations in information technology, telecommunications, energy, and healthcare, all of which traditionally make extensive use of artificial intelligence[1].

Kazakhstan, with its unique natural resources and advantageous geopolitical position, objectively possesses significant innovation potential. The «National Development Plan of the Republic until 2029» identifies as a priority the «rebooting of the national science model,» including a focus on «increasing the share of commercialized projects,» **«engaging business in science»**, fostering collaboration with industry and business, and «strengthening partnerships between research institutes, universities, and leading global scientific centers[2]. At a meeting with the academic elite at the «Center of science» center, the Head of State emphasized that **«a country that relies solely on raw materials has no future»**, as in geopolitical economic competition, **«innovation will be of decisive importance»**[3].

The need for a radical shift in approaches to state science and technology policy led to the adoption of a new legislative act that integrates scientific research and technological advancements - the Law of the Republic of Kazakhstan **«On Science and Technology Policy»** (2024), which previously had been addressed in separate documents[4].

The new edition of the Law introduces concepts that enhance the applied, practice-oriented significance of scientific research, such as «implementation (use) of the results of scientific and/or scientific-technical activities», «commercialization of the results of scientific and/or scientific-technical activities», «grant for the commercialization of the results of scientific and/or scientific-technical activities», «center (office) for the commercialization of the results of scientific and/or scientific-technical activities», «intellectual property results in the field of commercialization of scientific and/or scientific-technical activities», and a fundamentally new term – «industrial-scientific technological consortium». The emphasis, as is evident, is on the implementation of scientific and technical developments and the achievement of commercial outcomes. This focus applies not only to applied research but also to fundamental science, which is expected to set the trend in the development of science and technology.

Additionally, in the Code of the Republic of Kazakhstan dated October 29, 2015, No. 375-V «Entrepreneurial Code of the Republic of Kazakhstan», Article 241-1, «Concept and Content of

[1] *https://www.pwc.com/gx/en/audit-services/publications/top100/pwc-global-top-100-companies-2023.pdf*
[2] *https://adilet.zan.kz/rus/docs/U2400000611*
[3] *https://www.akorda.kz/ru/vystuplenie-glavy-gosudarstva-kasym-zhomarta-tokaeva-na-vstreche-s-uchenymi-v-centre-gylym-ordasy-314218*
[4] *The Law «On Science» (2011) and the Law «On State Support for Industrial and Innovative Activities» (2012)*

Innovation Activity», introduces the concept of a «full-cycle project». This refers to «a complex of coordinated scientific and scientific-technical works carried out by entities engaged in scientific and/or scientific-technical activities, aimed at creating products with scientific content (goods, works, services)»[5]. In other words, the legislator emphasizes the need for integrating scientific research and scientific-technical activities to drive the **innovative development of the national economy**.

The practice-oriented research focus directly forms the foundation and direction of activities at the Republican Research Institute for Occupational Safety and Health (RRIOSH) under the Ministry of Labor and Social Protection of the Population.

Today, the Institute has reached a 20-year milestone in its activities, achieving significant results. As a leading research institution in the theory and practice of occupational safety and health, the Republican Research Institute for Occupational Safety and Health conducts scientific and practical research on a wide range of issues related to occupational safety and hygiene. This includes financial, economic, and organizational-legal support for creating safe working conditions, developing and establishing a system for preventing occupational risks, and other studies aimed at improving the quality of life for workers in our country.

The Institute's research focuses on addressing modern socio-economic problems and developing proposals for their resolution. Notably, this includes topics such as «Risk-Oriented Organizational and Economic Mechanisms for Ensuring Safe Work in Modern Kazakhstan», «Systematic Modeling of the Processes of Formation and Implementation of Statistical Observations on Occupational Safety in the Republic of Kazakhstan» and ongoing research to be completed this year on «Economic Problems of Safe Work and Institutional Transformations of the Insurance Mechanism in the Republic of Kazakhstan».

Currently, new scientific projects have been launched, including «Transformation of the State Mechanism of Social Guarantees for Those Working in Hazardous Conditions in the Modern Context» and «Working Conditions and Occupational Risks: Classification, Categories, and Criteria for Grouping in the Transition to a Green Economy». The research and scientific developments that form the core of RRIOSH 's activities are always aligned with contemporary developments.

The progressive development of the national economy requires the effective use of existing resources and the enhancement of the innovation potential of scientific organizations, as well as the creation of a mechanism for constructive interaction with business structures and organizations. To achieve this, it is necessary to establish an institutional infrastructure for the commercialization and dissemination of innovations, foster an innovation-friendly climate, encourage participation, and create the organizational conditions for innovative activities.

It is important to note that innovations are always the result of intellectual activity, achieved through the implementation of research and experimental activities, and are fundamentally different from existing objects. Innovations should enhance efficiency in social, economic, production, and management spheres, whether at the organizational or industry level, as well as contribute to the economic advancement of a region or the country as a whole[6].

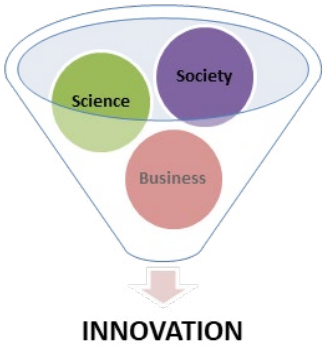


Figure – Creating innovations

[5] *Law of the Republic of Kazakhstan dated July 1, 2024 No. 104-VIII «On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on Science and Technology Policy, Platform Employment and State Control»*

[6] *Strategic imperatives and determinants of the economy of modern Russia: a monograph/ S.N. Glagolev, Yu.A. Doroshenko, A.Ya. Arkatov et al./ under the general ed., Yu.A. Doroshenko. Belgorod: BSTU Publishing House, 2014. – 239 p., p.117*

Obstacles to innovation often include reduced budgetary funding for projects, insufficient material and scientific-technical resources, and, in some cases, **resistance to change**. An established organizational structure, a focus on existing markets, the dominance of immediate interests, and an emphasis on short-term profitability are among the factors that can **limit innovative activities**. Reengineering a research organization will lead to an elevated status for scientific staff, changes in their roles, increased qualification requirements, a restructuring of established methods, breaking behavioral stereotypes and traditions, and eliminating routine tasks. Overcoming internal resistance and achieving radical organizational renewal can be facilitated by attracting young, talented researchers and identifying potential leaders and innovators. An essential condition for active innovation is the development of an innovation strategy that outlines the goals of innovative activities, determines the means to achieve them, identifies funding sources, and sets directions for commercialization.

Innovative activity relies on an appropriate infrastructure, which encompasses a set of divisions, a system of connections and interactions between them, a mechanism for regulating activities, and an evaluation of the effectiveness of their functions. Within this innovation infrastructure, the following entities can operate[7] [1, c.19] scientific and educational divisions that serve as initiators of innovations; entities that support innovative activities and are responsible for the commercialization and transfer of innovations; as well as external economic entities involved in the development of innovative activities.

In the development of innovative activities, scientific-educational and scientific-industrial clusters traditionally play a significant role as generators of innovation. Clustering occurs when the interests of science and business align, fostering collaboration between scientific-educational centers and industry. External influence or intervention through state regulation can create additional administrative barriers. Entrepreneurial initiative offers a more constructive approach to addressing funding challenges. The formation of technology and innovation markets is driven by the needs and initiatives of the business sector.

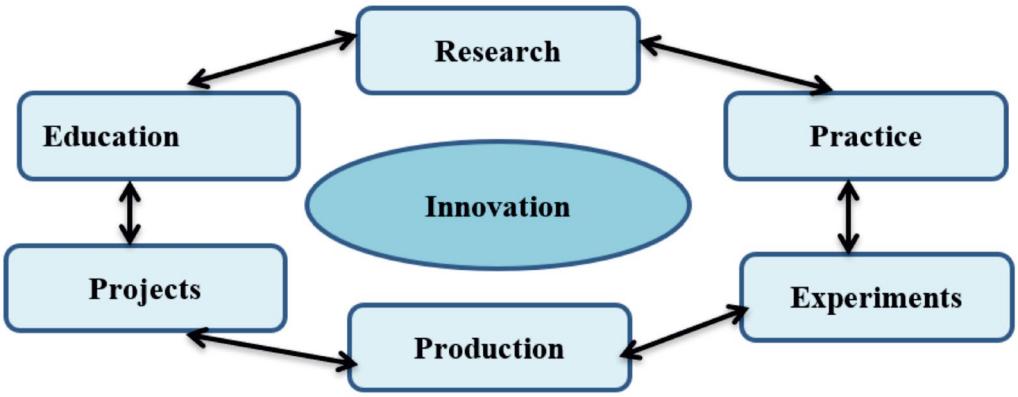


Figure – Institutional innovation infrastructure

Global examples of revolutionary technological breakthroughs illustrate the success of alliances between science and business. Recognized leaders in high technology, such as the Massachusetts Institute of Technology (MIT), Harvard University, Stanford University, and the California Institute of Technology (Caltech), base their research on private donations and investments. The implementation of innovative activities is facilitated by scientific and industrial infrastructure entities, such as technoparks, prototyping offices, and engineering centers, which establish connections with industry and business. Research divisions are integrated with consumers - business structures - forming fundamentally new business ideas and commercializing their developments.

In general, the formation of an innovation structure depends, first of all, on the tasks that are defined in the innovation strategy. Based on this, there are the following approaches to its formation: software, hardware, brainware[8]. **Software** – information and communication support for current innovation activities. **Hardware** – innovative infrastructure is seen as the foundation of its strategic development,

[7] *Vodolazhskaya E.L., Ostanina S.Sh., Kuramshina K.S. The effectiveness of small innovative enterprises' tools for the implementation of innovative development ideas within the framework of the scientific infrastructure of the University: monograph. – Kazan: CJSC «New Knowledge», 2012. – 84 p., p. 19*

[8] *Innovative activity of the university/ ed. V.G. Tronin. – Ulyanovsk: GU St., 2013. – 269s., P. 253*

the tasks of software are joined by the formation of its own production base, the establishment of direct long-term cooperation with industry. **Brainware** – building an innovation process management system is added to the existing «software» and «hardware» approaches.

An important factor in the development of innovation infrastructure is the human resources potential and corporate culture. **Corporate culture** integrates the production of new values and their accumulation (knowledge economy), regulates and assesses employee behavior based on the principles of corporate culture, and shapes employees' worldview, personal values, moral potential, and system of mutual understanding and interaction. It also involves establishing effective communication channels among employees.

In addition to strengthening issues related to the commercialization of scientific research, one of the legislative novelties is the possibility for local executive bodies to place **government orders** with «entities of scientific and (or) scientific-technical activity based on a contract for performing research work funded by budgetary funds»[9]. Collaboration between government bodies, scientific, and scientific-educational organizations affects the level of socio-economic development of a region, contributes to the formation of a regional innovation environment, and can have a synergistic effect. Support for science from central and local government authorities will stimulate the attraction and training of **qualified personnel in the region**, primarily in the research and experimental development sectors, as well as the emergence of **business-angels** and venture funds that can participate in innovation activities, assume the risks of financing, and facilitate the creation and implementation of innovations.

The effectiveness of collaboration between research entities and businesses is of particular importance. To facilitate cooperation between science, business, and government, network organizations can be established. These organizations would integrate industry-specific research institutes, sectoral universities, key industrial enterprises, corporations, and complexes to develop scientific experimental bases, c**ollective information centers**, equipment, search for innovative ideas, implement joint innovation strategies, enhance staff qualifications, and prepare the workforce.

RRIOSH closely collaborates with a number of industrial enterprises on issues such as workplace certification, conducting safety and occupational health seminars, and assessing workplace professional risks. The Institute, with its extensive network of branches across Kazakhstan, is able to work with regional authorities, universities, and local enterprises in these areas. Despite the existing interactions with representatives from the industrial and educational sectors, there is a need for further development of these relationships and the establishment of closer contacts. In the future, the Republican Research Institute for occupational safety and health plans to actively involve specialists from the scientific and industrial elite of the regions through consortium agreements with research, educational, and industrial institutions to advance fundamental and applied research in occupational safety and the protection of workers' health in our country.

This will, as defined in the Law on Science and Technological Policy, constitute an industrial-scientific technological consortium. The primary goal of such a consortium can be to create favorable conditions for the commercialization of innovative projects based on the integration of the scientific, educational, innovative, and technological potential of the consortium member organizations. Additionally, the consortium can be open to the inclusion of other organizations.

One of the organizational forms of the innovation structure could be a **cluster** based on the partnership between research and educational institutions, employers, and executive authorities. The aim would be to jointly utilize scientific, educational, production, resource, and infrastructural potential, as well as to attract administrative resources to ensure the socio-economic development of the regions.

Cluster policy is characterized by a central focus on strengthening the interconnections between economic entities within the cluster. Such integrative formations can be:

- Industry Clusters: These consist of centers for generating and transferring scientific knowledge that produce high-tech products based on advanced technologies.
- Science-Education Clusters: These are collections of geographically localized, interrelated institutions of science and education, connected through partnership relationships with each other and industry enterprises.
- Strategic Partnerships: Based on bilateral and multilateral agreements between universities, research institutions, and industry-specific enterprises. Participants in strategic partnerships can be spatially distributed, with business typically represented by large companies.

One of the most striking examples of the cluster approach is the collaboration between universities and companies in Silicon Valley, USA. This area is home to approximately 87,000 companies, several

[9] *https://adilet.zan.kz/rus/docs/Z2400000103*

dozen research centers, and several major universities, along with 180 venture firms and about 700 banks. An integral part of the cluster program is the presence of grant-holding organizations or grant-creating funds[10].

To define the national innovation system, scholars G. Ickovits and L. Leydesdorff (1997) proposed the «Triple Helix» model, which reflects the process of innovation development as a balanced interaction between science, industry, and government[11].

Interaction between the government, business, and scientific-educational complexes can be complemented by financial institutions. Such an alliance can emerge through the mechanism of public-private partnerships. This connection allows for defining the balance between applied and fundamental research and creating conditions for the implementation and dissemination of innovations.

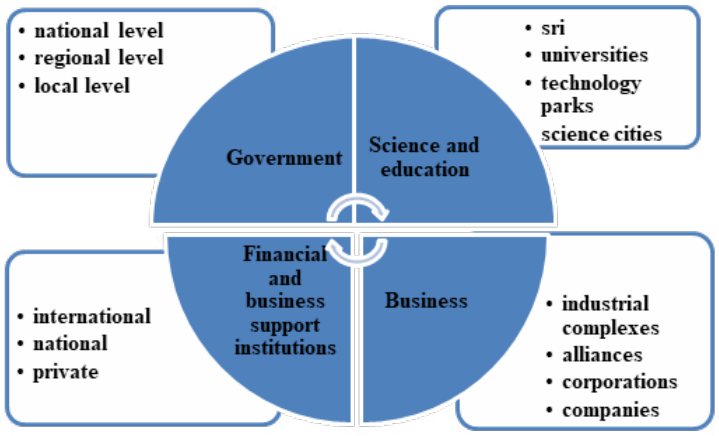


Figure – The model of interaction between science, education, business and the state

The model assumes mutual interest in collaboration. However, there are some issues reflecting the current state of national science. Firstly, there is a certain disconnect between science and production. Scientific and technical developments may lag behind the needs of production, and conversely, the technical and technological conditions of production may be insufficient for the implementation of modern scientific developments. Secondly, the primary source of funding for science remains budgetary funds, **with private financial** initiatives being less significant in this area. Thirdly, the scientific research conducted does not fully meet the interests of business. Fourthly, there is a fragmentation among the entities involved in scientific research and experimental development. There is no productive and effective integration in this sector. These problems hinder innovative development both for the country as a whole and for its regions in particular.

Thus, there is a pressing need for coordination and interaction between the state, science, education, and business to achieve a competitive advantage for Kazakhstan. This issue is not specific to any single institute, university, or enterprise; it is of national significance and requires resolution at the state level. To some extent, it can be addressed through strategic planning and spatial development of the country. State stimulation, based on creating investment-friendly conditions, can facilitate the establishment of scientific-industrial hubs in regions with developed scientific, educational, and production infrastructure. This will create future «points» of innovation development and economic growth, ensuring the sustainable development of both regional and national economies overall.

[10] *Innovative activity of the university/ ed. V.G. Tronin. – Ulyanovsk: GU St., 2013. – 269s., P. 253*
[11] *https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3404823*

Dauletalin S.,
Chairman of the Federation of Trade Unions
of the Republic of Kazakhstan

ENHANCING THE EFFECTIVENESS OF CONTROL AND MONITORING IN OCCUPATIONAL SAFETY AND HEALTH

The Federation of Trade Unions has long been vocal on all available platforms about the urgent need for a fundamental overhaul of the entire system of occupational safety and health. Overall, over the years of Kazakhstan's independence, significant progress has been made in reducing the primary indicator - the number of accidents. However, in the past 5 years, the situation has deteriorated, with the number of workplace injuries and occupational diseases showing no decrease. Moreover, in 2023, the number of fatal accidents reached 250 (compared to 203 in 2022). The horrific accidents and technological incidents in the coal industry, forestry, and energy sector have, with piercing pain throughout society, once again exposed a wide range of acute issues prevalent in many industries.

The Federation of Trade Unions of the Republic of Kazakhstan declared 2023 as the Year of Safe Labor. Within this framework, trade union organizations across all sectors and regions of the country conducted activities aimed at improving occupational safety and health. At the end of the year, based on information from member organizations, an analysis was conducted which revealed the following characteristic features of recent years.

1. There is a noticeable trend of accidents occurring due to issues related to the lack of timely replacement of worn-out equipment, outdated technologies, and production processes. The proportion of equipment requiring replacement is 40% in the manufacturing industry, up to 60% in the coal industry, and up to 70% in the energy sector.
2. Technological incidents that have led to fatalities and health losses among workers have once again highlighted a number of issues. These issues not only result in unacceptable cases of severe violations but also indicate the inability of responsible parties to effectively and safely address their consequences.
3. The current lack of stringent requirements for the development, approval, and adherence to normative staffing levels in enterprises and organizations creates conditions that perpetuate the causes of workplace accidents related to labor organization.
4. There is no positive trend in reducing the number of workers in high-risk groups (engaged in heavy, harmful, and hazardous working conditions).
5. Since 2016 (Labor Code, Entrepreneurial Code, moratorium on inspections), the level of control and supervision over compliance with occupational safety, industrial safety, and labor hygiene requirements has significantly decreased.

It is clear that a thorough overhaul of the entire occupational safety system is required to meet modern demands. To implement the national policy in the field of occupational safety, the Concept of Safe Labor has been adopted. Representatives from the trade union actively participated in its development, and it aims to effectively improve the structure and ideology of occupational safety and health.

It should be noted that the Concept is based on the core principles of occupational safety advocated by the trade unions:

- Systematic and continuous improvement.
- Preventive measures and balance based on the adaptation of best practices, including international ones.
- Accountability and involvement through social partnership.
- Objectivity and awareness based on comprehensive and reliable information coverage.

One of the directions for implementing the Concept is to enhance the effectiveness of control and monitoring in the field of occupational safety and health.

Monitoring will cover nearly all aspects of occupational safety and health, including the results of risk assessments at enterprises, data on workplace injuries and occupational diseases, funding for safety measures, provision of guarantees, availability of certified personal protective equipment (PPE), sanitary and hygiene facilities, preventive nutrition, medical services, occupational safety and health insurance, and sector-specific risk maps.

To ensure timely and high-quality risk assessments and monitoring of their results, a state inspection procedure will be implemented by the State Labor Inspectorate.

A mechanism for preventive state control over compliance with labor legislation will be implemented. This will involve comparing information from various sources about the activities of the entities under control, without requiring on-site visits.

The Concept provides for measures to ratify ILO conventions related to occupational safety and health. It is also crucial to fulfill the obligations undertaken under these ratified conventions, particularly those concerning control and oversight in the field of occupational safety and health.

An integral part of organizing occupational safety at enterprises is the institution of public oversight, legally vested in worker representatives. The development of this tool is a major priority for trade unions, and its broad application offers significant opportunities.

Work processes are associated with numerous risks to the life and health of employees. Ensuring safe working conditions is inconceivable without the involvement of the workers themselves. One way to implement the right to public oversight in matters of occupational safety and health is through the organization and effective operation of workplace councils, established on a parity basis between employers and employee representatives.

Currently, at enterprises where trade union organizations of the Federation of Trade Unions of Kazakhstan are present, there are 12,486 workplace councils and 18,436 occupational safety inspectors working at these enterprises.

We urge the parties to social partnership to provide maximum support for the creation and enhancement of the effectiveness of workplace councils in enterprises and organizations, as well as to actively support the work of occupational safety inspectors—who are the primary aids in ensuring accident-free operations and safe working conditions.

Currently, public oversight of compliance with occupational safety legislation is carried out by 18,436 occupational safety inspectors.

In 2023, occupational safety inspectors conducted 111,753 inspections regarding working conditions, including 47,150 inspections initiated by production councils. They identified 142,236 issues, of which 138,810 were resolved.

However, it should be noted that the limited functional capabilities and lack of extensive powers of occupational safety inspectors prevent them from fully ensuring effective compliance with established safety and occupational health requirements. The Federation of Trade Unions is pursuing a consistent and assertive policy to grant additional powers and incentives to safety inspectors. Relevant proposals have been submitted to the government and parliament. At the same time, we emphasize the need to increase the accountability of these inspectors.

One of the proposals involves organizing joint inspections in the format of «state labor inspector – occupational safety inspector.» The widespread involvement of occupational safety inspectors could enhance the quality of inspections and reduce the level of concealed injuries. A distinguishing feature of occupational safety inspectors is their deep understanding of issues from an internal perspective, different from that of a state inspector or a company's occupational safety staff.

The exercise of the right to conduct public oversight is not limited to the activities of production councils. The Federation of Trade Unions actively promotes solutions for creating safe working conditions at all levels of social partnership. Issues related to ensuring safe working conditions are regularly discussed at meetings of national, sectoral, and regional tripartite commissions on social partnership and regulation of social and labor relations.

Moreover, we believe that an effective step in monitoring workplace safety would be the development of the principles of industrial democracy, as highlighted at the Social Partners Forum in January of last year.

Following the example of production councils, it is possible to create specialized bodies with employee participation, such as quality control committees, personnel selection and training committees, rationalization and mentoring committees, and councils for applying best practices in safe work procedures, and so on.

The idea of integrating production councils and other specialized committees, such as those for quality control, personnel selection and training, and the application of best safety practices, is indeed valuable. It not only encourages productive and safe work environments but also empowers employees by recognizing their contributions and integrating their opinions into broader decision-making processes. This approach aligns with democratic principles and promotes a sense of inclusivity and shared responsibility, which can enhance overall workplace culture and safety standards.

Thus, the development of existing systems for employee participation in management and the encouragement of social partners to create new ones can accelerate economic reform processes, reduce social tensions and conflicts, which often hinder the achievement of expected outcomes.

The Federation of Trade Unions of the Republic of Kazakhstan, considering the provision of safe working conditions for employees as one of its main priorities, consistently expresses its readiness to cooperate with all like-minded individuals and partners. We are confident that through joint efforts aimed at ensuring decent and safe work for employees, we will achieve the necessary results.

Basin V. B.,
General Director Qarmet JSC

REVIVAL OF QARMET JSC: STRATEGIC TRANSFORMATION AND PROSPECTS DEVELOPMENT OF THE MINING AND METALLURGICAL COMPLEX OF KAZAKHSTAN

The mining and metallurgical complex is one of the key sectors of Kazakhstan's economy, providing a significant part of the country's industrial production and exports. In recent years, Qarmet JSC, one of the largest enterprises in the industry, has faced serious difficulties associated with insufficient investment, production and infrastructure investments. The situation required immediate and drastic measures to prevent bankruptcy and restore stable operation of the plant.

The attention paid to the problems of the company by the President of the Republic of Kazakhstan Kassym-Jomart Tokayev and the active assistance of the Government played a crucial role in the beginning of the process of reviving Qarmet JSC. This article analyzes the strategic actions taken by the company's management and assesses the results achieved in the context of the development of the mining and metallurgical industry in Kazakhstan.

1. Strategic development plan and its implementation

Production stabilization and financial investment

The change of a shareholder and the development of a new strategic plan became the starting point in the process of reviving Qarmet JSC. As part of a set of anti-crisis measures, 26.8 billion tenge was invested in production, which allowed to stabilize the operation of the enterprise and provide conditions for further growth. The main investment areas included:

- **Lower production costs**: Optimization of production processes and efficient use of resources allowed to reduce costs and increase the competitiveness of products in domestic and foreign markets.
- **Entering new sales markets**: Expanding the geography of deliveries and establishing new partnerships helped to increase sales and strengthen the company's position in the international arena.

Production indicators and growth dynamics

In the first 8 months of 2024, Qarmet JSC demonstrated significant improvements in its production indicators:

- **Steel production**: Monthly growth ranged from 1.2% to 20.7%, which led to an overall increase in steel output of more than 40% in the first half of the year. Total production was over 2.3,3 million tons of steel and 2.1,1 million tons of pig iron.
- **Product shipments**: The average monthly growth reached 6.4%, while the average daily shipment increased by 33%. In the second quarter of 2024, production and shipment of products accounted for 102% of the planned figures.

Particularly noteworthy is the result of May 2024, when the company produced more than 330 thousand tons of steel — the best figure in the last five years. All divisions of the Steel, Coal and Iron Ore departments work in accordance with the business plan, which indicates the effective implementation of strategic tasks.

2. Infrastructure and logistics development

Modernization of production facilities

To ensure stable and efficient operation of the enterprise, Qarmet JSC initiated a large-scale program for modernization and repair of production facilities:

- **Repair of buildings and workshops**: Key production sites are being updated and reconstructed, including the replacement of more than 50 thousand square meters of roof and the repair of the building of the chemical capture unit.
- **Upgrade of transport infrastructure**: purchase of new gondola cars, construction of railway tracks at Karazhal and Uglerudnaya stations, as well as construction of a new cargo terminal at the Entrance station are planned. Locomotives, rolling stock, and company-owned railway tracks are being repaired.

Strategic investments and future projects

The national investor has approved a strategic plan that provides for significant investments in the modernization of energy infrastructure and production equipment:

- **Upgrading of production facilities**: Construction of new coke batteries, repair of converters and continuous casting machines, construction of sites for the production of new types of steel.
- **Development of the raw material base**: Construction of a new horizon and processing plants at the Atasu and Lisakovsk deposits, development of dephosphorization technology, restoration and increase of coal production at mines with an increase in the volume of tunneling operations, transition to coal-chemical production.

The total investment in the development of the enterprise will amount to 3.5 billion US dollars over the next 5 years, which will allow Qarmet JSC to return to the status of one of the leaders in metallurgy in Central Asia and the CIS by 2028.

3. Production plans and growth prospects

5-9-5 program and target indicators

Qarmet JSC has adopted an ambitious development program «5-9-5», which provides for achieving the following indicators by 2028:

- **5 million tons of steel per year**: Increase in steel production with an increase in the yield of usable products by 0.2-1.5% (depending on the type of product from 3 to 40 thousand tons), reduce downtime by 15-25% and reduce risks in the field of industrial safety, as well as expand sales markets.
- **9 million tons of coal per year**: Full supply of the enterprise with its own coal, increasing the efficiency of processing plants and developing the mine complex.
- **5 million tons of concentrate per year**: Development of the Atasu and Lisakovsk deposits with an increase in the iron content in the concentrate to 62%.

Current achievements and planned activities

Investments in the amount of $ 1.3 billion are planned to stabilize the most critical areas. The following results have already been achieved:

- **Stabilization of coke production**: An increase in coke production from 4.4 to 6.6 thousand tons per day, which contributed to an increase in the average daily production of pig iron and steel products by 17%.
- **Repair campaigns**: Works were carried out to replace the converter housing No. 1, as well as repairs to sinter machine No. 5 and blast furnace No. 4 were completed.

Export potential and expansion of sales markets

In the first seven months of 2024, exports of products increased by 5% compared to the same period in 2023. According to the plan for 2024, exports are expected to grow by 10%. The priority regions for the development of the export direction are the countries of Central Asia, where the volume of deliveries has already increased by 12%. The main sales markets remain the countries of the EAEU and Central Asia, while the company is constantly working to expand the geography of supplies.

4. Environmental responsibility and sustainable development

Measures to reduce the negative impact on the environment

Qarmet JSC is aware of its responsibility for the environmental situation in the region and actively implements measures to minimize the negative impact:

- **Reduce emissions**: Targets are set to reduce fuel oil consumption, reduce dust emissions by 30% by 2028, and reduce CO2 emissions by 5% by 2025.
- **Transition to natural gas**: A project to connect to the Saryarka gas pipeline, located 25 km from the enterprise, is being implemented. This will ensure the supply of 1.2 billion m3 of natural gas to the company's workshops and significantly reduce harmful emissions.
- **Wastemanagement**: It is planned to increase the annual processing of industrial waste to 9 million tons by 2027, which will solve the problem of overcrowding of storage landfills.

Green initiatives and the ESG Agenda

As part of the development of the ESG-agenda, the company implements a number of environmental projects:

- **Creating a green belt**: About 1 million trees have been planted around the city of Temirtau, and thousands of additional seedlings will be planted in 2024. This initiative contributes to improving the air quality and environmental situation in the region.

5. Digitalization and innovative technologies

Implementation of advanced IT solutions

Qarmet JSC actively implements modern digital technologies to improve the efficiency of production processes:

- **Production automation**: Production management systems (MES) and ERP systems are being implemented to control and optimize production processes, increase transparency and efficiency of resource management, and reduce production costs.
- **Monitoring and management of energy resources**: EMS systems allow you to monitor and optimize energy consumption, helping to reduce costs and improve environmental efficiency.

Improving industrial safety

Special attention is paid to the introduction of technologies that increase the level of industrial safety:

- **Employee positioning system**: It is planned to equip all 8 mines of the Coal Department with a positioning system, which will allow real-time tracking of the location and condition of employees underground.
- **Central Control Room**: The opening of the new control room allows monitoring of all processes, accelerates emergency response and provides video communication with miners at a depth of up to 800 meters.

The introduction of digital technologies is carried out gradually and consciously, taking into account the current resources and capabilities of the enterprise, which allows you to adjust the strategy and effectively achieve your goals.

6. Social responsibility and employee support

Improving the working and living conditions of employees

Qarmet JSC attaches great importance to social responsibility and implements a number of programs aimed at improving the working and living conditions of its employees:

- **Hygiene program**: Includes the repair and modernization of bathrooms, canteens, changing rooms, showers and walk-throughs at production sites, ensuring the comfort and safety of employees.
- **Support for employees 'families**: Repairs were carried out in children's health camps, where employees' children can relax in updated and comfortable conditions.
- **Psychological support**: A psychological support service has been established that provides professional assistance in interpersonal and family matters, contributing to the emotional well-being of employees.

Regional infrastructure development and socially significant projects

The company is actively involved in the development of social and urban infrastructure:

- **Restoration of the Temirtau tram fleet**: Complete replacement and repair of 30 km of tram lines and electric contact parts, cars is being carried out, which will improve the city's transport system.
- **Creation of public spaces**: A modern Labor Glory Park («Qarmet Park») with recreation and sportsareas is equipped;
- Creation **Центрof a Creative Technology Center** with sections on auto and aircraft modeling, programming, robotics, STEM and other areas.

• **Support for municipal services**: In February 2024, the company donated 15 vehicles for emergency medical services and police in the cities of Temirtau, Saran, Shakhtinsk and Abay.

Human resource development and vocational education

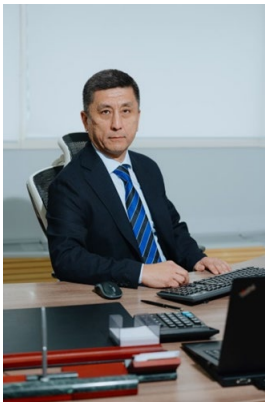
With a staff capacity of more than 34 thousand employees, Qarmet JSC pays special attention to professional development and training of personnel:

• **Training programs**: Mentoring of experienced employees, theoretical and practical training is conducted in the company's training centers with the involvement of external training organizations.

• **Cooperation with educational institutions**: Every year more than 1000 students of colleges and universities pass professional practice on the basis of the enterprise. Memoranda of cooperation were signed with NAO «Karaganda Industrial University» and NAO «Karaganda Technical University named after A. Saginov». The company provides educational grants to 153 students, including 80 students and 73 employees.

The process of reviving Qarmet JSC demonstrates the effective implementation of strategic plans aimed at stabilizing and developing one of the key enterprises of the mining and metallurgical complex of Kazakhstan. Significant investments in production modernization, infrastructure development, environmental and social projects, as well as the introduction of advanced digital technologies allow the company not only to overcome existing challenges, but also to confidently look to the future.

The results achieved in the first eight months of 2024 demonstrate the high efficiency of the selected strategies and the potential for further growth. The implementation of the planned plans until 2028 will allow Qarmet JSC to regain its status as an industry leader in the region, make a significant contribution to the economic development of Kazakhstan and ensure sustainable and responsible production in accordance with modern international standards.



Dosmukametov K.M.,
General Director of «Solidcore Resources» LLP

A COMPREHENSIVE APPROACH TO OCCUPATIONAL SAFETY AND HEALTH AND INDUSTRIAL SECURITY

In the modern mining industry, ensuring occupational safety and health (OSH) and industrial security is one of the key tasks for companies. Ensuring employee safety not only prevents accidents and incidents but also contributes to increased productivity and reduced costs associated with equipment failures and downtime. This article examines the innovative approaches employed by Solidcore Resources to improve OSH and industrial security at its sites, including the implementation of a local personnel positioning system, an anti-sleep system for dump truck drivers, and the electronic issuance of work orders for employees.

1. Local personnel positioning and employee health monitoring system.

One of the promising approaches to enhancing workplace safety is the use of a local personnel positioning system combined with employee health monitoring. Since 2022, JSC «Varvarinskoye» has implemented a system that allows real-time tracking of employees' locations and monitoring their physical condition based on data collected from wearable devices. The system consists of several key components: wearable devices (such as bracelets, helmet sensors, and so-called «GPS tags»), a wireless communication infrastructure between the tag and the anchor (receiving device), and software for data analysis. The wearable devices are equipped with sensors that collect biometric data (such as heart rate and body temperature). This data is transmitted to the system, where it is analyzed to determine the employee's location and detect any signs of health deterioration.

2. Anti-Sleep System for Dump Truck Drivers at «Komarovskoye Mining Enterprise» LLP.

Driving mining vehicles requires heightened attention and quick reaction times from dump truck drivers. Driver fatigue and drowsiness are among the main risk factors for accidents. To prevent such situations, the Company has implemented an «anti-sleep» system designed to monitor drivers' conditions and prevent cases of falling asleep at the wheel.

The «anti-sleep» system is based on the use of surveillance cameras, motion sensors, and algorithms for facial and behavior recognition of the driver. Cameras installed in the cabins of the dump trucks monitor the driver's condition, detecting signs of fatigue or drowsiness (such as blinking, yawning, eye closure for more than 2 seconds, or smoking) as well as distractions (like head turns). When such signs are detected, the system sends an alert signal that immediately reaches both the driver and the dispatch center.

3. Electronic issuance of work orders for employees.

Effective organization of the work process and clear allocation of employee responsibilities are crucial aspects of ensuring workplace safety. Solidcore Resources is in the process of implementing an electronic work order issuance system, which facilitates the prompt and accurate assignment of tasks, as well as monitoring their completion.

The electronic work order issuance system is based on the use of specialized software accessible through both stationary and mobile devices. Department managers create assignments for employees, specifying the tasks, the location where they are to be performed, the necessary equipment, and safety

measures. Employees receive the work orders via mobile devices or computers, after which they confirm receipt and completion of the tasks.

The innovative approaches to occupational safety and industrial security being implemented by Solidcore Resources demonstrate high effectiveness in preventing accidents and improving working conditions. The use of modern technologies, such as local positioning and employee health monitoring systems, anti-sleep systems for drivers, and electronic work order issuance for employees, allows the company not only to ensure the safety of its employees but also to enhance the efficiency of its operations.

Silvia Amatucci,
Professional Actuary of the Statistics
and Actuarial Accounting
Department of the National Institute for Insurance against
Accidents at Work (INAIL, Italy)

ACCIDENTS AT WORK: A SEMANTIC ENGINE TO CLASSIFY THEM

ESAW (European Statistics on Accidents at Work) is the system for coding accidents at work, born in Europe in the early 1990s and adopted in Italy since 2001.

ESAW compares the cause of the accident phenomenon between different Member States of the European Union, standardizing the language with which the causes and circumstances of accidents are described. It also has the purpose of evaluating and identifying interventions to improve the conditions of healty and safety of workers in compliance with EU directives up to reducing the frequency and severity of the injuries themselves. To counter an event, it is necessary to know how and why it occurs. The icon aims, therefore, at the constant improvement of data quality: the more reliable the information, the better the prevention policy adopted will be. To this end, INAIL has exploited the potential of the semantic engine IRIDE is able to reduce the uncertainties due to operators in the coding phase of the accident report, and to standardize the process. The innovative approach, the process and the results: the ESAW-IRIDE database The innovative approach of the IRIDE software is in the support of the coders in the attribution of the correct code to the variables that describe the causes and the circumstances of the accident at work. The basic principle of semantic technology is the interpretation of the natural language used in the accident report. In other words, these engines are able to include the contents of the texts and then assign, through the so-called «rules» defined by experts, a code that identifies a word or a concept. Initially, the accident reports for specific sectors of economic activity were analyzed, in addition to defining the domain on which IRIDE bases its rules. In 2018 the project successfully leads to important results in terms of coding quality and finally today we can talk about the IRIDE-ESAW database.

Introduction

Among the strategic objectives of INAIL (the Italian insurance institute against accidents at work), for many years now, there has been the Protection against accidents at work, which provides interventions for safety and prevention.

In this mission, which is fundamental for the improvement of the Institute's information system, the contribution of the IRIDE-ESAW[1] (IRIDE from now on) project was significant, which envisaged how the new classification/coding of the ESAW/3[2] variables was supported through a facilitator system, in this case a semantic engine, capable of improving the quality of the recorded data, simplifying the process of such registration and reducing time and economic costs deriving from the processing of a claim.

In 2016 this project «The semantic engine ESAW-IRIDE: Accident analysis in support of prevention» received the ISSA Certificate of Merit of Good Practices at an international level.

The IRIDE project has therefore placed itself at the forefront at national and European level as the first experience applied through the use of so-called artificial intelligence.

Research methods

ESAW (European Statistics on Accidents at Work) is the system for coding accidents at work, born in Europe in the early 1990s and adopted in Italy since 2001.

ESAW compares the cause of the accident phenomenon between different Member States of the European Union, standardizing the language with which the causes and circumstances of accidents are described. It also

[1] *IRIDE-ESAW is a semantic engine to code accidents at work*

[2] *ESAW – European Statistics on Accidents at Work. ESAW/3 are variables that describe causes and circumstances of accidents at work*

has the purpose of evaluating and identifying interventions to improve the conditions of healty and safety of workers in compliance with EU directives up to reducing the frequency and severity of the injuries themselves. To counter an event, it is necessary to know how and why it occurs. The icon aims, therefore, at the constant improvement of data quality: the more reliable the information, the better the prevention policy adopted will be. To this end, INAIL has exploited the potential of the semantic engine IRIDE is able to reduce the uncertainties due to operators in the coding phase of the accident report, and to standardize the process. The innovative approach, the process and the results: the ESAW-IRIDE database The innovative approach of the IRIDE software is in the support of the coders in the attribution of the correct code to the variables that describe the causes and the circumstances of the accident at work. The basic principle of semantic technology is the interpretation of the natural language used in the accident report. In other words, these engines are able to include the contents of the texts and then assign, through the so-called «rules» defined by experts, a code that identifies a word or a concept. Initially, the accident reports for specific sectors of economic activity were analyzed, in addition to defining the domain on which IRIDE bases its rules. In 2018 the project successfully leads to important results in terms of coding quality and finally today we can talk about the IRIDE-ESAW database.

This is a new way of coding cause and circumstances of accidents at work.

Employer has to report accidents at work. To do that they describe where the accident took place, what the worker was doing, why and how the accident occurred. These data are called ESAW variables. Yearly the Member States of the European Union have to send this kind of data to Eurostat.

ESAW compares the data of the accident phenomenon between different European Countries, standardizing the language with which the causes and circumstances of accidents are described. It also has the purpose of evaluating and identifying policies to improve the conditions of healty and safety of workers in compliance with EU directives up to reducing the frequency and severity of the injuries themselves.

INAIL aims, therefore, at the constant improvement of data quality because the more reliable the information, the better the prevention policy adopted will be.

Since 2017, INAIL (National Institute for Insurance against Accidents at Work) is using a semantic engine to assist the encoder in coding ESAW variables. From then to today Esaw data has definitely improved.

ESAW is the European coding system of injuries, adopted by Inail since 2001, allowing to compare accidents at work rates in different Member Countries. Knowledge of causes and circumstances of occurrence of accidents at work is essential for planning policies for prevention and protection aimed at reducing the frequency and severity, as well as enabling the plan of measures to improve working conditions. Inail, in order to improve their data quality and reduce some elements of uncertainty due to subjective interpretation of ESAW variables/3, in 2010 has undertaken the way of technological innovation. Inail has therefore developed the software-semantic engine IRIDE aimed to an assisted encoding, and proposed a new

model for accident reporting, structured to highlight more information ensuring proper allocation of variables. As an injury is often the result of a cascade of adverse events and contributing factors, it becomes important not only to quantify it in a timely manner, but also to evaluate it through a qualitative characterization of the event. The software ESAW-IRIDE is therefore a timely response to the need of making an accurate and standardized encoding.

The ESAW project, which involves several European Union Countries, aims to harmonize methodologies and criteria for registration of data on accidents at work to make them comparable in the different Countries. The last phase of the project, called ESAW/3, aims to standardize the description of the causes and circumstances of the accident at work through a sequence of eight variables, which are used to represent the actual dynamic accident. The analysis of the data relating to these variables, if properly coded, provides a vision qualitatively and quantitatively reliable for injuries; while this activity allows an interpretation of the data in terms of prevention, aimed at proposing effective corrective measures. In Italy Inail adopted this encoding system since January 2001, thereby enhancing its role preventional.

In fact, the implementation of the database with information on terms of occurrence of injuries is crucial to define and/or propose policies to reduce the frequency and/or severity of harmful events. However a proper codification of the variables ESAW/3 – The Working Environment (the workplace, work premises or general environment where the accident happened), The Working Process (the general activity or task being performed by the victim at the time of the accident), The Specific Physical Activity (to describe the victim's activity immediately before the accident), The Deviation (an abnormal event, such as totally or partially losing control of a machine or falling onto/off something), The Contact — Mode of injury (it describes how the victim was injured and how he or she came into contact with the object that caused the injury) and Material Agents involved (tool, object or instrument used by the victim when the accident happened) - can be complex for the encoder in relation to the articulation of the same variables and because these variables normally derive from the interpretation of unstructured description of the accident at work contained in its complaint.

Since an injury is often the result of a cascade of adverse events and contributing factors, it becomes important not only to quantify it in a timely manner, but also to evaluate it through a qualitative characterization of the event that only an accurate encoding can ensure. The software ESAW-IRIDE is therefore a timely

response to the need to make an accurate and standardized encoding, raising the level of analysis of the accident's dynamics .

The good practice has the following objectives:

- an accurate analysis of injury rates;
- a uniform and rational encoding of injuries at national level because INAIL is distributed nationwide;
- to support more targeted interventions for prevention.

The innovative approach was to use software mainly to support the encoders to attribute the correct codes to the variables that describe causes and circumstances of accidents at work.

The principle on which, in general, technologies of semantic ontology are based consists of interpreting natural language; in other words they are able to understand the content and managing such knowledge at a conceptual level (not only through key words), in a way similar to what people do.

Using mathematical functions, so-called «rules», it is possible to assign the value of a code to a set of concepts.

A semantic engine IRIDE scans the text, it extracts the concepts and relationships, it transforms the knowledge into codes; starting from the analysis of the information contained in the complaints of injuries (an unstructured text), IRIDE worked out a series of codes that are suggested for the encoding of the case.

The encoder can not use the suggestions provided by the software, choosing, if deemed more suitable, a code other than those proposed.

In the engine also other functions are enabled, visible and usable according to the degree of user profiling (encoder, validator, administrator):

- "search", which allows you to extract complaints interesting responsive to various parameters, including a «string» in natural language;
- "prompter", allowing you, directly entering the texts that describe the causes and circumstances of the event, to experience the suggestion of real-time encoding ESAW proposed from the engine to each of the variables under consideration;
- "search of validated complaints", which allows access to the history of all complaints used for training of IRIDE;
- "monitoring", which allows you to monitor the ability of classificatory IRIDE, leading in the choice of more complaints to be validated and will be used in the future to support the statistical studies on the dynamics of workplace accidents.

As a first step it was created the domain on the basis of scientific and technical documents relating to the classification system introduced by ESAW. Subsequently, the system was implemented using encodings of real complaints, trying gradually to cover all the variable codes ESAW3. Real complaints were investigated in a timely manner by the group of technical experts who ensured for each code compliance attributed to the coding rules imposed in Europe.

When a high level of correspondence was reached between the encoding suggested by the engine and that one identified by the experts, it proceeded with a test phase by extending the system to INAIL local operators.

Monthly, in order to refine the rules of case studies or special codes that are scarcely recurring or not covered by the set of complaints encoded in the seats, a sample is extracted for the validation phase: tested timely, such a sample is used for the subsequent training of the system.

IRIDE is a useful tool to monitor the dynamics of «emerging» accidents, as well as those less serious events, and to characterize the «deviations» that led to the damaging event, comparing them with trends and experiences in different European Countries. In proper implementation of a prevention intervention, data analysis is not necessary only in the initial stage of design and implementation, but also at a distance of time, in evaluating the effectiveness of the intervention done.

INAIL has invested considerable financial, technical and organizational resources.

To implement these objectives, under the supervision of Central Directorate for Prevention, synergies between different INAIL departments (Technical Advisory for Risk Assessment and Prevention, Statistical and Actuarial Consulting, Innovation Technological Advisory, Centrale Directorate for Digital Organization) were fundamental.

To enrich the data of additional concepts, synonyms and coding rules, key step to improve the interpretative skills of the software, data were regularly extracted in order to evaluate IRIDE performance.

An interdisciplinary group of professionals (actuaries, biologists, chemists, engineers) was constituted to carry out the following activities:

- creation of the domain on the basis of scientific and technical documents relating to the classification system introduced by ESAW;
- system implementation through encodings complaints certified by Eurostat and then encodings real complaints relating to all sectors of economic activity;
- preparation of set encodings «certified»;
- clarification of some rules for situations that can lead to difficulties of interpretation;

- timely analysis of coding to ensure compliance with the codes assigned to the coding rules imposed in Europe;
- advice on questions and problems posed by the developers of the software;
- training and information for expert coders;
- information activities process managers;
- monitoring sample encodings performed by expert coders;
- preparation of FAQ for the most common data cases.

A more accurate reconstruction and interpretation of injuries, such as that IRIDE software helps to get, integrated from other data held by INAIL, can identify more closely the real safety needs of each production sector.

It gives, ultimately, a knowledge base of size and quality significantly higher than the current one, with which to evaluate, design and implement preventive interventions aimed at reducing the severity and frequency of accidents. Furthermore, given the overall objectives of ESAW, the Italian experience of IRIDE lends itself to being shared with other participating States at the coding system, in order to achieve better comparability of data and highlight any differences in the nature and distribution of accidents.

The IRIDE semantic engine is therefore able to understand the unstructured information present in accident reports and develop a range of codes to be suggested to the operator for the coding of the case.

IRIDE belongs to the latest generation of information technologies that interpret language and are able to achieve content understanding and manage knowledge not only by keywords but on a conceptual level, in a similar way to what people do.

In practice, IRIDE recognizes the contents of a complaint and leads them back to the basic concepts – ontologies – on which is developed: place, worker, action, object.

The implementation process of the engine was divided into 4 phases:

1. learning
2. training
3. classification
4. validation

and involved a central working group and 40 operators from the regional offices who used the system to codify complaints actually received by Inail: this made it possible, through a punctual control of the results, to further improve the performance of the system. Iride was introduced in 2017.

IRIDE has not replaced the figure of the operator, which has remained central to the coding process, but it has been able to reduce work times and consequently economic costs and to reduce the subjective interpretation of the operator.

Results

The IRIDE engine has been trained through a series of ontologies, taxonomies, rules and real accident reports, relating to all economic activities, and validated by a group of INAIL central experts.

The sample of validated complaints was used both to instruct the semantic engine and to test its goodness. The levels of coverage achieved were more than satisfactory: almost all the codes relating to the five main ESAW/3 variables were included in the engine.

In detail, the results show that the engine returns the correct code on average in 91% of cases for the five main ESAW/3 variables and in 89% of the cases for material agents.

Furthermore, considering the single accident report, Iride, nine times out of ten, returns the correct code of at least 6 of the 8 ESAW/3 variables.

By focusing on the position of the correct code in the range of suggestions that the engine returns, IRIDE identifies the correct code in the first three suggestions, respectively in 96% of cases for the five ESAW/3 variables and in 84% of cases for material agents.

The excellent results achieved by the semantic engine have made it possible to replace the current manual coding system with the new system based on the IRIDE engine.

BIBLIOGRAPHY

Marco Albanese – La codifica ESAW diventa motorizzata. Dati INAIL 2016
Maria Rosaria Fizzano – IRIDE: un motore per la prevenzione. Dati INAIL 2016
Silvia Mochi – IRIDE ESAW: i risultati. Dati INAIL 2016
Silvia Amatucci - Accidents At Work: a semantic engine to classify them. ISSA Berlin 2020
EUROSTAT - European Statistics on Accidents at Work (ESAW) - Summary methodology




K. T. Nadyrov,
PhD, Chairman of the Board - Rector NP JSC «Astana Medical University» of the Ministry of Health of the Republic of Kazakhstan, Astana

V. V. Koikov,
Doctor of Medical Sciences, Vice-Rector NP JSC «Astana Medical University» of the Ministry of Health of the Republic of Kazakhstan, Astana

A. A. Ismailova,
Doctor of Medical Sciences, Professor of the Department of Public Health and Epidemiology NP JSC «Astana Medical University» of the Ministry of Health of the Republic of Kazakhstan, Astana

A. A. Musina,
Doctor of Medical Sciences, Professor, Head of the Department of Public Health and Epidemiology NP JSC «Astana Medical University» of the Ministry of Health of the Republic of Kazakhstan, Astana

PROSPECTS FOR THE DEVELOPMENT AND IMPLEMENTATION OF A METHODOLOGY FOR ANALYZING OCCUPATIONAL RISKS IN THE CONTEXT OF MODERN CHALLENGES TO OCCUPATIONAL SAFETY AND HEALTH OF THE WORKING POPULATION OF KAZAKHSTAN

The issue of creating safe working conditions for employees has become not only a social and economic concern but also a political one, and its resolution requires a comprehensive approach to health protection and labor longevity. The professional community is focused not only on developing legislative and regulatory acts in the field of occupational health and safety but also on conducting quality monitoring within the «human-technology-environment» system. This aims to determine safe working tenure by accounting for harmful factors in working conditions and predicting the risk of developing occupational diseases among workers in hazardous industries. The methodology for assessing occupational risks, taking into account exposure to adverse production environment factors and health indicators of workers, will enable employers in industrial enterprises to ensure workplace safety across many sectors of Kazakhstan's economy.

Ensuring the right of workers to work without the risk of losing their health is a priority in the state policies of many countries worldwide. Considering the socio-economic aspects of workers' occupational health, there is a global trend toward implementing risk assessment procedures through new organizational and legal forms.

According to the European Agency for Safety and Health at Work, since the adoption of the Framework European Directive 89/391/EEC, risk assessment has been the cornerstone of the European approach to occupational safety and health. Since 1996, the «Guidance on Risk Assessment at Work,» approved by the Director-General for Employment and Social Affairs, has been in effect in the European Union [1].

Occupational medicine and safety services in the United States, the United Kingdom, and other countries have conducted national discussions on the issue of risk [2,3].

Kazakhstan's integration into the global community requires improving working conditions and enhancing occupational safety, as well as harmonizing national legislation with international standards, agreements, and

commitments, particularly within the framework of the European Union, the International Labour Organization (ILO), and the World Health Organization (WHO).

Numerous key WHO documents, including the «Health for All» strategy, General Programmes of Work, and several World Health Assembly resolutions, emphasize the need to protect and promote health and safety at work by preventing and controlling hazards in the workplace environment [4,5].

The ILO promotes the principles of decent work by advancing occupational safety, labor standards, social dialogue, and social protection for vulnerable categories of workers. To achieve this, each country must develop an effective national occupational safety system within the framework of joint efforts by the government and social partners. Safe working conditions are a fundamental human right and an integral part of the concept of «decent work». According to the ILO's definition, a production monitoring system should consist of several subsystems reflecting various working conditions and integral indicators, enabling dynamic tracking of occupational safety and the health status of workers across different production sectors [6].

In the assessment of occupational risk, the analysis of adverse factors in the production environment that affect workers' health is of great importance. Therefore, physical, chemical, and biological hazardous production factors are considered causal risk factors for the development of occupational diseases if their impact exceeds the maximum permissible concentrations (MPC) and maximum permissible levels (MPL) [7-9].

From the perspective of occupational medicine, the methodology and fundamental approaches to assessing various aspects of occupational risk based on working conditions, developed by the Research Institute of Occupational Medicine of the Russian Academy of Medical Sciences, can be considered well-developed for predicting health risk [10].

The assessment of occupational risks in the Republic of Kazakhstan is based on domestic principles and criteria for the hygienic regulation of working conditions, classified by levels of harm and danger, as well as the severity and intensity of work processes. The determination of safe working tenure in hazardous conditions and the prediction of the risk of developing occupational diseases are conducted using mathematical models based on probabilistic characteristics of health impairment due to the frequency of exposure to adverse production environment factors.

From this perspective, predicting occupational risk is an extremely complex task. When analyzing the frequency of various health deviations, whether in individuals or labor collectives, an innumerable number of indicators can be used, each of which can be considered a criterion of occupational risk [11, 12].

Methodology for Occupational Risk Assessment. *To assess the risk prediction of respiratory diseases development* under high concentrations of dust and gas aerosols in the workplace, the calculation of dust or gas dose load should be conducted using the following formula:

$$R = 38{,}2\ X_1 + 26{,}1\ X_2 + 17{,}5\ X_3 + 5{,}5\ X_4\ K, \quad (1)$$

where,

X1 - Age of the worker, in years

X2 - Total work experience, in years

X3 - Duration of exposure to harmful aerosols, in years

X4 - Concentration of aerosols in the air of the work zone (maximum allowable concentration), in mg/m³;

K- Coefficient that reflects the severity of the work and the associated lung ventilation volume.

The value of dust exposure doses (DED) or risk factor X4 depends on the concentration of aerosols in the workplace air and the duration of their exposure. The calculation of the DED (in $mg \cdot m^{-3} \cdot$ year) is carried out according to the formula:

$$DED = A \bullet P, \quad (2)$$

where,

A - average shift concentration of aerosols (X4), mg /m³;

P - analyzed period of time (in years) (X_3).

Alongside the calculation of the integral indicator R, it is also recommended to calculate the permissible DED. The values of personal DED for workers should not exceed these permissible limits to ensure that exposure levels remain within safe boundaries.

The maximum permissible dust exposure dose (PDED) corresponds to a calculated risk of disease of 5% over a total work exposure of 30 years.

Assessment of Risk Prediction for Hearing Disorders. The severity of hearing impairments depends on noise parameters, including its intensity, spectral composition, duration of exposure during the workday, the length of time working under noise conditions, and individual sensitivity.

To assess the risk of vestibular disorders, it is necessary to calculate the dose of noise exposure per shift and the cumulative noise exposure over the period of employment while operating machinery.

The noise load level during the period of the technological operation is determined by the formula:

$$Д = \sum_{i=i}^{n} (pi2\ ti),$$ (3)

where,
pi – sound pressure levels corresponding to sound levels Li
ti - time interval of noise exposure at level Li
n - total number of time intervals of noise exposure

The level of the zero dose of noise is carried out according to the formula:

$$\textbf{ЛДТ= ЛДМN + 10lg (T/To)},$$ (4)

where,
L дмп - Equivalent (energy) frequency-corrected noise level for the year, dBA
T- work experience in the profession, in years
To- work experience is 1 year

Risk assessment for hearing impairment is conducted in accordance with ISO 1999-75 «Acoustics. Determination of occupational noise exposure and assessment of hearing impairment due to noise» (Table 1).

Table 1 - Probability of hearing impairment, (%)

Age, years	Work experience, years											
	10			20			30			40		
	Degrees of hearing loss											
	I	II	III	I	II	III	I	II	III	I	II	III
$LA_{экв}$ = 90 dBA												
30	12	0	0									
40	22	0	0	25	0	0						
50	33	0	0	35	3	0	37	3	0			
60	44	6	0	46	9	0	48	0	0			
$LA_{экв}$ = 100 dBA												
30	39	17	0									
40	47	25	5	62	32	6						
50	50	28	7	62	36	15	68	41	20			
60	60	37	19	71	44	25	76	48	30	82	53	33

Assessment of the risk of developing diseases associated with vibration exposure. Key risk factors for vibration-related pathology include: prolonged exposure in a vibration-prone profession (10-15 years), high vibration levels, and the presence of additional adverse factors in the working environment and process (static loads, cool microclimate, forced postures, etc.).

Medical-biological risk factors include: starting work at an age younger than 20 or older than 45, clinically significant osteochondrosis of the cervical and lumbar spine, asthenic syndrome, autonomic lability, frostbite or injuries.

To assess the risk of developing occupational diseases related to vibration exposure, it is necessary to consider both dose-based and tenure-based loads.

The relative dose of vibration represents the ratio of the actual dose to the permissible dose and serves as an indicator of vibration exposure over any period of employment:

$$D_{В} = \frac{D_{f,}}{D_{per}}$$ (5)

Vibration exposures for workers during their employment are typically inconsistent due to changes in occupation, work location, technology, organization of labor, and work breaks, which affect the daily doses and the number of shifts per year.

The cumulative relative vibration dose serves as an indicator of vibration exposure over any period of employment and is determined by the formula:

$$D = d \bullet N \bullet T, \quad (6)$$

where,

d - relative vibration dose;

N - number of work shifts per year with a constant daily dose *d*;

T- years of work under vibration conditions with a constant dose *d* and number of shifts per year.

Assuming the permissible shift dose (D_v permissible = 1), the average number of work shifts in a calendar year (250), and a work period (T years) of 40 years, the permissible cumulative dose (D_v per) theoretically amounts to:

$$D_{v\ per} = 1 \bullet 250 \bullet 40 = 10000, \quad (7)$$

The permissible duration of work under the influence of vibroacoustic factors is calculated using the formul:

$$T = 10000/d \bullet N, \quad (8)$$

where,

d - relative shift dose over the period of employment,

N - number of work shifts per year,

T - safe duration of work

The assessment of health risks associated with vibration exposure is conducted in accordance with ISO 5349, «Vibration. Measurement and evaluation of human exposure to hand-arm vibration», and is presented in Tables 2 and 3.

Table 2 - Assessment of the probability of health impairment from the action of general vibration

Equivalent corrected accelerations, 2, м/с ^{2}	Health risk from general vibration %, years of service		Classes of labour conditions
	10	20	
≤1,0 (MPL)	-	-	2 permissible
0,22	0,08	0,13	3.1 (harmful 1 degrees)
0,45	0,3	0,4	3.2 (harmful 2 degrees)
0,9	1,0	1,8	3.3 (harmful 3 degrees)
1,8	5,0	7,0	4 dangerous

Table 3 - Assessment of the probability of health impairment from the action of local vibration

Equivalent corrected accelerations, м/с ^{2}	Health risk from local vibration %, with experience, years		Classes of labour conditions
	10	20	
	Signs whitening of the fingers	Signs whitening of the fingers	
≤ 2,0 (MPL)	8,7	34,8	2 permissible
2,8	17,4	>50	3.1(harmful 1 degrees)
4,0	34,7	>50	3.2 (harmful 2 degrees)
5,6	>68	>50	3.3 (harmful 3 degrees)
8,0	>50	>50	4 dangerous

Thus, for effective management of occupational safety and health and worker safety in industrial enterprises, it is necessary to: continuously monitor the levels of adverse factors in the work environment, replace outdated equipment, implement new techniques and technologies to minimize manual labor, analyze workers' health based on data from annual periodic medical examinations, accident reports, and industrial injury statistics, respond promptly to changes in factors affecting the safety of hazardous production sites and their personnel, conduct necessary preventive measures aimed at preserving the labor potential for future generations.

1. Overall, the system for monitoring professional risks is aimed at identifying and assessing existing risks, as well as developing mechanisms for their minimization. Risk management should be integrated into

the overall organizational management process. It is important to develop a specific strategy and tactics for effective risk management. Additionally, it is crucial not only to implement risk management but also to periodically review and update the measures and tools used for this management.

2. The use of workplace assessment results for working conditions and data from periodic medical examinations allows for the calculation of dose-based shift and cumulative exposures to harmful production factors. This helps determine safe work tenure and forecast the risk of developing occupational diseases.

3. The result of monitoring occupational risk is the quantitative assessment of the degree of health risk to workers from harmful and dangerous factors in the working environment and job demands, based on probability.

4. The occupational risk assessment monitoring system requires adherence to two main principles:

- Structured Risk Assessment: Risk assessment must be structured to account for all hazards and risks.

- Risk Mitigation: After identifying risks, decisions must be made regarding the feasibility of eliminating them, and a comprehensive set of organizational, technical, sanitary-hygienic, and preventive measures should be implemented to ensure occupational safety and health.

5. Interdepartmental and intersectoral collaboration between the Ministry of Health and the Ministry of Labour and Social Protection of the Population of Kazakhstan in the field of improving working conditions and preserving the health of industrial workers, as well as with executive authorities, state sanitary, environmental, and technical oversight bodies, professional unions, and employers, should be conducted within the framework of the Main Strategic Directions for ensuring occupational safety and health protection of the working population, which are approved by the Government on an annual basis.

Reference

1. European Commission. Guidance on Risk Assessment at Work. Health and Safety: Office for Official Publications of the European Communities, 1996. - P. 87.

2. American Industrial Hygiene Association White Paper on Risk Assessment and Risk Management: AIHA, 1997. - P.311-313.

3. Criteria and Methods for Preparing Emergency Exposure Guidance Level (EEGL), Short-Term Public Emergency Guidance Level (SPEGL), and Continuous Exposure Guidance Level (CEGL) Documents. - Washington, 1996. - Vol. 2. - P. 69.

4. Report on the state of health in the world. Reducing risk, promoting health. - Geneva. - World Health Organization, 2002. -248 p.

5. WHO. The Global Action Plan for the Protection of Workers' Health for 2008-2017. WHO; 2007/ [Electronic resource] - Access mode: IC:Shr:/MIo.sh1/ossira-tional_health/WHO_health_assembly_ru_web. pdf (accessed 12/01/2017).

6. 6. Materials of the report of the Director General of the ILO at the International Labour Conference. National review. - Helsinki, 2006. -126 s.

7. Bukhtiyarov I.V. The current state and main directions of preserving and strengthening the health of the working population of Russia. Occupational medicine and industrial ecology. 2019; 59(9):527-532. doi: 10.31089/1026-9428-2019-59-9-527532

8. Gurvich V.B., Plotko E.G., Shastin A.S. and others. On the choice of priority areas in the management of professional risks. Actual problems of safety and risk analysis of public health under the influence of environmental factors: Proceedings of the VII All-Russian Scientific and Practical Conference with international participation, Perm, 2016 Vol. II. pp. 72-76.

9. Nazarova T.Yu., Pitetskaya Yu.Yu., Vaulina N.V., Fedosov A.V. The influence of the quality of periodic medical examinations on the level of detection of occupational diseases. Industrial safety expertise and diagnostics of hazardous production facilities: proceedings of the International Scientific and Practical Conference, Ufa, March 22-23, 2018. - Ufa: Oriental Press, 2018. -pp. 120-124.

10. 10. Occupational health risks for employees. Organizational and methodological foundations, principles and evaluation criteria / Handbook R.2.2.1766-03 / Edited by N.F. Izmerov, E.I.Denisov. – Moscow, Trovant, 2003. - 448 p.

11. 11. Ismailova A.A. Karabalin S.K., Sultanbekov Z.K., etc. Methods for calculating the safe length of service and forecasting the risk of developing occupational diseases among workers employed in leading industries // Method. Recommendations, approved The Ministry OF Health OF the Republic of Kazakhstan.- 2009.- 29 pages.

12. Ismailova A.A., Kudryavtsev S.S. Emelin P.V., Satarova G.S. Methodology for determining the indicator of harmful working conditions of an industrial enterprise / Certificate of state registration for an object of copyright.- No. 110 dated February 7, 2013.

Ryabov S.V.,
Occupational Health and Safety Management
Director Eurasian Group LLP

DIGITAL SOLUTIONS FOR OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT: THE TRANSFORMATION OF ERG IN KAZAKHSTAN

Modern industry is facing many challenges in the field of workplace safety. Global competition and the increasing complexity of production processes encourage companies to look for innovative ways to maintain business sustainability by improving production safety and preserving the labor potential of employees.

Under these conditions, ERG in Kazakhstan has made a strategic decision to introduce digital solutions into the Occupational health and Safety Management System (OHSMS). At the beginning of 2024, the management of Eurasian Group LLP initiated the development and active implementation of digital solutions within the framework of the development of the Unified Information System (UIS) of OHSMS. This step is aimed at improving the efficiency of occupational safety management, reducing the risks of occupational injuries and creating more transparent processes in the current OHSMS Management System.

Digitalization of critical risk control in the workplace

In April 2024, a pilot project on critical risk control (KCR) was launched at three enterprises of the Group. The KKR methodology is based on a risk analysis using the «bow tie» method, which allows for a simple and visual representation of the relationship between the risks of an incident, the causes of its occurrence and control tools aimed at preventing an incident and avoiding possible consequences.

The critical risk control process includes the following components:

Identification of critical risks of the site (workshop)

Identification of the most important «protective barriers»

Determining the point of control of the most important «protective barriers»

Control of the availability and operability of the most «important protective barriers»

Filling out checklists in paper form by working personnel, and in electronic form (KKR module in «EIS OHSMS») IT and the heads of the production department, in order to control the most important «protective barriers»

Elimination of violations of the most important «protective barriers» (when such facts are identified)

Analysis of the effectiveness of the KKR process

The introduction of KKR allows you to form a clear understanding of what controls are necessary to prevent injury or an accident at a particular workplace and production site.

The IT module of the KKR in the EIS « OHSMS « of the enterprise allows you to automate the basic processes for the identification, assessment and control of critical risks in the workplace. The use of the IT module of the KKR enables each of the managers of the production site (workshop) to promptly

collect and analyze data, which contributes to more accurate and timely decision-making aimed at ensuring the safe performance of work, reducing the likelihood of emergencies and minimizing the consequences of possible incidents.

Behavioral Security audits: Improving efficiency through automation

Behavioral safety Audits (PUB) are an important element of the occupational health and Safety Management System (OHSMS) in many large manufacturing holdings and enterprises. However, traditional methods of conducting such audits often require significant time and resources, which makes them unattractive and difficult to implement for many companies. The introduction of digital solutions during the PUB allows you to significantly simplify, speed up and improve this process.

The introduction of the PUB IT module into the «Unified Information System of OHSMS « (UIS OHSMS) for conducting behavioral security audits will allow ERG enterprises to automate the process of data collection and operational analysis. With this IT module, you can quickly capture the results of the conducted PUB, identify recurring problems and develop measures to eliminate them. In addition, the system allows you to assess the involvement of managers in the conduct of the PUB and promptly respond to identified violations.

In the future, it is planned to additionally use analytical tools, including those based on artificial intelligence solutions, integrated into the digital platforms of the Group's enterprises, including EIS OHSMS. This will allow for a deeper analysis of behavioral factors, identify hidden patterns and predict potential threats to occupational safety and health caused by the human factor. This approach opens up new opportunities for proactive safety management at work and allows our enterprises to adapt faster to changing conditions.

Registration of work permits for hazardous work: a digital approach

The implementation of the IT module «Work permit» will significantly simplify and improve the process of issuing work permits at our enterprises, providing higher accuracy, reliability and efficiency of the information entered, minimizing the likelihood of errors related to the human factor. The IT module «Work permit» in the «EIS OHSMS» allows you to centrally control the process of registration and execution of hazardous work, providing access to information in real time for all those involved in the

organization and conduct of hazardous work. In addition, the IT module allows you to quickly make the necessary changes to the issued work permits when working conditions change, notify all involved and interested parties, which makes the process more flexible and adaptive in modern production conditions.

The system for issuing electronic work permits at the next stage of its development will include not only standard procedures and requirements for issuing work permits, but also individual recommendations based on the analysis of data on previously carried out work at a specific workplace or site. This will allow us to take into account all the specifics of the work and ensure maximum safety for our employees and employees of contractors.

Production control: automation and process improvement

The implementation of the IT module «Production Control» in the «EIS OHSMS» allows real-time monitoring of compliance with the schedule of rounds (inspections) within the PC, the real state of workplaces, promptly record deviations from the norms, evaluate the implementation of measures based on the results of identified violations, etc.

The digital data of the production control results entered into the IT module «PC» also allows for a comprehensive analysis of the collected information and identify hidden threats that may be invisible with traditional control methods. This opens up new opportunities for incident prevention and minimizing workplace risks. In addition, automation of production control, when scaled to all enterprises of the Company, will reduce the documentary (paper) burden on specialists of OTIPB services of enterprises, giving them the opportunity to focus more on data analysis, trend identification, preventive measures and consultations on OHSMS.

Benefits of implementing digital solutions: increased efficiency and transparency

The introduction of digital solutions for the OHSMS provides our Company with a number of significant advantages. First of all, it is an increase in the efficiency of management processes in the field of occupational safety and industrial safety. Automation of routine operations can significantly reduce the time required to complete tasks, which in turn reduces costs and increases productivity. For example, digitalization of work permits allows you to reduce the time for their registration, and automation of production control reduces the time to identify and eliminate violations.

Another important advantage is the increased transparency of the processes. Digital solutions allow centralized storage and processing of all data related to the risk management of OHSMS, which makes the process more open and controlled. For example, the use of digital platforms for conducting behavioral security audits (PUB) allows you to quickly and easily access the results of their conduct, analyze them and take appropriate management measures aimed at developing a safety culture at the enterprise and increasing the level of trust on the part of employees.

In addition, digitalization reduces the likelihood of errors related to the human factor. Process automation reduces the number of manual operations and minimizes the risk of errors associated with incorrect data entry or misinterpretation of the information received. This is especially important in conditions where even a minor mistake can lead to serious consequences for the safety of production and employees.

The beginning of a long journey

The introduction of digital solutions for the OHSMS of ERG enterprises in Kazakhstan is not just a modernization of existing processes, but the beginning of a long way to transform the entire OHSMS risk management system in production. Digitalization opens up new opportunities to increase the efficiency and transparency of OHSMS management processes, improve safety culture and reduce the number of accidents at work. However, this process requires constant improvement and adaptation to new challenges. In the future, the Company plans to actively develop EIS OHSMS as a digital ecosystem, using its own developments and the best industry solutions.

The active implementation and development of digital solutions for the OHSMS Management System is a strategically important step towards creating a safe and efficient work environment. Companies and enterprises that are ready to invest in digitalization and improve their OHSMS processes today ultimately gain a competitive advantage in the long term through increasing the sustainability and success of the business.

Smagulov A. R.,
Technical Director

Seminars I.M.
Head of SOTiPB

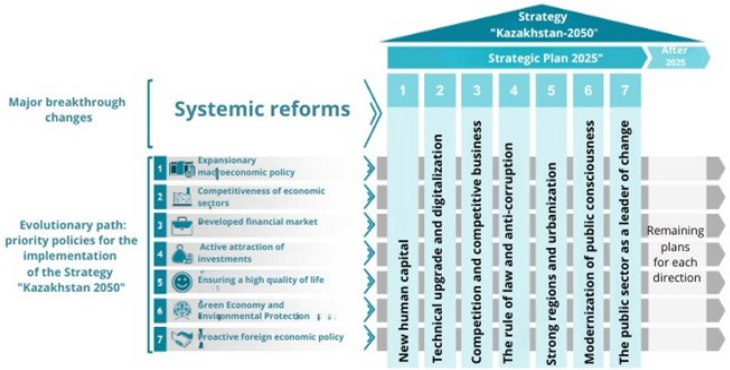
HEALTH AND ENVIRONMENTAL PROTECTION THE SUCCESS OF KOSTANAY MINERALS JSC IS THE KEY TO THE PROSPERITY OF THE REGION

Today Kostanay Minerals JSC is a modern highly mechanized mining and processing enterprise, the only one in the Republic of Kazakhstan for the extraction and processing of chrysotile ores. The raw material base of the enterprise is the Dzhetygarin chrysotile deposit, which ranks fifth in the world in terms of mineral reserves. The company turns 60 years old next year, its production capacity is designed for 400 thousand tons of chrysotile per year.

The corporate policy of Kostanay Minerals JSC (hereinafter – KM JSC) in the field of social responsibility, based on the Message of the Head of State Kassym-Jomart Tokayev to the people of Kazakhstan **«A just State, a United Nation, a Prosperous Society», and the strategic development plan of the Republic of Kazakhstan up to and including 2025**, includes four main directions.

NEW HUMAN CAPITAL

The first direction, PERSONNEL DEVELOPMENT, is aimed at attracting and retaining capable, talented employees and provides:



- Conclusion of a socially oriented collective agreement;
- Training and professional development;
- application of motivational payment schemes;

- provision of a social package;
- creating conditions for recreation;
- employee participation in management decision-making, etc.

Special emphasis is placed on social partnership and enhancing the role of the collective agreement. The amount of social expenses increases annually and currently amounts to about 1.2 billion tenge.

For many years, despite the difficulties encountered, the company has successfully implemented all the tasks set for social support of employees and maintains its position on social responsibility to society.

The social programs of JSC «KM» are designed for all categories of employees:

• young professionals;
• Human resources staff;
• veterans of labor and pensioners of the enterprise.

Social guarantees are provided in accordance with the agreements reached between the administration of the enterprise and **the trade union committee, reflected in the collective agreement, which ensures:**

• compensation of fees for the maintenance of children of employees of the enterprise in preschool institutions -11.2 million tenge;
• partial compensation for the cost of meals for employees in canteens and buffets of the industrial zone of JSC «KM», employed full–time outdoors - 83.7 million tenge;
• compensation of expenses for utilities for employees with three or more children under the age of 18 – 6.4 million tenge;
• compensation for the full cost of travel to the industrial site – 4.2 million tenge per year;
• financial assistance within the framework of the «Road to School» campaign for low–income and large families to prepare children for school - 5.3 million tenge;
• allocation of vouchers to the sanatorium-dispensary of Densaulyk 2008 LLP, which is a partner company of KM JSC, to employees and pensioners, employees with the honorary title of «Veteran of Labor», participants in the war in Afghanistan and other local wars, participants in the liquidation of the Chernobyl accident. The cost of vouchers is paid from the company's funds;
• allocation of vouchers to summer health camps: the administration of JSC «KM» and the trade union committee pay half the cost of vouchers – 1.7 million tenge;
• allocation of financial assistance to employees with children who graduate from schools for the organization of graduation parties;
• payments to young employees upon marriage – 0.7 million tenge.
• allocation of temporary financial assistance to young professionals to improve living conditions;
• bonuses for employees on public and professional holidays;
• encouraging employees to take well-deserved rest and on the occasion of anniversaries;
• one–time vacation compensation: for personnel in the amount of two minimum wages – about 82 million tenge; for young workers in the amount of one monthly tariff rate - 7 million tenge.

Thanks to the current social support measures, KM JSC has formed its own corporate lifestyle: employees feel cared for, honor traditions, strive for self-development and, importantly, cheer for their company.

The second direction – HEALTH PROTECTION AND SAFE WORKING CONDITIONS – is ensured by the creation and support of additional (in relation to legally established) standards of health protection and workplace safety conditions.

In order to carry out internal control over compliance with safety and labor protection requirements at the Kostanay Minerals JSC enterprise, in accordance with the regulatory legal acts of the Republic of Kazakhstan, the Labor Protection and Industrial Safety Service (hereinafter – SOTiPB) has been established since November 2003.

In order to comply with the requirements of the Labor Code of the Republic of Kazakhstan, the Law of the Republic of Kazakhstan «On Civil Protection», the Environmental Code of the Republic of Kazakhstan and to ensure the conditions of labor protection and safety, medical care of personnel, maintenance of sanitary and hygienic working conditions, **the following structures operate in SOTiPB**:

• Department of Labor Protection;
• Department of Environmental Protection;
• Medical service;
• sanitary laboratory.

Providing staff with safe working conditions for the management of KM JSC is one of the most pressing issues. He is the focus of attention of every head of the structural unit and all ordinary specialists.

The management of the joint-stock company, relying on personnel, designates as a priority the care of staff and their family members.

One of the sections of the collective agreement provides for:

- Labor protection guarantees;
- Creating a safe environment;
- Providing employees with the required benefits and compensation.

Kostanay Minerals JSC pays great attention to the issues of a systematic approach and management in solving all tasks based on international standards. Today, the company meets the following systems of ST RK: ISO 45001-2019 «Health and Safety management System» and ST RK ISO 14001-2006 «Environmental Management System»

The third area – ENVIRONMENTAL PROTECTION AND RESOURCE CONSERVATION – is aimed at:

- rational consumption of natural resources;
- prevention of environmental pollution;
- organization of an environmentally safe production process;
- carrying out gardening campaigns and clean-up days.

Thanks to resource-saving measures, Kostanay Minerals JSC has achieved savings:

• electric energy – due to the modernization of pneumatic transmission and aspiration systems, power factor control by generating reactive power on site by automatic condenser units, optimizing the movement of traction units for passing a shift inspection, overhaul of 3 traction units with the introduction of an electric power recovery system and digital traction control, modernization of EKG excavators with the introduction of thyristor low-voltage complete devices. Together with the Research Institute, research has begun on the efficiency of vacuum chamber and pneumatic transport fans, initial conclusions indicate the prospects for modernization and improvement of work efficiency

• natural gas – transfer of heating of the boiler house and nearby buildings from steam to hot water, changes in the boiler room operation mode in the summer to intermittent; reduction of thermal waste - return of technological water discharges in the boiler room back to technology, use of evaporative coolers with heating of incoming water, optimization of heating network schemes; scientific work was carried out with the involvement of research institutes on modernization of mine furnaces for drying ore, which made it possible to reduce the specific gas consumption - according to the results of the work, the furnaces are being modernized (3 furnaces have been modernized by 2024)

• diesel fuel and gasoline – by improving the quality of roads in the quarry, reducing technological downtime, downtime for loading and unloading in a motor transport company;

• cold water – due to a change in the water consumption regime for the whole enterprise, the transition from steel pipelines of household water to plastic (reduction of gusts and improvement of water quality), the return of technological water discharges in the boiler room back to technology, the transfer of filters for chemical water treatment from sulfocarbon to ion exchange resins, optimization of thermal network schemes. Over 10 years, consumption has been reduced by more than 2.5 times

The total economic effect achieved in 2024 due to energy–saving measures, in general, for Kostanay Minerals JSC amounted to 80.2million tenge (Gas – 758.3 thousand m3, water - 31.3 thousand m3, electricity - 156512kw. per year, or 48.8 million EURO at 2024 prices). The economic effect of 3 upgraded PE 2m traction units is 1493.3 thousand kW per year or 31.4 million tenge (at prices in 2024).

In general, the following measures were implemented: reactive power compensation – allowed to free transmission power lines and substations from parasitic reactive power, which allows transmitting large capacities without replacing equipment; overhaul of 3 traction units with the introduction of a recovery system and digital traction control – reduced the specific rate of electricity consumed per ton * km of rock mass by an average of 32% due to electricity generation during recovery, the ability to use 1 dumpcar more thanks to a computer–controlled power application system that eliminates slippage; reduction of thermal waste - during boiler room operation discharges from boilers are regularly applied to eliminate the formation of steam plugs inside. The discharges were carried out into the sewers. A number of measures made it possible to redirect this water into a condensate tank, from where it is taken into the technology. Both the water and the heat contained in it are preserved. Vapor coolers connected to the main water supply pipeline to the boiler room and to deaerators (exhaust steam outlet pipes) allow steam to condense into water and take it into the technology, as well as preheating the water at the entrance to the boiler room. Vapor coolers make a significant contribution to saving gas and water;

the transfer of heating of the ABC boiler house and nearby buildings from steam to hot water made it possible to eliminate the round–the-clock operation of the steam boiler in winter by cutting the heating systems of the ABC boiler house and nearby buildings into water heating pipelines. the transition from steel drinking water pipelines to plastic ones – a significant reduction in the number of gusts, a longer trouble-free service life, convenience and ease of installation affects not only water conservation, but also labor facilitation and increased productivity; the transfer of filters for chemical water treatment from sulfocarbon to ion exchange resins made it possible to use technical salt more efficiently, reduce the number of filter regenerations from once every 4 days to once every 2-3 months, with this regeneration about 200 m3 of water was lost; optimization of the thermal network circuits – changing the hot water supply scheme to the ATP along a shorter route and a pipe with a smaller diameter allowed to reduce the discharge of hot water.

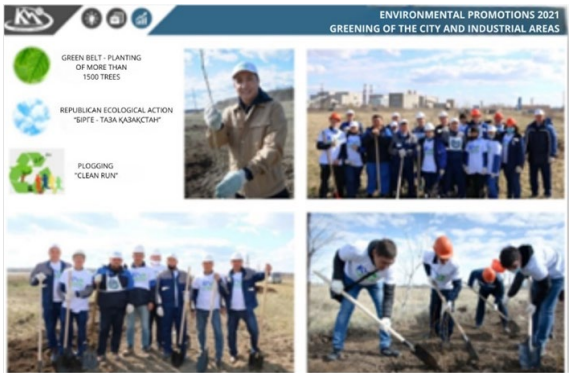
Green economy and environment

Kazakhstan is a country with an energy-intensive economy, so today steps are needed to transition to sustainable long-term development.

The company has also been tasked with reducing energy consumption. In general, the company has approved a Strategy for improving the environmental performance of Kostanay Minerals JSC and the ecology of the city for 2020-2025 since 2020.

In the implementation of the Concept of a «green» economy, the issues of transition to renewable energy and environmental protection are comprehensively considered.

Kostanay Minerals JSC commits to achieve the stated contributions to reduce greenhouse gas emissions by 2030.



In order to comply with the requirements of environmental legislation to reduce the negative impact of the enterprise on the environment, a plan of environmental protection measures is developed with the necessary frequency.

The most significant environmental measures of JSC «KM»:

1) continuous control of emissions from stationary sources;

2) replacement of worn hoses in the vacuum chamber to improve the quality of air purification and reduce emissions into the atmosphere;

3) current and major repairs of dust cleaning equipment;

4) dust suppression on drilling rigs;

5) chemical control of the composition of quarry and groundwater, as well as storm drains.

The main source of emissions at the enterprise is a quarry, considered as a single source of evenly distributed emissions from drilling, blasting, excavation, loading and trucking operations. During the production of all these types of work, there is a significant release of dust into the atmospheric air. In order to suppress the gas and dust cloud in the area where blasting operations are carried out, hydraulic drilling of wells is used. In addition, hydraulic irrigation of roads in the quarry is being carried out.

A Belarusian-made irrigation machine is used to solve this task. Modern equipment equipped with powerful pumps and with a larger irrigation area. It also has equipment for irrigation of excavator faces. The machine is used in the summer,

This important event is carried out to ensure that the dust content in the atmospheric air does not exceed the maximum permissible standards at workplaces in the quarry. Environmental monitoring, which is constantly carried out at the enterprise, allows us to assess the impact of emissions on the state of the environment in dynamics and develop a set of measures in case of a negative impact. According to the results of monitoring over the past 5 years, no exceedances of the maximum permissible concentration at the border of the sanitary protection zone of the enterprise were detected.

The costs of environmental protection measures are increasing from year to year, and today amount to more than 400.0 million tenge.

The fourth direction is THE DEVELOPMENT OF THE LOCAL COMMUNITY.

Kostanay Minerals JSC, as a city-forming enterprise, actively participates in socially oriented projects and actions, supports socially protected segments of the population. Fulfilling and supporting the policy of Kazakhstan's content of goods and services, KM JSC concludes contracts with many small and medium-sized businesses in the region.

As a sponsor, the company provides financial support to cultural, sports, and healthcare institutions, and participates in the preservation and development of the city's housing and communal services.

According to the results of work for 2023, annual tax revenues to the state budget from the company's activities amounted to: about _1.7billion tenge to the local budget, more than 3.5 billion tenge to the republican budget.

Since 2008, a memorandum of cooperation has been signed between the Akimat of Zhitikarinsky district and Kostanay Minerals JSC on the implementation of social projects in the region within the framework of corporate social responsibility of business.

In particular, JSC «KM» finances:

- hot meals for one hundred students in two schools of the city;
- measures for the socio-economic development of the Zhitikarinsky district and its infrastructure;
- cultural, mass, sports events of the Zhitikarinsky district;
- Spiritual organizations are used as charitable assistance: to strengthen the material and technical base, repair work and pay for utilities.

More than 80 million tenge is allocated annually for the maintenance of social facilities – these are expenses for the improvement of urban areas (streets, parks, squares, etc.), repair of departmental buildings of the swimming pool and the Gornyak stadium.

New ways in production management

In the current global economic situation, Kostanay Minerals JSC uses new company management models, paying due attention to the diversification of production. This will become an effective shock absorber for crisis phenomena.

Today, the company enters the market with new products such as asphalt concrete and which use products related to the main production: mineral powder, crushed stone, construction sand. This reduces the load on a ton of chrysotile fiber.

An action plan has been implemented to develop a technological scheme for obtaining a stabilizing additive for asphalt concrete mixtures. By expanding the product line, the company creates new jobs in its region.

Strengthening the health of employees

Kostanay Minerals JSC pays great attention to promoting a healthy lifestyle and strengthening the health of employees.

Every year, the Department of Culture and Sports develops a comprehensive program of mass sports events, which include:

- winter mini-football championship;
- the traditional autumn mini-football tournament «Golden Autumn»;
- The championship of the league of JSC «KM» in ice hockey;
- Swimming championships (individual, team);
- Sports and entertainment contests: «Come on, girls!», «Mom, Dad and I are a sports family», «Zhas Batyr»;
- Ice fishing competition;
- Men's and women's basketball and volleyball championships;
- The athletics relay dedicated to Victory Day;
- open bike ride for prizes of the Board of Kostanay Minerals JSC;
- holiday on the city beach «Neptune Day»;
- mini-spartakiads dedicated to the professional holidays of metallurgists, railway workers, motorists, miners, concentrators, power engineers.
- urban sports competitions.

A children's football and hockey school has been established on the basis of KM JSC, whose students take part in all sports events of the region and the district, deserve the title of champions and prize-winners of the region.

We work in one team!

Kostanay Minerals JSC is an enterprise with a half–century history, with its own traditions. Management involves employees in the management of corporate responsibility aimed at protecting labor and social rights.

To achieve this goal, the main task has been developed – the creation and maintenance of a favorable moral and psychological climate in labor collectives: the organization of relations based on the principles of mutual respect, competence, politeness and correctness.

Great emphasis is placed on human resource management issues – professional and personal growth of staff, leadership and talent development.

The reputation of the company is also evidenced by the fact that Kostanay Minerals JSC was awarded the honorary title «Industry Leader 2014», a national certificate and a wall medal «Leader of Kazakhstan» were awarded.

Technological management and digitalization

The onus of responsibility for the safe performance of work lies with the management of the organization. If an organization operates both hazardous production facilities (OPO) and non-hazardous facilities at the same time, then the boundaries of the application of requirements in the field of industrial safety (PB) and occupational safety (OT) are difficult to establish and comply with. In addition to the control and fulfillment of production tasks, production is paramount, as well as the task of safe production, aimed at reducing occupational risk and preventing occupational injuries and occupational diseases. For this complex issue, such tools as the «AUTOMATED CONTROL SYSTEM FOR THE TECHNOLOGICAL PROCESS OF ENRICHMENT OF CHRYSOTILE ORES OF the FIRST TRACT, the SECOND SECTION OF the CENTRAL PROCESSING PLANT» come. The company is taking a very broad turn on the project approach to such tasks as increasing productivity, manageability of the technological process and, of course, improving occupational safety. In 2021, after the protection and approval of the project passport, this project began its implementation under the guidance of the automation service. In addition to the economic justification of the project, the project also provides for regulatory factors for the safe organization of work. In the future, the platform is to create a full-fledged system for managing production and technological processes, into which data from various units of groups will flow and be provided to a single control center (dispatcher) in an understandable processed form. This system will improve the efficiency of the production process by modernizing the control system. The use of a new block diagram of automation under the control of a Siemens controller will allow real-time automated control of the 1st tract, the second section of the central control center from the operator's workplace, a system for diagnosing shutdowns appears, the cause of shutdowns, emergency conditions are recorded in the database, this will solve tasks such as:

- increase the efficiency of the production process;

- It will allow monitoring the operation of equipment, basic and auxiliary parameters of the system in order to diagnose and early warn of the occurrence (or possibility of occurrence) of emergency situations;
- convenience of graphical representation of the technological process for the purpose of comprehensive monitoring of its operation and operational management in real time;
- display in real time and for an arbitrary period of time diagnostic, information and emergency messages, equipment operation;
- the ability to quickly and flexibly configure the operation of system elements in terms of the possibility of ensuring the system's operability in case of failure of hotel elements without compromising the safety and operating parameters of the complex as a whole;
- data collection from process units;
- improving the reliability of the equipment;
- improvement of the quality indicators of the final product;
- production process reporting;
- output of archived and current data;
- generation of reports on downtime for each of the controlled units;
- Improving the quality of regulation;
- minimizing the influence of the human factor on the operation of the equipment;
- protection against unauthorized access.

The investment costs for the automated control system for the technological process of the 1st tract of the total cost amounted to 60,993,142.36 tenge. Lessons learned from the project and recommendations of S.M.A.R.T. on improving the productivity of finished products and reducing downtime of technological equipment. Digital – industrial automation provides data collection, data analysis in order to draw conclusions, and conclusions are necessarily needed to adjust our actions. The system displays in real time the operation of the first tract, the second section in the form of digital information on the screen of the operator panel of the Central control center in a convenient and understandable form. The system is quite flexible to changes, updated data is entered by the staff of the automation service on-line. Increasing the pace of digitalization integration of technological and production processes.

During the period of operation, the following advantages have been identified: Automatic mode. The technological mode is controlled according to a given algorithm in automatic mode without the participation of an operator. In case of emergency situations, the technological process either stops in accordance with the algorithm, or execution continues according to an alternative algorithm, or the operator decides to unblock (disable from the algorithm) some part of the program. The start and stop of technological installations is carried out by technological personnel in an automated mode from the operator's control panel, which is directly related to the safe method of operation. The SCADA system provides a user-friendly interface for viewing diagnostic events. Automatic monitoring of the technological process status of the first tract, the second section of the central control center in real time checks violations of the warning and pre-emergency values of technological variables. The operator panel provides an alarm system for violations, expressed by sound and color change, which is directly related to the visualization of the process, which ensures a reduction in operator tension during working hours. Conditions have been created for the sustainable operation of production and increasing the productivity of the workshop. The reliability of the equipment has increased in accordance with the established algorithm, while ensuring mutual interlocks to avoid disruption of the start and stop sequence. Real-time display of the occurrence of abnormal situations, indicating the source of occurrence, this leads to a decrease in the time to find the causes and a decrease in the time of repair and restoration work, and this is directly related to minimizing the influence of the human factor on the operation of equipment. This project also allows you to start phased work on replacing the morally and physically outdated existing equipment of the process control system, relay (PTS) of the enrichment shop. Creation of a modern automated control system based on advanced automation equipment. Today, the project provides an opportunity for convenient graphical representation of the technological process in order to comprehensively monitor its operation and operational management in real time.

The criterion for achieving the goal of creating an automated control system is: Uninterrupted operation of equipment in automated mode in accordance with the required algorithm of the technological line and the specified performance parameters, and this is directly related to occupational safety at the enterprise of Kostanay Minerals JSC. The introduction of further stages of the management and control system allows, will increase efficiency, eliminate downtime of technological equipment, allows for high-

quality data accounting and analysis of the technological process in order to adjust further actions to increase the productivity of the workshop.

In general, the implementation of the automated control system should ensure the achievement of the main goal of the company's quality policy: obtaining stable profits through the production of competitive products that meet the requirements of consumers, creating safe workplaces and the absence of injuries.

RPA as an Occupational Safety Tool RPA (Robotic Process Automation) is a technology that automates routine and repetitive tasks, increasing work efficiency and reducing the risks associated with human error. However, RPA should be considered not only as a tool for improving operational processes, but also as an important means of occupational safety. This is due to the fact that RPA can significantly reduce the workload on employees, reduce their fatigue and minimize the risks that arise when performing monotonous or physically difficult work. The company has already successfully implemented several RPA projects, which have brought significant advantages in different departments. The personnel department has robotized the processes of concluding employment contracts on the Enbek website and the formation and automatic mailing of a vacation schedule, which has reduced processing time, eliminated errors related to the human factor and reduced the burden on employees. The Legal Department uses RPA to compare contracts, which ensures faster and more accurate verification of documents. It also reduces the burden on employees, freeing them from routine work and allowing them to focus on more complex and important tasks. The accounting department has robotized the process of transferring employee debt from an account to an account, which significantly speeds up accounting processes and minimizes the risks of errors. RPA needs to be introduced as a tool for occupational safety and health in the category of reducing the intensity of the labor process for several reasons:

Firstly, automation of repetitive and monotonous tasks reduces the physical and emotional burden on employees, which directly affects their fatigue and, consequently, their safety. Reducing stress and fatigue leads to a reduction in the number of mistakes that can lead to workplace incidents.

Secondly, the use of RPA helps to improve working conditions, as employees are freed from routine tasks that can be dangerous or physically demanding. This is especially important in the context of occupational safety, as improved working conditions contribute to an increase in the overall level of safety at the enterprise. In addition, automation using RPA can provide more accurate and timely monitoring of compliance with occupational safety requirements. For example, robots can process and analyze data on compliance with safety standards, generate reports and notifications about potential risks. This allows you to quickly identify and eliminate dangerous situations, increasing the level of safety in the workplace. Thus, RPA not only contributes to improving operational efficiency, but is also an important tool in the occupational safety system, helping to reduce the burden on employees, improve working conditions and increase the overall level of safety at the enterprise. Given the successes already achieved in other departments of the enterprise, the introduction of RPA as a means of occupational safety can bring significant benefits both for employees and for the organization as a whole. Why can RPA be considered an effective tool for occupational safety? First of all, automation using RPA reduces the physical and emotional burden on employees. When routine and monotonous tasks are handed over to robots, employees are freed from performing jobs that can be a source of fatigue, stress and, ultimately, mistakes. Reducing fatigue has a direct effect on reducing the number of workplace incidents. In addition, automation of work processes improves general working conditions, especially when it comes to tasks related to increased physical activity or adverse conditions. This not only increases the comfort and safety of employees, but also helps to reduce the risk of occupational diseases and injuries. The RPA also opens up new opportunities to improve the monitoring of compliance with occupational safety standards. Robots can automatically collect and analyze data on compliance with safety requirements, generate reports and promptly notify about possible risks. This allows you to quickly identify and eliminate dangerous situations, which significantly increases the overall level of safety at the enterprise. Thus, the application of RPA can be considered as an important innovation in the field of occupational

safety. This technology not only improves productivity, but also creates a safer, healthier and more sustainable work environment. Considering the results already achieved, it is safe to say that RPA is not just an automation tool, but also a powerful means of protecting the health and safety of employees.

The entire implementation program cannot be implemented without the competence, training and awareness of the staff.

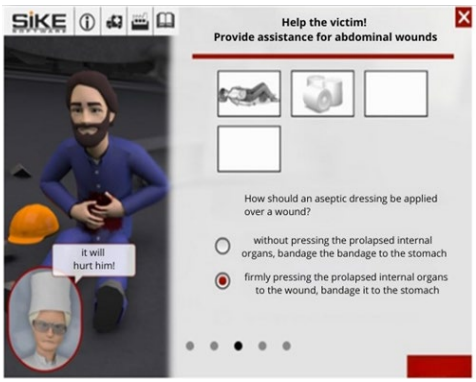
In the established main areas of activity of the enterprise, personnel training is carried out in the existing Training Center (hereinafter referred to as the Training Center), which directly interacts with the heads of all structural divisions. Determining the need for training in OTiPB issues, as well as when setting criteria for deciding whether to send employees for training, the need for personnel to undergo a certain type of training is established annually when developing enterprise development plans and personnel training.

Training and education of personnel at various levels is carried out:

- when applying for a job at an enterprise;
- within the framework of targeted training programs for employees of structural divisions on OTiPB issues , taking into account their specific job responsibilities;
- as part of the training of personnel (workers and specialists) with specific responsibilities in the field of OTiPB to work at facilities subordinate to supervision and control bodies;
- within the framework of professional development programs for workers;
- within the framework of professional development programs for managers, specialists and employees.

The material and technical base of the Training Center is at a sufficient level for the organization of the educational process. In each classroom there is visual material corresponding to the discipline taught: posters, layouts, samples, etc. This year, in order to improve the quality of education, the Company's Training Center purchased interactive SIKE learning tools, such as electronic posters and courses on the following topics:

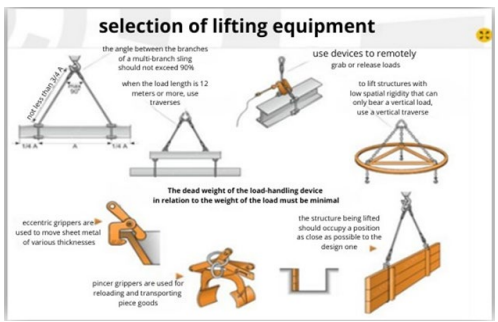
- First aid;
- Welding;
- repair mechanic;
- slinger;
- Occupational safety and health;
- cargo slinging.



These tools are installed on 12 PCs in the computer classroom of the training center, which allows you to study individually and at a comfortable pace to study each direction of the course. Electronic posters provide an opportunity to familiarize yourself with the rules of occupational safety and health, with the main types of equipment and tools used in work in a certain direction, with their characteristics and criteria for assessing suitability for safe operation, as well as the procedure for performing work.

Electronic courses allow the student to study the theoretical part of the course, which is divided into sections, then familiarize himself with the regulatory framework governing the procedure for performing actions, upon completion of training, he is tested on the material he has passed. The e-course is also designed in such a way that, if necessary, you can return to a specific topic and study it again.

Training on the subject of «First aid» takes place in the form of a quest: the student is offered various situations and options for actions that need to be performed in a particular case, followed by an explanation of the correctness of the answer.



We believe that such an approach to the study of the material significantly increases the effectiveness of its assimilation and further application of safe methods of work in practice.

The Training Center of Kostanay Minerals JSC conducts personnel certification in accordance with the requirements of industrial safety, labor protection, and fire safety.

Personnel involved in work at hazardous production facilities (quarry, warehouse of explosive materials (VM),

warehouse of flammable liquids (LVL), drying building, boiler room) are trained in 10- and 40-hour programs corresponding to the industry, as well as knowledge testing in the field of industrial safety. The certification coverage is about 3,000 people annually.

It is worth noting that the company is very demanding about the responsibility and implementation of practical measures to prevent and control the impact of harmful factors on employees at the enterprise. Annually, measures are drawn up for all structural units to ensure the protection and controlled use of chrysotile, primarily aimed at preserving health and improving working conditions. The events are planned and implemented jointly with such partners as:

RSE «National Center for Occupational Hygiene and Occupational Diseases» of the Ministry of Health of the Republic of Kazakhstan, Karaganda:

• for the implementation of research works «Medical examination and inpatient rehabilitation of persons with initial signs of diseases of employees of Kostanay Minerals JSC.

• to carry out research work on the «Periodic medical examination of employees of Kostanay Minerals JSC in the number of 1000 people», annually.

RSE «Karaganda State Medical University» of the Ministry of Health of the Republic of Kazakhstan, Karaganda:

• on the implementation of sanitary and hygienic studies «Certification of production sites according to working conditions»;

• on the implementation of sanitary and hygienic studies «Assessment of working conditions, general and occupational morbidity in the development of occupational risk indicators in the main professions» of Kostanay Minerals JSC;

• on the development of acceptable work experience in conditions of exposure to chrysotile-asbestos-containing dust for employees of Kostanay Minerals JSC.

The national occupational safety management system in force in the Republic of Kazakhstan is regulated by labor legislation. The implementation of the priorities outlined in strategic and program documents determines the state significance of bringing the occupational safety management system in line with the standards of the International Labor Organization. The main aspect of the new occupational safety management system, taking into account the considered and adopted «Concept of safe work in the Republic of Kazakhstan 2030», is the development and active implementation of software and automation in the field of occupational safety and health, to create an innovative occupational safety management system in the Republic of Kazakhstan. As a result of the work carried out by SOTiPB, innovative approaches to the introduction of a new occupational safety management system at the enterprise were identified. In this part, we are keeping up with the times by introducing this occupational Safety program at the enterprise on the 1C Enterprise platform. According to the approved project for the implementation of the Labor Protection software product on the 1C enterprise platform, the labor protection service, with the support of accounting, information technology department, warehousing, training center and representatives of Inform Consot LLC, implemented this program. The main goals of creating an information system are: improving the efficiency of specialists by freeing up time for monitoring occupational safety, industrial and fire safety by automating the preparation and analysis of necessary, required documentation and reporting, increasing the level of accident-free and safe production, as well as reducing the cost of financing measures to ensure and improve safety and working conditions. The application of the 1C program allows you to create Records of the issuance of PPE, create a personal card for an employee, take into account the timeliness of briefings, training in the field of industrial safety, as well as create the necessary reports both for the whole enterprise and for structural divisions.

The study of atmospheric air at the border of the SPZ and in the residential area of the city of Zhitikara for contamination with suspended solids and respirable asbestos fibers.

Next year, Kostanay Minerals JSC will celebrate its 60th anniversary. With qualified personnel and modern material and technical resources, the management confidently sets optimistic development goals for itself and the team, and none of the residents of the region has any doubt that the stable operation of the city-forming enterprise of Kostanay Minerals JSC is the key to their well–being and prosperity.

Argyngazinov A.,
Chairman of the Management Board
JSC «State Social Insurance Fund»

OFFICIAL EMPLOYMENT – PROVISION OF SOCIAL GUARANTEES

The right to decent work and fair pay is one of the most important constitutional guarantees. The provision of an appropriate level of social protection for the working population is also in an integral relationship with these concepts.

The legal basis for regulating labor relations and social protection of the population in our country are the Labor and Social Codes.

Thus, the Labor Code regulates the legal relations between an employer and an employee, in particular, issues of payment of wages, provision of vacations, payment of sick leave, rights and obligations of the parties to labor relations, as well as labor protection and safety.

The Social Code reveals the main conditions for the joint responsibility of the state, employers and citizens in the field of social protection, which is achieved by sharing responsibility for the quality of life, social well-being, as well as for reducing social risks.

At the same time, the Social Code is a single source of knowledge of citizens about their social rights and responsibilities, and also allows for automated monitoring of the social welfare of the population.

An additional level of social protection for working citizens in the event of social risks is compulsory social insurance, introduced in the Republic of Kazakhstan since 2005.

In this regard, the availability of concluded employment contracts during employment is of particular importance. In such cases, the employer automatically assumes obligations to pay monthly social contributions (social contributions) to the State Social Insurance Fund (Fund) at his own expense.

Compulsory social insurance covers citizens and Candace, as well as foreigners and stateless persons permanently residing in the territory of the Republic of Kazakhstan who carry out income–generating activities on the territory of Kazakhstan, with the exception of working pensioners (men aged 63 and women aged 61).

Currently, the payers of social contributions to the Fund are not only employers, individual entrepreneurs and persons engaged in private practice.

Since July 1, 2023, in connection with the adoption of the Social Code, the coverage of compulsory social insurance has been expanded with new categories, these are:

- individual assistants who provide support services for a person with a group 1 disability who has difficulty moving;

- and starting from January 1, 2025, the insurance system will extend to individuals who perform work (provision of services) under contracts of a civil nature concluded with tax agents.

It should also be noted that from January 1, 2025, the social tax rate will be 11%, and the social contributions rate will be 5%, respectively.

At the same time, according to the norms of the Tax Code, the amount of social tax payable to the budget by taxpayers is reduced by the amount of calculated social contributions.

The Social Code establishes a clear deadline for the payment of social contributions - no later than the 25th day following the reporting month, which are made from the employer’s expenses for the payment of income to the employee in the form of wages.

There are also monthly minimum and maximum amounts of the object of calculating social contributions at the level of at least one and no more than seven times the minimum wage (minimum wage) established by the law on the republican budget for the corresponding period.

In order to simplify the fulfillment of obligations to pay social payments and individual income tax (IIT) on employee income, a Single Payment (EP) has been introduced since 2023.

As part of the EP, the payer pays mandatory pension contributions, social contributions, as well as contributions and deductions for compulsory social health insurance in one amount, then social payments are distributed to the NAO «State Corporation «Government for Citizens» by extra-budgetary funds.

Individual entrepreneurs and legal entities that are subjects of micro and small business, applying special tax regimes provided for by the Tax Code, have the right to pay such a simplified payment.

From January 1, 2025, the EP rate will be 23.8% of the taxable object and the social contributions rate as part of the EP 4.5%, respectively.

Taking into account the social component, the current legislation provides for control over the timeliness and completeness of payment of social contributions, it is entrusted to the state revenue authorities.

It should be noted that compulsory social insurance is based on the principles of solidarity, since social contributions are paid for all working citizens, and payments from the Fund can only be received by those persons who have a social risk of loss of income due to: disability, loss of breadwinner, loss of work, pregnancy and childbirth, adoption or adoption of a newborn child, with child care.

At the same time, the amount of social benefits directly depends on the amount of social contributions paid, the timeliness and duration of their payment. It is on such principles that this system operates, providing citizens with an additional form of social support.

In this regard, it is important for the working population to have access to information about the amounts of social contributions paid to the Fund.

Currently, this opportunity is implemented through the egov e-government portal.kz, mobile applications of banks online, as well as through branches of the State Corporation «Government for Citizens» (PSC) and branches of the Fund.

Thus, official labor relations are important, designed in accordance with the requirements of the law, this is not only a guarantee for social security provided for working citizens, but also the main incentive to legal employment in the fight against the shadow economy.




Taubaev A.A.,
Doctor
of Economics,
Professor,
Rector of Esil
University
Astana

Kenzhebekov N.D.,
Candidate
of Economic Sciences,
Associate Professor
Mr. Rational
Solution LLP,
Karaganda

Zhailauov E.B.,
PhD,
Director
of Rational
Solution LLP,
Karaganda

Ulybyshev D.N.,
Candidate
of Economic Sciences,
Associate Professor,
centre director
socio-economic
Esil University
Astana

APPROACHES TO BUILDING A PROACTIVE TARGETED SOCIAL ASSISTANCE SYSTEM IN THE REPUBLIC OF KAZAKHSTAN

Currently, comprehensive approaches aimed at developing modern forms of social protection, reactive and proactive measures of state social policy are based on the provisions of the concept of adaptive social assistance (ASA). An adaptive approach to social protection requires that all developed mechanisms of SCA be based on a well-developed legal and institutional framework. This should ensure both programme stability and recognition of beneficiaries by rights holders. At the same time, the authors understand the proactive mechanism of targeted social assistance as preventing the deterioration of the social and economic situation of vulnerable households and supporting their integration into society.

On the basis of in-depth interviews and questionnaire survey of experts (professionals employed in the system of social protection of the population of the country), as well as questionnaire surveys of recipients of targeted social assistance, a number of scientific results have been obtained, namely: in relation to the current system of targeted social assistance in Kazakhstan, a portrait of a TSA recipient has been drawn up; the features of the TSA system affecting the degree of targeting of assistance have been determined; the features and problems of the current system of conditional cash transfers in assessing its ability to solve the problems have been identified; and the problems of the system of conditional cash transfers have been identified.

The authors propose the use of such a system of providing targeted social assistance, the elements of which are four blocks: 1. Early identification of the circle of persons at risk. 2. Cost-oriented system of TSA. 3. Social integration. 4. Prevention.

The modern market economy implies the formation of such a model of social protection of the population, which would not only meet the minimum needs of socially vulnerable groups of the population, but also ensure the minimum necessary level of their human development to interrupt «self-reproducing» poverty. In this context, the state providing public goods within the social protection system needs to strike a balance between meeting the needs of the population in social assistance, including targeted social assistance (TSA), and the available resources of the state budget based on the principles of maximising economic and social efficiency.

A proactive approach to the organisation and functioning of the social protection system, widely used in countries with developed socially oriented economies, makes it possible to maintain this balance on the basis of identifying the required and prospective amounts of TSA, families in real need of support, facts of dependency, and corresponding adjustment of the institutional content of the targeted social assistance mechanism in terms of methodology and practice of making changes in the calculation of

social benefits, the procedure for identifying those in need, and the definition and implementation of the type of social assistance, including the type of social benefits, the type of social assistance, and the type of social assistance to be provided.

Thus, the purpose of this study is to improve the mechanism of targeted social assistance to socially vulnerable segments of the population in the Republic of Kazakhstan on the basis of a proactive approach.

Research on the formation of adaptive social protection has started relatively recently, in 2008, M. Davis, B. Gunter and others in their work «Adaptive Social Protection: Synergies for Poverty Reduction» raise the issues of disaster risk reduction through the development of an adaptive social protection structure [1]. This line of research is related to the aggravation of global climate change problems. In this case, adaptability is aimed at increasing the level of coordination and improving the sustainability of social policy, reducing vulnerability, primarily of the rural population, associated with extreme changes in climatic conditions of residence, agricultural activities, etc.

This concept was further developed in the initiatives of the UN General Assembly, in particular the Millennium Development Goals, the Sustainable Development Goals containing 17 global interrelated goals (in particular, Goal 1: «Eradicate poverty», Goal 2: «Eradicate hunger», Goal 3: «Good health and well-being», Goal 8: «Decent work and economic growth», Goal 10: «Reduce inequalities») and 169 relevant targets for sustainable development [2].

This concept defines the priorities of social policy against the background of growing problems of food security, poverty alleviation, rising unemployment and the need to develop human capital, productive employment, decent work and much more. In this regard, the benefits of formation and development of adaptive capacity of social protection will allow to justify and identify the criteria of proactive and reactive components of the mechanism of targeted social assistance.

Adaptive social protection is aimed at increasing the resilience of vulnerable segments of the population and households through monetary and in-kind (non-monetary) transfers. Resilience is understood as the readiness and development of adaptive potential of households for the long-term period to various variants of negative situations and circumstances. Adaptive social protection systems consist of a wide range of interventions aimed at reducing poverty, inequality and vulnerability. As follows from the theoretical review of modern concepts of targeted social assistance, adaptive mechanism of social policy, the idea of the project is to expand the current mechanism of TSA through proactive components. In other words, it is supposed to shift the emphasis of the state social policy oriented on TSA beneficiaries to the policy that takes into account the interests and rights of TSA beneficiaries.

Vulnerable people's social protection enhances the freedom of action, both economic and social. At the same time, whether they are the intended beneficiaries of the TSA or not, adaptive TSA should take into account, first of all, their vulnerability. This means that the mechanism should give the potential beneficiary the freedom to choose certain measures aimed at minimising potential adverse risks or consequences and optimising positive effects on living standards [3-5].

Of course, an adaptive approach to social protection requires that all TSA mechanisms developed be based on a well-developed legal and institutional framework. This should ensure both programme stability and recognition of beneficiaries by rights holders. In Table 1, we summarise the current forms of reactive and proactive TSA that, in various combinations, can be applied in developed and developing countries to form national models of social assistance mechanisms.

Table 1 – Forms of reactive and proactive TSA

Types of models	Functions (targeting)	Forms of social assistance
Paternalistic model of social protection	Protective (high targeting)	Targeted cash transfers
	Protective (high targeting)	Food programs (food baskets, vouchers, coupons for the purchase of food, school meals)
	Protective (medium targeting)	Organization of catering and accommodation services
	Preventive, stimulating (high targeting)	Free health care, education, social and household services

Productive model of social protection	Preventive (high targeting)	Health insurance programs,
	Stimulating	Social adaptation programs
	Transformative	Sports programs for people with disabilities
Contractual model of social protection	Stimulating	Ensuring minimum employment standards
	Transformative (high targeting)	Programs of work activity, professional growth, community service
	Transformative (high targeting)	Microcredit programs
Note – compiled by the authors based on sources [6-11]		

The proactive mechanism of targeted social assistance, therefore, is to prevent the deterioration of the social and economic situation of households in vulnerable situations and to support their integration into society. It includes measures and actions aimed at preventing social problems before they arise or worsen, as well as at actively supporting beneficiaries in achieving self-sufficiency and improving their living conditions.

In order to conduct the research, we interviewed over 195 experts from 17 oblasts and three cities of republican significance. The number of questionnaires sent by experts living in urban areas is 80, the other 118 questionnaires are from rural areas. Despite the fact that the system of targeted social assistance is more developed in urban areas, the results of the survey showed that the problems faced by TSA recipients in both urban and rural areas are the same.

In addition, a survey of recipients of targeted social assistance was conducted. The number of respondents was 426 people mainly from Astana city, Akmola, Kostanay and Zhambyl regions. The results of the survey of recipients of targeted social assistance confirmed the data obtained in the course of analysing the questionnaires of specialists.

A portrait of a TSA recipient has been compiled in relation to the system of targeted social assistance operating in Kazakhstan. A typical TSA recipient is characterised by the following qualities. Reason for applying for TSA: a single parent is unable to work and/or the household has a low level of income. Financial situation of the household: difficult and average (one member of the household has a medium or low wage job). Family composition of applicants: large or single-parent families. Disability of family members: most often one child or one parent. There are usually no restrictions on labour activity among adult members of the household. Availability of housing: no housing of their own (families live with relatives or rent housing). Education level of adult household members: secondary or secondary specialised education in urban areas and often without education in rural areas. Nature of occupation of able-bodied family member: current but low-paid or seasonal work. Labour activity at the time of applying for assistance: wage earners in urban areas and unemployed in rural areas. The average age group of adult TSA recipients is 25-45 years old.

We characterised the degree of aid targeting by the following features:

- Not all people in need are included in the TSA system, and there are recipients in the system who are not eligible for TSA;
- «The Digital Family Portrait is well established and working effectively, but the data on TSA recipients is not always up to date;
- 50-70 per cent of applicants are approved for TSA;
- high number of TSA refusals due to the fact that household income for each of its members exceeds the poverty line by only 1-5 thousand tenge;
- The current methodology for determining eligibility to enter the TSA system allows for a reliable determination of eligibility and the amount of assistance, but does not fully take into account the needs of the modern family;
- monitoring periodically identifies illegally assigned (received) aid.

In assessing the ability of the current system of conditional cash transfers to solve the problem of poverty in Kazakhstan, the following features and problems have been identified:

- The current TSA system allows the poor to meet only basic needs and find employment;
- The amount of TSA paid is generally sufficient to address poverty;
- almost half of TSA recipients do not leave the system for a long time (i.e. poverty is not addressed);
- the proportion of TSA recipients who leave the system and do not return to it for at least a year does not exceed 20 per cent;

- the main factor contributing to the TSA recipient's exit from the system is self-employment in his/her speciality or an increase in income for another reason;

- experts consider it necessary to provide for the possibility of providing a combined type of assistance (monetary + in-kind).

Conclusions. On the basis of the survey data and conclusions based on the results of their processing, the authors have developed a scheme of proactive mechanism of targeted social assistance. Schematically, the proposed proactive mechanism of TSA consists of four blocks (Figure 1).

Block One: Early identification of those at risk. This block of the proactive mechanism aims to diagnose and identify households at risk before they face serious problems. This block can be extended not only by economic indicators of living standards, but also by the circumstances of unforeseen emergencies (floods, man-made disasters, etc.).

Within this block it is necessary to improve the TSA system in the following directions:

- Artificial Intelligence and Big Data technologies to deepen the application of the Digital Family Map;

- Crowdsourcing the nonprofit sector.

Application of big data technologies and analytical tools to process and analyse information on demographic and social indicators allows to identify patterns and predict crisis situations. Development of applications and platforms to collect feedback from the population, provide information on available services and resources. In addition, the database for Labour Mobility Centres and Career Centres should be expanded, bringing together information from various state and non-state organisations, including health, education, social services and law enforcement agencies.

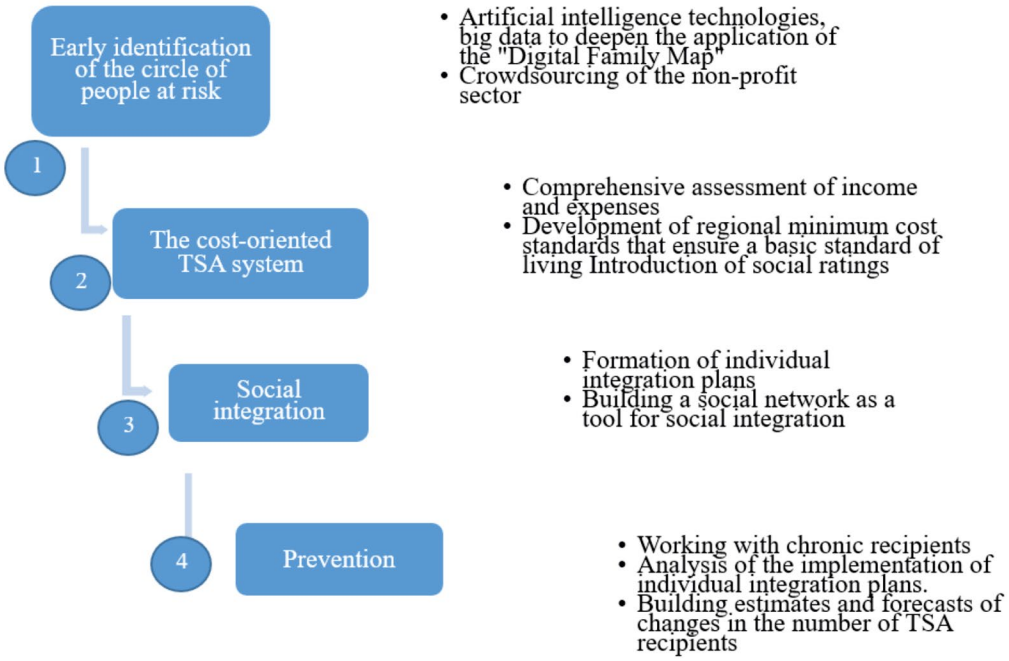


Figure 1 - Proactive mechanism of targeted social assistance
Note: compiled by the authors

Block Two: Expenditure-based TSA system. The expenditure-based TSA targeting model aims to improve the accuracy of targeting and fairness of cash assistance distribution, taking into account the real financial needs of families.

First of all, it eliminates the shortcomings of the existing system. In particular, TSA beneficiaries who are individual entrepreneurs may hide real income in the shadow sector of the economy, in which case the legislation sets a threshold of 25 times the MRP (92,500 tenge), which is slightly higher than the minimum wage. Expenditure-orientation eliminates this problem, as expenditures are easily traceable and difficult to conceal.

In addition, the current system does not take into account the inequality of expenditures of TSA recipients. In this case, households with equally low incomes have different expenditure patterns. For example, a family that does not have its own housing has to pay rent. The results of the conducted surveys

and observations showed that a significant part of expenditures goes to pay for rent, as beneficiaries do not have their own housing. The same applies to medical expenses, education expenses, etc.

Thus, the assessment of household expenditures makes it possible to determine more accurately the financial situation of the family, taking into account their real needs and circumstances, and contributes to the equitable distribution of TSA resources. However, the efficiency of this system largely depends on the accuracy of beneficiary selection.

One of the key methods of targeting the needy is a comprehensive assessment of household income and expenditures. This approach is based on the concept of the life cycle of income by F. Modigliani and R. Bloomberg, according to which family expenditures may vary depending on the life stage, despite the invariability of income [12].

Comprehensive income and expenditure assessment implies a separate assessment of the total income of households claiming TSA. The assessment procedures are applied in the existing system, by coordinating the percentage of the regional subsistence minimum it is possible to increase the coverage of those in need. The main categories of expenditures, households applying for targeted social assistance should be classified as follows:

- rent or mortgage costs, utility bills (water, electricity, gas, heating), home repairs and maintenance;
- expenditure on the minimum food basket;
- the costs of medical services and medicines;
- costs for kindergartens, educational materials, school uniforms, etc;
- public transport costs;
- the cost of buying clothes, shoes and accessories for the whole family;
- other expenses (communication services (internet, telephone), entertainment and leisure).

Detailed categorisation of basic expenditures allows a more accurate assessment of household needs and ensures equitable distribution of targeted social assistance.

Verification of data through banks, utilities, medical centres, pharmacies, educational structures, etc. should be applied as verification procedures.

The next step after a comprehensive assessment of income and expenditures is the development of regional minimum expenditure standards to ensure a basic standard of living. Regional minimum expenditure standards are a set of indicators that define the minimum financial outlays required to ensure a basic standard of living in different regions. These standards take into account differences in the cost of living, climatic and economic conditions, and the social and environmental characteristics of the regions. The application of regional minimum expenditure standards includes determining the level of need of the population and developing social assistance programmes, adjusting benefits and other forms of support to regional differences, and designing economic development strategies. Continuous monitoring of changes in the cost of living and adjustment of standards allows to assess the effectiveness of social assistance programmes and economic policies, ensuring a more equitable and accurate allocation of resources.

Third block: Social integration. Social inclusion aims at the inclusion of TSA beneficiaries in the economic, social and cultural life of the community. This is achieved through measures that improve their well-being and increase their level of participation in the community.

Economic integration implies support in job search, training and skills development, and participation in temporary employment programmes.

Cultural integration is aimed at active participation of TSA beneficiaries in the cultural life of the society. This process should reflect activities on organising cultural events, festivals and holidays, ensuring equal access to cultural institutions and resources, classes in fine arts, music, etc. The process of cultural integration is aimed at the active participation of TSA beneficiaries in the cultural life of the society.

Educational integration aims at removing barriers to learning and creating conditions for full educational and professional development, ensuring equal opportunities for all TSA beneficiaries. Adult education programmes aimed at professional development and vocational training help TSA beneficiaries to improve their skills and increase their competitiveness in the labour market.

As foreign experience shows, all integration measures should be fixed in the so-called individual integration plan, which also prescribes certain obligations of the recipient.

This plan is a contract between the TSA recipient and an authorised public authority, e.g. the Labour Mobility Centre, which details the responsibilities and rights of both parties and includes specific steps and activities to be undertaken by the recipient to improve his/her well-being and exit from the TSA

system. This includes employment issues, children's school performance, cooperation with various involved bodies (medical, educational institutions, non-profit organisations).

The plan includes specific timeframes for each of the measures to be implemented and the objectives to be achieved. This helps structure the process and makes it more manageable. The plan is regularly reviewed and updated according to the recipient's progress and changes in their situation. This allows the measures and objectives to be adjusted to keep them relevant and effective. Failure to fulfil the measures threatens to reduce the amount of assistance.

Fourth block: Prevention. The tasks of this block are a logical continuation of the third block and are closely related to the tasks of the first block, aimed at early diagnosis of households at risk.

The primary goal of this block is to have recipients exit the TSA system in a timely manner. In the case of chronic or dependent TSA recipients, the reduction or termination of TSA payments should be envisaged. Social workers should regularly assess the progress of each TSA recipient and make adjustments to individual integration plans.

The study was funded by the Committee of Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan (grant BR18574225).

Sources:

1 Davies M., Guenther B., Leavy J., Mitchell T., Tanner T.. Adaptive Social Protection: Synergies for Poverty Reduction // IDS Bulletin. - 2009. - №39 (4). - P. 105-112. – doi:10.1111/j.1759–5436.2008.tb00483.x

2 Millennium Development Goals (MDGs). - URL: https://www.who.int/ru/news-room/fact-sheets/detail/millennium-development-goals-(mdgs)

3 Müller-Armak A. Principles of Social Market Economy. In the book: Social Market Economy. (Theory and Ethics of Economic Order in Russia and Germany). - SPb, 1999. - 366 c.

4 Poverty and Inequality in Contemporary Russia: Oxfam Policy Brief. - URL: www.oxfam.org

5 Burankova M.A. Provision of targeted social assistance on the basis of an electronic social certificate // Actual issues of modern economics. - 2019. - №5. - C. 206-218.

6 Revisiting Targeting in Social Assistance: A New Look at Old Dilemmas. - URL: https://www.worldbank.org/en/topic/socialprotection/publication/a-new-look-at-old-dilemmas-revisiting-targeting-in-social-assistance.

7 Fitzbein A. et al. Conditional cash transfers. Poverty reduction in the present and future. - URL: https://www.vesmirbooks.ru/fragments/1663/.

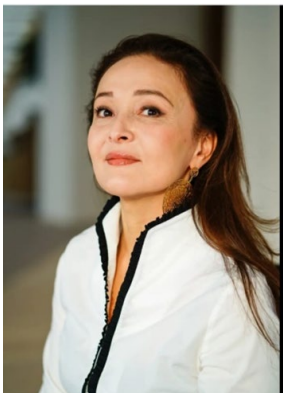
8 Aleksandrova M., Costella C. Reaching the poorest and most vulnerable: addressing loss and damage through social protection // Current Opinion in Environmental Sustainability. - 2021. - №50. - P. 121-128.

9 Pryazhnikova O.N. World Bank on social development: changing approaches // Economic and Social Problems of Russia. - 2021. - № 4. - C. 97-109

10 Devereux S., Masset E., Sabates-Wheeler R., Samson M., Rivas A.-M., Lintelo D.. The targeting effectiveness of social transfers // Journal of Development Effectiveness. - 2017. - №9 (2). - P.162-211.

11 Bowen T. et al. Adaptive social protection: building resilience to shocks. - World Bank Publications, 2020. - doi: 10.1596/978-1-4648-1575-1

12 Nauenberg E. Social capital and health across the life cycle // Elgar Companion to Social Capital and Health. - Edward Elgar Publishing, 2018. - P. 47-69. - doi: 10.4337/9781785360718.00012



Abzalieva D. S.,
MD, Professor, Director
Institute of Integrative Medicine
and Wellness Ltd., Astana

Sagintayeva R..S.,
PhD, Founder
Institute of Integrative Medicine
and Wellness Ltd., Astana

EXECUTIVE BURNOUT AND THE RELEVANCE OF IMPLEMENTING ANTI-STRESS RECOVERY

In the modern world, the health of managers is becoming an increasingly high-priority topic, especially in the context of stress and its impact on professional performance. A study by FlexJobs and Mental Health America (MHA) (2021) found that 37% of CEOs now work longer hours than before the pandemic, and more than 75% also report work-related mental and physical health problems. According to Deloitte (2022), about 70% of senior managers are seriously considering leaving their jobs, mainly to improve their emotional well-being. According to a recent report from Challenger, Gray & Christmas, Inc., more than 650 executives will leave their jobs in 2022.

Stress is a natural human response that focuses attention on problems or threats that occur in everyday life (WHO, 2023). Most of the causes of stress are workplace burnout. In 2019, the World Health Organization (WHO) included burnout in the 11th edition of the International Classification of Diseases (ICD-11) as an occupational phenomenon. «Burnout (ICD-11) is a syndrome that is seen as the result of chronic workplace stress that has not been managed. It is characterized by three dimensions:

- Feeling drained or drained of energy.
- Increased mental distance from work or feelings of negativism or cynicism associated with work;
- Reduced professional efficiency.

«Burnout refers to phenomena in a professional context and should not be used to describe experiences in other areas of life» (WHO, 2019).

Burnout syndrome in managers

Heavy workload, responsibility for results, risk-taking, and change management distinguish managers from employees in any organization. According to a Harvard Business Review (2021) study, 96% of senior managers reported feeling «burned out» to some degree, with one-third classifying their burnout as extreme. And the Microsoft 2022 Work Trends Index, which includes a global survey of employees in various industries and companies, found that more than 50% of managers report feeling burned out, slightly higher than the level among employees in general. One of the main causes of managers ‘ stress at work is an overload of information and tasks. Modern technologies allow you to be constantly in touch and available for work 24/7, which leads to a constant feeling of lack of time and inability to relax.

Analysis of gender characteristics showed that the average value of the integral professional burnout index is higher for male managers compared to-female managers (F=156.84, p0.001), despite the fact

that significant differences were obtained for all 9 functional components of burnout (Berezovskaya, 2016).

По According to the international journal «Global Advances in Health and Medicine», 51.3% of managers are diagnosed with high levels of stress. Most of the problems were related to well-being indicators such as sleep, anxiety, energy levels, and nutrition. Executive stress was associated with work (64.4%), family problems (44.2%), health problems (20.3%), and work-life balance (7.4%) (Ganesh et al., 2018).

One of the most high-profile cases of executive burnout occurred with an American journalist of Greek origin Arianna Huffington, the creator of one of the most visited online publications in the world, The Huffington Post. In 2007, after working for 18 hours, devoting 3-4 hours a day to sleep, Arianna Huffington woke up from fainting in a pool of blood with a broken zygomatic bone due to a nervous breakdown caused by overwork. In August 2016, Huffington left The Huffington Post and launched a multi-functional website dedicated to healthy living (Forbes, 2017).

Causes of stress

A 2019 Harvard Business Review study found that the main causes of burnout are:

- *Working load:*

According to a Statista study (2019), heavy workloads account for 39% of workplace stress and are the main cause of burnout. Factors contributing to the increased workload include a lack of employees, an excessive workload of skilled professionals, and an over-reliance on software that may not meet expectations.

A Gallup study (2018) found that tired employees are 63% more likely to take sick leave and 2.6 times more likely to actively look for another job.

- *Remuneration:*

Effort, lack of reward, and an imbalance of effort and reward during the first year on the job lead to exhaustion (Gorgievski, 2017).

- *Social factor and justice:*

Building strong relationships, nurturing a sense of belonging, and dealing with feelings of loneliness can help prevent burnout and promote well-being in the workplace, regardless of the work environment (HBR, 2019).

Effects of workplace stress

Executive stress and burnout have become a major problem in today's workplaces because of their negative impact on both individual managers and the organization as a whole.

- *Impact on the organization's performance:*

A study published in theInternational Journal of Accounting Research» (Oboreh et al., 2016) found a significant negative correlation between managers ' stress levels and organizational performance indicators such as profitability and employee productivity.

Every year, approximately 17 million working days are lost worldwide due to poor health caused by stress, depression or anxiety at work (HSE, 2022). Up to 40% of staff turnover is due to stress. The International Labour Organization (ILO) identifies occupational stress as the main threat to workers ' health.

- *Health and well-being implications:*

TheJournal of the American Heart Association» published the results of a longitudinal study, according to which managers who experience chronic stress have a 50% higher risk of developing cardiovascular diseases compared to their colleagues who experience less stress (Sara et al., 2018). Some studies have linked work-related stress to various diseases, such as musculoskeletal disorders, cardiovascular diseases, depression, and cancer (Eurofound, 2016; WHO, 2017).

In 2015, Dr. Michael A. Freeman et al. (2018) conducted a survey of 242 entrepreneurs and 93 demographically comparable comparison participants. They found:

- 72% of entrepreneurs (significantly more than in the comparison group) independently noted the presence of mental health problems,
- 49% of entrepreneurs have had one or more mental illnesses in their lifetime,
- 32% of entrepreneurs have had two or more psychiatric disorders in their lifetime,
- 18% of entrepreneurs have had three or more mental health problems in their lifetime,
- 23% of entrepreneurs were asymptomatic family members with high symptoms.

- Compared to the control group, entrepreneurs who participated in the study were significantly more likely to report:
- depression (30% compared to 15% in the control group)
- ADHD (29%, compared to 5% in the control group)
- substance use-related condition (12%, compared to 4% in the control group)
- diagnosis of bipolar disorder (11% compared to 1% in the control group).

Neurotic and psychosomatic diseases, namely the manifestation of neuroses, one of the forms of which is neurasthenia, which is most common in people holding senior positions, are a consequence of constant problems and stress among managers of different ranks. The Polish scientist КемпинскимA. Kempinski, an outstanding psychiatrist, psychologist and professor at the Jagiollon University, introduced the concept of «director's neurosis»in 1975. Kempinski A. describes managers suffering from director's neurosis as follows: «They are always making out something, repeatedly holding several telephone handsets at once, reacting to simple questions with a quick temper and often giving contradictory orders. By their behavior, they irritate the social group, everyone turns like squirrels in a wheel, which as a result leads to general irritation» (Kempinski, 1975).

- *Financial costs:*

According to WHO estimates (2022) , around 12 billion working days are lost worldwide each year due to depression and anxiety, and productivity losses amount to US $ 1 trillion per year.

According to a study conducted by the World Health Organization (WHO), every $ 1 invested in the treatment and support of common mental disorders generates a profit of $ 4 in the form of improved health and increased productivity. Therefore, companies should prioritize the mental health of their employees and provide them with the necessary support, as these measures benefit employees and contribute to the overall success of the company.

Possible solutions

Managing executive stress and burnout requires comprehensive solutions that prioritize both individual well-being and organizational support.

1. *Implementation of the Stress Management and Wellness Program (EAPs).*

According to a study by the American Psychological Association (APA, 2023) , 54% of organizations with stress management programs report improved employee morale and increased job satisfaction.

A study published in the journal «JAMA Psychiatry»found that employees who received mental health services experienced a 28% reduction in stress levels and a 30% increase in job satisfaction (Mangurian et al., 2023).

A study published in theJournal of Occupational Health Psychology»found that employees who participated in stress management activities had a 25% reduction in their stress levels (Richardson, 2017). A study conducted by the Health Enhancement Research Organizationshowed that companies with wellness programs have reduced the number of sick leave and absenteeism by 25 %.

Компания Johnson& Johnson» has historically been recognized for its comprehensive approach to employee health and well-being, and its programs have shown positive results in reducing health risks. According to the company's executive vice president, Peter Fasolo, the company's health indicators, such as obesity and triglyceride levels, are consistently ahead of the national average obtained from the Centers for Disease Control and Prevention (CDC). For example, in 2016, 30% of people nationwide had hypertension, compared to just 9.2% ofJohnson & Johnson employees» (Bartz, 2018).

«Johnson & Johnson» offers all its employees access to the Energy for Performance® (E4P) course. During the two-day program, participants complete exercises that help them identify and prioritize the most significant components of their lives. They also take part in food seminars and classes that have been scientifically proven to boost energy (Bartz, 2018). The results of the evaluation of the company's wellness program indicate a significant reduction in risks in 8 of the 13 risk categories considered for all employees who participated in two health risk assessments on average for 2 and 3/4 years. The study highlights the ability of large-scale, carefully designed and integrated corporate health and productivity management programs to positively impact employee health and well-being (Goetzel et al., 2002).

An experiment conducted at the multinational corporation «Turbocoating Spa», located in Rubbiano di Solignano (Parma, Italy), which has its headquarters with 229 employees, proved the positive effect of meditation on the body of workers. As a sequence, a 20-minute practice was chosen, taken from the Tibetan tradition, and adapted to specific conditions. The meditation session was held in a specially designated room on the company's premises, from Monday to Friday, from 7: 35 am to 7: 55 am.

The average registered presence rate during working days was 82%. The effects of meditation were measured in terms of both company productivity and the well - being of those who did not meditate, the latter using the Mood State Profile (POMS) and Short Form 36 (SF36) questionnaires. As for the performance indicators of enterprises, the experimental trimester compared to the previous trimester showed an improvement in product quality (+6.6%), non-compliance of critical products with standards due to human factors (i.e. errors) (-42.6%), quarterly productivity (+10.5%) (Explore, 2019).

The Centers for Disease Control and Prevention (CDC, n.d.) also claims that regular physical activity can reduce symptoms of anxiety and depression by 20-30%.

2. Encourage work-life balance.

A study conducted by the Society for Human Resource Management (SHRM) found that 89% of employees report better work-life balance when they are offered flexible working hours (Maurer, 2019).

According to theHarvard Business Review» , organizations with work-life balance policies have a 21% increase in productivity and a 37 % reduction in absenteeism (Seppala & Cameron, 2015).

3. Prioritize your workload and time management.

A study conducted by the American Psychological Association (APA, 2011) found that 49% of employees who think they have too much work experience increased levels of stress.

A study published in theJournal of Occupational and Environmental Medicine» found that effective workload management and prioritizing time reduced employee burnout by 41%.

4. Supportive and healthy leadership.

The behavior, decisions, and well-being of managers significantly influence how employees perceive their tasks and perceive the workplace. Leaders who prioritize employee well-being play a key role in creating a positive and highly productive work environment. By focusing on the health and happiness of their team members, including themselves, these leaders not only increase individual job satisfaction and morale, but also significantly contribute to the overall success of the organization and long-term sustainability (Jendriks, 2024). Mental health and well-being are seen as key drivers for improving corporate culture by 42% (LinkedIn, 2022).

Research published in theJournal of Applied Psychology»shows that employees who perceive their work environment as supportive have lower burnout rates and higher job satisfaction.

A Gallup study found that employees who feel supported by their supervisors are 70% less likely to suffer from burnout (Harter, 2022).

The PwC report (2021) states that organizations with supportive management have a 70% lower turnover rate.

5. Training managers in stress management techniques.

According to the American Stress Institute (APA, 2023), managers trained in stress management techniques can reduce stress levels in their team by 50%.

A study published in theJournal of Occupational Health Psychology» found that employees whose supervisors were trained in stress management techniques had a 23% reduction in stress-related absenteeism (Richardson, 2017).

Conclusion

Executive wellness is an ongoing process that is essential for reducing workplace stress, for overall well-being, and for improving productivity. Our research highlights the need for active implementation of stress and chronic fatigue prevention programs by organizing health improvement for employees in wellness-sanatoriums.

ИнститутThe OM Institute for Integrative Medicine and Wellness (IIMW) has developed оздоровительная программа «the Anti-Stress Wellness program, which is an integrative approach to improving overall well-being based on the principles of evidence-based medicine, where all procedures interact synergistically, providing an integrated approach to human health. This program includes the following main components:

1. Physiological stimulation of the respiratory system with phytoncides, aeroionotherapy with coniferous trees and improving the function of the cardiovascular system by conducting activities in the forest area. Also in the work of Japanese scientist Lee 2022, it is proved that «bathing in the forest - Shinrin-Yoku» reduces the level of stress hormones such as epinephrine and norepinephrine in the urine, as well as cortisol in saliva/serum, helping to manage stress, and also reduces blood pressure and heart rate, having a preventive effect on the heart. cardiovascular system.но-сосудистую систему.

2. Meditation practices, yoga, дыхательнbreathing practices, and vibroacoustic therapy. Исследование A Harvard Medical School study (2013) used advanced genomic testing to analyze transcriptional changes that occur during meditation practice. The results showed that just one mindfulness meditation session caused rapid increased expression of genes related to energy metabolism, mitochondrial function, insulin secretion, and telomere maintenance, as well as reduced expression of genes related to the inflammatory response and stress-related pathways. In addition, data from Novaes et al. (2020) suggest that yoga programs that include pranayama lead to reduced anxiety in people. The Institute's clinic selects personalized meditation and breathing exercisesй методusing biofeedback techniques based on the results of a study of heart rate variability and stress levels.

3. Practices for improving adaptive abilities based on the effective use of natural resources, including methods of aromatherapy, herbal medicine, pantotherapy, koumiss treatment and other natural therapeutic techniques.

4. Stimulation of the lymphatic drainage function of the body with the help of heat and contrast treatments, as well as hardware pressotherapy.

5. A balanced diet of organic products with enhanced properties of antioxidant protection of the body and products to normalize the intestinal microbiome.

6. Organization of space and conditions for healthy sleep and rest.

Achieving optimal effectiveness of our preventive and wellness programs is a top priority. Preliminary data showed an improvement not only in the emotional state and general well-being as a result of the Anti-Stress program, but also in the positive dynamics of the Heart Rate Variability(HRV) study indicators. A comprehensive analysis of the indicators, including variational, spectral and autocorrelation, showed reliable dynamics during the health program. The most sensitive indicators indicated an improvement in the neurohumoral regulation of the body, adecrease in the imbalance of the autonomic nervous system,и an increase in the adaptive reserves of the body, and a comprehensive health indicator. The synthesized approach in our wellness Program «Antistress» is a holistic method for preventing early aging, helping to reduce stress levels and improve the physical and psychological state of a person. This study highlights the importance of a personalized approach to health and longevity, combining scientific evidence and practical methods to achieve optimal results in maintaining health and quality of life.

ДFor successfuloй implementation of theseи Programs, it is necessary to develop a network of wellness-resorts throughout Kazakhstan, increasing their availability and efficient use of natural resources. This initiative can have a huge impact on public health, preventing the development of many chronic diseasesassociated with the impact of stress and will contribute to an overallimprovement in the quality of life of the population.

List of used literature

American Psychology Association (APA). 2023. Artificial intelligence, monitoring technology, and psychological well-being. https://www.apa.org/pubs/reports/work-in-america/2023-work-america-ai-monitoring

American Psychological Association. 2023. 2023 Work in America Survey. https://www.apa.org/pubs/reports/work-in-america/2023-workplace-health-well-being

Americal Psychological Association (APA). 2022. Workers appreciate and seek mental health support in the workplace. https://www.apa.org/pubs/reports/work-well-being/2022-mental-health-support

Americal Psychological Association (APA). 2011. APA Survey Finds Many U.S. Workers Feel Stressed Out and Undervalued. https://www.apa.org/news/press/releases/2011/03/workers-stressed

Harter J. 2017. Employee Engagement vs. Employee Satisfaction and Organizational Culture.

BARTZ, A. (2018). "This healthcare company is determined to have the healthiest employees in the world" https://www.jnj.com/innovation/how-johnson-johnson-is-improving-workplace-wellness-for-healthiest-employees

CDC. n.d. Benefits of Physical Activity. https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm

Challenger, Gray & Christmas, Inc. (2022) "May '22 CEO Report: Changes Continue Upward Trajectory, Exits Up 52% From Same Month Last Year" https://www.challengergray.com/blog/ceo-changes-continue-upward-trajectory-may-exits-up-52-from-same-month-last-year/

Deloitte (2022). "The C-suite's role in well-being" https://www2.deloitte.com/us/en/insights/topics/leadership/employee-wellness-in-the-corporate-workplace.html

Eurofound. (2016). Germany: Occupational health strategy focuses on work-related stress. Retrieved from https://www.eurofound.europa.eu/observatories/eurwork/articles/workingconditions/germany-occupational-health-strategy-focuses-on-work-related-stres

Forbes (2017). «On the Verge of a nervous Breakdown: How Arianna Huffington is making money from the global stress epidemic» https://www.forbes.ru/forbes-woman/343367-na-grani-nervnogo-sryva-kak-arianna-haffington-zarabatyvaet-na-globalnoy

FlexJobs Report: Statistics on the State of Remote Work for 2021 (2021) https://www.prweb.com/releases/flexjobs-report-statistics-on-the-state-of-remote-work-for-2021-843040451.html

FlexJobs, Mental Health America Survey: Mental Health in the Workplace https://www.flexjobs.com/blog/post/flexjobs-mha-mental-health-workplace-pandemic/?utm_source=cj&utm_medium=VigLink&utm_campaign=affiliates&cjevent=778ad27ac3cc11eb80a700040a82b836

Freeman, M.A., Staudenmaier, P.J., Zisser, M.R. et al. 2018.The prevalence and co-occurrence of psychiatric conditions among entrepreneurs and their families. Small Bus Econ 53, 323–342 (2019)

Ganesh, MBBS, MD,1 Saswati Mahapatra, MS,1 Debbie L Fuehrer, LPCC,1 Levi J Folkert, BA,1 Whitney A Jack, RN,2 Sarah M Jenkins, MS,3 Brent A Bauer, MD,1 Dietlind L Wahner-Roedler, MD,1 and Amit Sood, MD (2018) “The Stressed Executive: Sources and Predictors of Stress Among Participants in an Executive Health Program” GLOBAL ADVANCES IN HEALTH AND MEDICINE https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6196623/

Gallup (2018) https://www.gallup.com/workplace/237059/employee-burnout-part-main-causes.aspx#:~:text=Although%20burnout%20has%20become%20%22just,actively%20seeking%20a%20different%20job

Gavelin, Magdalena E. Domellöf, Elisabeth Åström, Andreas Nelson, Nathalie H. Launder, Anna Stigsdotter Neely, Amit Lampit (2021) “Cognitive function in clinical burnout: A systematic review and meta-analysis” Work&Stress https://www.tandfonline.com/doi/full/10.1080/02678373.2021.2002972

Goetzel, R. Z., Ozminkowski, R. J., Bruno, J. A., Rutter, K. R., Isaac, F., & Wang, S. (2002). “The Long-Term Impact of Johnson & Johnson’s Health & Wellness Program on Employee Health Risks” Journal of Occupational and Environmental Medicine https://doi.org/10.1097/00043764-200205000-00010

Harvard Business Review (2021) https://hbr.org/2021/02/beyond-burned-out

Jendriks T. 2024. 95 Company Culture Statistics: Leadership, Employee Engagement, and Work-Life Balance. Flair HR. https://flair.hr/en/blog/company-culture-statistics/

LinkedIn. 2022. The Reinvention of Company Culture. 2022 Global Talent Trends https://business.linkedin.com/content/dam/me/business/en-us/talent-solutions-lodestone/body/pdf/global_talent_trends_2022.pdf?trk=bl-po&veh=Global-talent-trends-2022-launch-post

Mangurian C, Fitelson E, Devlin M, et al. Envisioning the Future of Well-Being Efforts for Health Care Workers—Successes and Lessons Learned From the COVID-19 Pandemic. JAMA Psychiatry. 2023;80(9):962–967. doi:10.1001/jamapsychiatry.2023.2355

Marjan J. Gorgievski (2017) Effort-reward imbalance and work-home interference: a two-wave study among European male nurses https://www.tandfonline.com/doi/full/10.1080/02678373.2018.1503358

Maurer R. 2019. Flexible Work Critical to Retention, Survey Finds. Society for Human Resource Management (SHRM). https://www.shrm.org/topics-tools/news/talent-acquisition/flexible-work-critical-to-retention-survey-finds

Ministry of Health, Labour and Welfare, “Stress check system implementation manual based on the Industrial Safety and Health Act (in Japanese),” Feb. 2021. http://www.mhlw.go.jp/content/000533925.pdf

Medicine https://journals.lww.com/psychosomaticmedicine/abstract/2006/11000/burnout_and_risk_of_type_2_diabetes__a_prospective.8.aspx

Oboreh, J., Echo, O. & Okeke, M.M. (2016). Effects of Stress on Employee Productivity. International Journal of Accounting Research. 2. 38-49. 10.12816/0028138.

Oswald, Eugenio Proto, Daniel Sgroi (2009) “Happiness and Productivity” IZA Institute of Labor Economics https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1526075

Pagliaroa, Renato Pelatib, Domenico Signorinib, Giulia Parentia, Francesca Roversi (2019). “The effects of meditation on the performance and well-being of a company: A pilot study”

PwC. 2021. Organisational culture: It’s time to take action. 2021 Global Culture Survey of 3,200 leaders and employees worldwide. https://www.pwc.com/gx/en/issues/upskilling/global-culture-survey-2021.html

Richardson, K. M. (2017, February 2). Managing Employee Stress and Wellness in the New Millennium. Journal of Occupational Health Psychology. Advance online publication. http://dx.doi.org/10.1037/ocp0000066

Sara, J. D., Prasad, M., Eleid, M. F., Zhang, M., Widmer, R. J., & Lerman, A. (2018). Association Between Work-Related Stress and Coronary Heart Disease: A Review of Prospective Studies Through

the Job Strain, Effort-Reward Balance, and Organizational Justice Models. Journal of the American Heart Association, vol. 7, No. 9. https://doi.org/10.1161/JAHA.117.008073

Seppälä E. &Cameron K. 2015. Proof That Positive Work Cultures Are More Productive. Harvard Business Review. https://hbr.org/2015/12/proof-that-positive-work-cultures-are-more-productive

Statista (2019) https://www.statista.com/statistics/315848/employee-stress-sources-at-work-in-north-america/

Harvard Business Review (2019) https://hbr.org/2019/07/6-causes-of-burnout-and-how-to-avoid-them

The Health and Safety Executive (HSE) (2022) https://www.ukata.org.uk/news/hse-publishes-annual-work-related-ill-health-and-injury-statistics-202122/#:~:text=The%20figures%20from%20Great%20Britain%E2%80%99s%20workplace%20regulator%20show,working%20days%20lost%20due%20to%20work-related%20ill%20health

World Health Organization (2023) https://www.who.int/news-room/questions-and-answers/item/stress

World Health Organization (2019) https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases

World Health Organization. (2017). Tobacco (Fact Sheet No. 339). Retrieved from http://www.who.int/mediacentre/factsheets/fs339/en/

World Health Organization. (2017). Alcohol (Fact Sheet No. 349). Retrieved from http://www.who.int/mediacentre/factsheets/fs349/en/ 239

World Health Organization. (2017). Physical Activity (Fact Sheet No. 385). Retrieved from http://www.who.int/mediacentre/factsheets/fs385/en/

World Health Organization. (2017). Cardiovascular diseases (Fact Sheet No. 317). Retrieved from http://www.who.int/mediacentre/factsheets/fs317/en/

Berezovskaya R. A. (2016) «Features of attitude to work and burnout syndrome among managers» Bulletin of Moscow University https://cyberleninka.ru/article/n/osobennosti-otnosheniya-k-rabote-i-sindrom-vygoraniya-u-rukovoditeley/viewer

WHO. 2022. Mental health in the workplace. https://www.who.int/ru/news-room/fact-sheets/detail/mental-health-at-work

WHO. 2016. Investing in treatment for depression and anxiety disorders pays off fourfold. https://www.who.int/ru/news/item/13-04-2016-investing-in-treatment-for-depression-and-anxiety-leads-to-fourfold-return

Kempinski A. «Psychopathology of neuroses" https://coollib.com/b/489050-anton-kempinskiy-psihopatologiya-nevrozov/read

Li Q. (2022). Effects of forest environment (Shinrin-yoku/Forest bathing) on health promotion and disease prevention -the Establishment of «Forest Medicine». Environmental health and preventive medicine, 27, 43. https://doi.org/10.1265/ehpm.22-00160

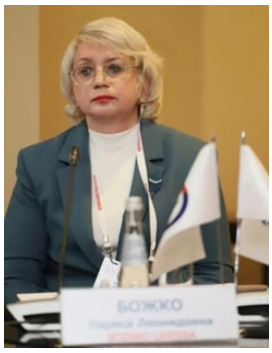
Li, Q., Morimoto, K., Kobayashi, M., Inagaki, H., Katsumata, M., Hirata, Y., Hirata, K., Suzuki, H., Li, Y. J., Wakayama, Y., Kawada, T., Park, B. J., Ohira, T., Matsui, N., Kagawa, T., Miyazaki, Y., & Krensky, A. M. (2008). Visiting a forest, but not a city, increases human natural killer activity and expression of anti-cancer proteins. International journal of immunopathology and pharmacology, 21(1), 117–127. https://doi.org/10.1177/039463200802100113

Bhasin, M. K., Dusek, J. A., Chang, B. H., Joseph, M. G., Denninger, J. W., Fricchione, G. L., Benson, H., & Libermann, T. A. (2013). Relaxation response induces temporal transcriptome changes in energy metabolism, insulin secretion and inflammatory pathways. PloS one, 8(5), e62817. https://doi.org/10.1371/journal.pone.0062817

Black, D. S., Cole, S. W., Irwin, M. R., Breen, E., St Cyr, N. M., Nazarian, N., Khalsa, D. S., & Lavretsky, H. (2013). Yogic meditation reverses NF-κB and IRF-related transcriptome dynamics in leukocytes of family dementia caregivers in a randomized controlled trial. Psychoneuroendocrinology, 38(3), 348–355. https://doi.org/10.1016/j.psyneuen.2012.06.011

Antoni, M. H., Lutgendorf, S. K., Blomberg, B., Carver, C. S., Lechner, S., Diaz, A., Stagl, J., Arevalo, J. M., & Cole, S. W. (2012). Cognitive-behavioral stress management reverses anxiety-related leukocyte transcriptional dynamics. Biological psychiatry, 71(4), 366–372. https://doi.org/10.1016/j.biopsych.2011.10.007

Creswell, J. D., Taren, A. A., Lindsay, E. K., Greco, C. M., Gianaros, P. J., Fairgrieve, A., Marsland, A. L., Brown, K. W., Way, B. M., Rosen, R. K., & Ferris, J. L. (2016). Alterations in Resting-State Functional Connectivity Link Mindfulness Meditation With Reduced Interleukin-6: A Randomized Controlled Trial. Biological psychiatry, 80(1), 53–61. https://doi.org/10.1016/j.biopsych.2016.01.008



Saparkhojaev N.P.,
PhD,
Chairman
of the Board - Rector
NAO «Rudny Industrial
University»,
Ore

Bozhko L.L.,
Ph.D.
in Economics,
Vice-Rector
for Academic Affairs
NAO «Rudny Industrial
University», Ore

Afanasyev M.A.,
Teacher
NAO «Rudny
Industrial
University»,
Ore

AbzhatovaA.K.,
Senior Lecturer
NAO «Rudny
Industrial
University»,
Ore

SOCIAL POLICY IN THE CONTEXT OF SDG IMPLEMENTATION IN COUNTRIESEAEU

The article examines approaches to the justification and implementation of national priorities in the field of sustainable development in the EAEU countries.The purpose of the study is to compare approaches to substantiating national priorities of state social policy of the EAEU countries, as well as identifying areas for their improvement, taking into account global international trends. The choice of the EAEU countries for comparison is justified by the identity of the parameters characterizing the socio-economic and political processes in these countries, as well as the presence of common borders. The concept of sustainable development, which involves ensuring a balance between economic, social and environmental goals, taking into account management efficiency, is adopted as the methodological basis for conducting a comparative assessment of the impact of various social factors on regional development. Particular attention is paid to the study of how national priorities in the field of social policy are embodied in management decisions taken at the national and regional levels. In conclusion, conclusions are made on ways to improve social policy mechanisms and the possibilities for disseminating the identified best practices.The article was prepared within the framework of the grant of the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan under the project AP19679796 “Study of factors of regional development taking into account interregional relations and state regulation”.

The processes of regional integration have become a daily practice of international life and have covered most of the planet’s continents. Economic regional integration covers the territory of the former Soviet Union. A striking example of such an integration formation is the Eurasian Economic Union. The current task of the EAEU member states is to transform into a self-sufficient, harmoniously developed and attractive macro-region for all countries of the world, possessing economic, technological and intellectual leadership and maintaining a high level of well-being of the population.

Social policy is a priority area of development for the EAEU countries. The state’s social obligations to its citizens are enshrined in the Basic Law. For example, Kazakhstan is a socially oriented state designed to protect the rights and interests of its citizens. This is reflected in the Constitution of the Republic of Kazakhstan: «The Republic of Kazakhstan asserts itself as a democratic, secular, legal and social state, the highest values of which are man, his life, rights and freedoms» [1]. In the Russian Federation, the Basic Law states: «The Russian Federation is a social state, the policy of which is aimed at creating conditions that ensure a decent life and free development of man [2]. The Constitution of the Republic of Armenia reflects that «the Republic of Armenia is a sovereign, democratic, social,

legal state» [3]. Article 1 of the Constitution of the Republic of Belarus: «The Republic of Belarus is a unitary democratic social legal state» (Constitution of the Republic of Belarus of March 15, 1994) [4].

The implementation of the SDGs is considered as an element of more global goals related to ensuring the sustainable development of national economies. The concept of sustainable development, which involves ensuring a balance between economic, social and environmental goals, taking into account the effectiveness of governance, was developed in the initiatives of the UN General Assembly, in particular the Millennium Development Goals, the Sustainable Development Goals, which contain 17 global interrelated goals (SDG 1: «Eradicate poverty», SDG 2: «Zero hunger», SDG 3: «Good health and well-being», SDG 8: «Decent work and economic growth», SDG 10: «Reduced inequalities») and 169 corresponding targets in the field of sustainable development.

An analysis of international experience in localizing and implementing the Sustainable Development Goals by countries that are leaders in the SDG index showed different levels of SDG implementation. Some countries adopted a national sustainable development strategy back in 1997, while others did so only in the early 2000s. Countries are also at completely different stages of implementing the SDGs in strategic documents – from the absence of such work to the localization of all 17 Sustainable Development Goals.

The reasons for these differences are largely related to the specifics of the implementation process management and the established models of governmental organization. However, these issues have not yet become the subject of active scientific discussions.

To fill the existing substantive gaps, a study was conducted of the governmental organization models used in the EAEU countries in the context of implementing social policy.

The existing body of literature on the problems of studying models of governmental organization in the context of implementing social policy can be divided into three groups.

The first group is -These are works devoted to problematic issues of assessing the implementation of SDGs at the national and regional levels.M. Stafford-Smith, D. Griggs, O. Gafni focus on the existing relationships in three areas (large business, public sector, civil society), as well as indirect confluence of interests of countries with low, middle and high income levels. Based on the results of the study, recommendations were developed aimed at improving the identified relationships, both at the global and national levels [5].

Savrukov A. N. identifies a number of shortcomings in assessing public administration in the regions, which can be partially transferred to assessing the achievement of sustainable development goals. For example, the list of indicators may be incomplete, i.e. not fully take into account certain aspects that influence one of the three directions (economic, environmental, social), or not take them into account at all, which may be due to the specifics of the country aspect. Studies that compare regions of different areas or populations without standardizing the data may be incorrect. In this case, it is more correct to use specific indicators [6].

In the work of Antonov M.A., an approximate list of indicators is presented that can relate to one of three groups of factors (economic, environmental and social) [7].

The second group of sources reflects the specifics of the implementation of social policy instruments. Barrientos A., Clasen J., Clegg D. analyze policies and programs of social assistance, considering their adaptation to regional characteristics [8, 10]. Issues related to the implementation of various social programs are reflected in the works of Hakovirta M. [11], Skinner C. [12],HiilamoH.[13], Jokela M. [13], Clasen J. [14], Clegg D., Alderman H. [15].

Third group - resultssocio-economic studies of the subjective well-being of the population. The main benchmark in this area is the socio-economic research of scientists from the Higher School of Economics (Russian Federation), examining social life and economic activity in their interrelation and interdependence. In foreign science, this area is being developed by Amitai Etzioni and his numerous followers.

The study compares the experience of substantiating national social policy goals in the EAEU countries; the priorities of social policy of the analyzed countries are compared in the context of the implementation of the SDGs.

The article also presents the results of a sociological study aimed at determining the level of awareness of residents of the regions about the implementation of national projects within the framework of the SDGs, and also made it possible to assess the social well-being of residents of the regions.

The sample population was compiled on the basis of random selection, the general population was the entire population over 18 years of age permanently residing in the territory of the Republic of

Kazakhstan. The sample population size was 2000 respondents. This sample population size allowed us to obtain data with a statistical error of 2.8% (with a confidence level of 97%).

The main method of collecting sociological information was an online survey using an interactive standardized questionnaire posted on the website and filled out online from a computer or mobile device, based on the use of Internet technology in a remote form.

The information was processed by forming a database in the specialized computer program SPSS. The analysis of the obtained data was carried out using modern methods adequate to the goals and objectives of the study, as well as using the calculation of indices and rating scales.

The information base for the study was made up of five types of sources. Firstly, official statistics data from the EAEU countries. Secondly, documents that form the regulatory framework for the implementation of social policy and documents characterizing strategic national priorities in this area. Thirdly, strategic plans and programs of regional and local government bodies. Fourthly, works devoted to sustainable development issues. Fifthly, the results of the conducted sociological research.

In order to assess the impact of the social component on regional development, the study included an analysis of national and regional regulatory documents related to the global SDGs in countries such as Kazakhstan, Kyrgyzstan, Armenia, Belarus, and Russia. (Table 1)

Table 1 - Institutionalization of SDGs in the national policies of the EAEU countries

Criteria	Republic of Kazakhstan	Kyrgyz Republic	Republic Armenia	Republic Belarus	Russian Federation
Main country strategic document	Strategy "Kazakhstan -2050"	National Development Strategy of the Kyrgyz Republic for 2018-2040	Strategy for the transformation of Armenia until 2050	National Strategy for Sustainable Development until 2035	Decree on national development goals of Russia until 2030
Priority areas of social focus set out in the main strategic document	Comprehensive support for entrepreneurship; **building new principles of social policy;** comprehensive economic pragmatism based on the principles of profitability, return on investment and competitiveness; knowledge and professional skills (training and retraining of personnel); further strengthening of statehood and development of democracy; consistent and predictable foreign policy; support and development of Kazakhstani patriotism as the basis for the success of a multinational and multi-confessional society	**Providing employment and stable income for the population;** creating productive jobs and competitiveness of the digital economy; creation of attractive conditions for entrepreneurs; application of innovative and environmentally friendly technologies; development of infrastructure, industry and the agro-industrial complex; digital transformation of the country	Increase in GDP; increase in population; creation of new jobs; overcoming poverty; increase in average wages; increase in life expectancy; development of education and technology; doubling of forest area; increase in annual influx of tourists	**Sustainable development of the family institutionand** qualitative growth of human potential; employment and decent incomes of the population; digital transformation of the economy and large-scale dissemination of innovations; creation of a developed business environment and sustainable infrastructure; ensuring environmental safety, transition to rational models of production and consumption (circular economy)	**Preservation of population, health and well-being of people**; opportunity for self-realization and development of talents; comfortable and safe living environment; decent, effective work and successful entrepre-neurship; digital transformation

Regional bodies most actively involved in the implementation of the SDGs	Regional and city akimats	to the offices of the plenipotentiary representatives of the President of the Kyrgyz Republic in the regions, the mayor's offices of the cities of Bishkek and Osh	Yerevan administration and representatives of each region	Deputy Chairmen of the Regional and Minsk City Executive Committees	The implementation of the SDGs in the regions is carried out through the implementation of regional programs and projects that are consistent with the SDGs.
Number of SDG indicators	297 indicators (with the addition of 76 national indicators, 35 of which are proposed additionally)	514 indicators, including 219 of the 244 indicators on the Global List, 9 national indicators similar to the indicators on the Global List, and 286 additional national indicators	66 goals out of 169 SDG goals, i.e. 40% of these goals	225 indicators of the global list recognized as relevant for the Republic of Belarus, including 131 indicators that correspond to the global ones, 94 indicators have been replaced and/or supplemented	118 (120, including repetitions) global UN SDG indicators, of which 29 indicators are presented by subjects

Kazakhstan is actively developing institutions for sustainable development of the social sphere in its regional policy. One of the key institutions is the Ministry of Labor and Social Protection of the Republic of Kazakhstan. The Agency of the Republic of Kazakhstan for Youth and Family Affairs, which coordinates and implements state policy in the field of youth development, also actively participates in regional policy. Regional executive authorities and local governments also play an important role in the development of the social sphere. They monitor and supervise the implementation of state policy in the social sphere, develop and approve regional development programs, and provide funding for social programs at the local level. The Development Plans of the Regions of the Republic of Kazakhstan for 2021-2025 reflect such global goals for sustainable development of the social sphere asZero Hunger, Good Health and Well-Being, and Quality Education.

Sustainable development of the social sphere in the regional policy of Kazakhstan also provides for the active participation of civil society and public organizations. They play an important role in monitoring and evaluating the effectiveness of the programs being implemented, as well as in representing the interests of the population and mobilizing resources to solve social problems.

It is important to note that in Kazakhstan's realities, demographic factors are of particular importance for the sustainability of regional development in the medium term. Demographic indicators are allocated to a separate block within the framework of assessing the social sphere of regions and the quality of human capital. Given the importance of introducing sustainable development issues into the regional governance system, a block of indicators has been additionally introduced to assess the quality of regional governance in terms of social development (taking into account the social component in regional strategies, development of public-private partnerships, the level of social well-being of the population, etc.).

Institutions of sustainable development of the social sphere in the regional policy of Kazakhstan are one of the important elements of the country's development strategy. They contribute to improving the quality of life of the population, ensuring social security and developing public cooperation.

In Kyrgyzstan, the key program documents reflecting the main directions of the country's development are the National Development Strategy of the Kyrgyz Republic for 2018-2040, the Development Program of the Kyrgyz Republic «Unity. Trust. Creation». The level of consistency of the National Strategy and the Program «Unity. Trust. Creation» with the global goals and objectives of sustainable development was assessed based on the number of global sustainable development objectives, one way or another taken into account in the relevant strategic document. The highest level of consistency (more than 80%) was identified for the following SDGs: 7, 9, 13. In the medium term, the General State Development Program of the country, as well as state programs at various levels, are being implemented.

The Government of Armenia considers the implementation of the SDGs to be one of the most important tools for the implementation of comprehensive domestic reforms launched in Armenia. Since 2015, the country has been actively taking steps to create substructures necessary for the implementation of the SDGs, such as the National Council for Sustainable Development, which operates under the leadership of the Prime Minister of Armenia, the Interdepartmental Working Group on the Achievement of the SDGs Taking into Account National Specifics, and an innovative platform – the National Innovation Lab on SDGs in Armenia.

In the Republic of Belarus, the National Sustainable Development Strategy 2035 is linked to the global SDGs. The main priorities of the NSDS 2035 are: sustainable development of the family institution and qualitative growth of human potential; productive employment and decent incomes of the population; digital transformation of the economy and large-scale dissemination of innovations; creation of a developed business environment and sustainable infrastructure; ensuring environmental safety, transition to rational models of production and consumption. In the medium term, the Program of Socioeconomic Development of the Republic of Belarus, programs of socioeconomic development of administrative-territorial units are being implemented.

In the Russian Federation, provisions of regulatory legal acts that are related to individual SDGs are implemented at the regional level. For example, the objectives of SDG 1 «Eradicate poverty» are related to the provisions of laws on social assistance and support for citizens and are addressed in a number of other legislative and regulatory legal acts of the subjects, the achievement of SDG 2 «Eradicate hunger» is integrated into the laws of the subjects on food security. In the subjects under study, regional plans for adaptation to climate change in the territory of the subjects have been approved or are at the stage of development and approval, which is related to the implementation of SDG 13 «Take urgent measures to combat climate change and its impacts».

At present, it is possible to conditionally identify several main directions for the implementation of sustainable development principles at the regional level:

1) taking into account the principles of sustainable development in strategic planning,
2) monitoring achievement and reporting on contribution to achieving the SDGs,
3) development of green economy sectors;
4) development of a low-carbon agenda;
5) involving businesses and other stakeholders in the sustainable development agenda, expanding interaction in this area with large banks and development institutions.

Direct implementation of the provisions of the Sustainable Development Agenda in the constituent entities of the Russian Federation, as a rule, is not envisaged. The SDGs are implemented through the implementation of regional programs and projects that are consistent with the SDGs. Most of the SDGs related to the powers of the constituent entities are reflected in the goals and target indicators of the analyzed regional strategies, regional projects and state programs operating in the territory of the constituent entities. As a rule, the SDGs are not present as such in the strategic planning documents of the constituent entities. There are isolated examples of the inclusion in regional strategies of provisions directly aimed at implementing the Sustainable Development Agenda.

The EAEU countries show a wide range of priority areas set out in the main strategic documents, which indicates different levels of economic development in these countries. However, all countries give greater priority to issues of socio-economic development.The legal framework for SDGs at the national

levelis represented by a wide range of documents, including development strategies and concepts, but it should be noted that the regulatory documents have different time frames, which indicates the absence of a unified approach to this issue.

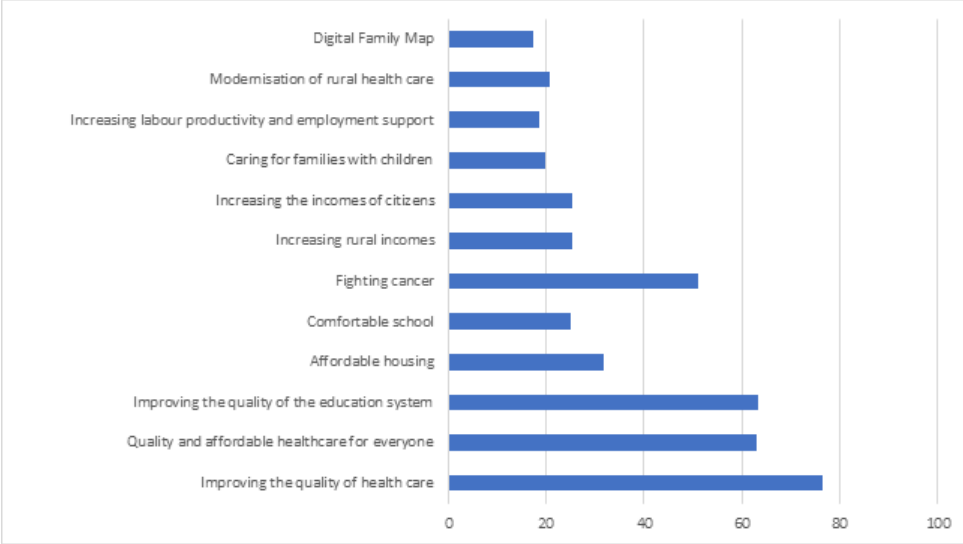
In addition, there is a different level of consistency of program documents with the sustainable development targets. For example, in Kyrgyzstan the highest level of consistency (more than 80%) is characteristic of SDGs 7, 9 and 13, in the Republic of Kazakhstan - SDGs 3, 4, 8.9 and 16, etc.

It should be noted thatThe depth of penetration of SDGs at the regional level is significant enough only in the Republic of Kazakhstan.

It is no coincidence that the results of the survey conducted by the authors of the study showed that in the Republic of Kazakhstan 31.2% of respondents believe that local and regional authorities shouldcontribute to achieving the Sustainable Development Goals to a greater extent, and only 27.3% of respondents noted that this is the prerogative of the republican authorities. 51.1% of residents of the regions of Kazakhstan are familiar with the term «UN Sustainable Development Goals» or the abbreviation SDG/ESG and are well aware of the conceptual apparatus of the SDG.

83.5% of respondents positively assess the social situation and quality of life in the country; 57.8% are satisfied with the social policy pursued by the local executive authorities. The most favorable (according to the participants of the sociological survey) in terms of socio-economic development are Kostanay, Aktobe, Atyrau, East Kazakhstan regions and the city of Astana.

As a result of the study, respondents assessed the areas of activity of local executive authorities related to the implementation of social policy (Pic. 1).



Picture 1 – Results of respondents' assessment of the directions of activities of local executive authorities

42,7% of respondents are not familiar with such a direction of the akimat's activity as the Digital Family Card. At the same time, residents of the regions speak positively about the activities of the local executive bodies in the field of improving the quality of medical care (76.6%), high-quality and accessible health care for everyone (63.1%), improving the quality of the education system (63%), and combating cancer (51.1%). According to respondents, over the past year, akimats have begun to pay more attention to the implementation of social policy. In the context of individual components of the data, the respondents' opinions were divided:

43% of respondents are satisfied with the quality of education (respondents are mostly satisfied with the quality of higher education);

49.9% of respondents give a satisfactory assessment of the solutions to issues related to improving the quality and accessibility of healthcare;

7.1% of respondents are satisfied with the implementation of social programs and policies in the field of social protection of the population.

Generally,51.6% of respondents partially agree with the policy pursued by the MIO in the area of improving the quality of life, and 35.1% of respondents believe that the socio-economic situation of the region has not undergone significant changes in recent years.

Conclusions.

The approaches used by the EAEU countries to the formation of national priorities in the field of social policies are to a greater extent consistent with the letter and spirit of the approach declared by the United Nations.

An analysis of the main priorities of socio-economic development in the EAEU countries showed that in countries with a higher level of income of the population (Kazakhstan and Russia), priority is given to social goals (focus on humanitarian and social goals, creating a comfortable and safe environment for life, supporting self-realization and development of talents, etc.), while in other countries the emphasis is on solving priority tasks (overcoming poverty and unemployment, ensuring macroeconomic stability, increasing investment attractiveness, developing traditional sectors of the economy, etc.).All EAEU countries have adopted comprehensive documents reflecting prioritiesdevelopment of social policy. National goals in the field of social development are formulated in documents of direct action, decrees, national strategies and programs.

The population of the regions is quite critical of the measures taken in the area of social policy and places greater responsibility for the activities carried out on regional authorities.Regional assessments vary significantly across individual components of the social block.In order to achieve a synergistic effect, it is advisable to use work with the population in conjunction with the use of an existing set of tools in the field of social policy.

References

1 Constitution of the Republic of Kazakhstan. – URL: https://www.akorda.kz/ru /official_documents/constitution

2 Constitution of the Russian Federation. – URL: https://www.consultant.ru/document/cons_doc_LAW_28399/

3 Constitution of the Republic of Armenia. – URL: http://www.parliament.am/legislation.php?sel=show&ID=2425&lang=rus

4 Constitution of the Republic of Belarus. – URL: https://president.gov.by/ru/gosudarstvo/constitution

5 Kochetkova L.N. The theory of the social state of Lorenz von Stein // Philosophy and society. - 2008. - No. 3. - P. 69-79

6 .Stafford-Smith, M., Griggs, D., Gaffney, O. et al. Integration: the key to implementing the Sustainable Development Goals: Sustain Sci, - 2017– vol.19. pp. 911–919. URL:https://doi.org/10.1007/s11625-016-0383-3(Accessed 21.08.2024)

7. Savrukov A. N., Savrukov N. T. Methodological approach and criteria for assessing the effectiveness of public administration in the regions // Finance and Credit. 2017. Vol. 23. No. 7. P. 388–402.

8. Antonova M. A. Theoretical and methodological foundations for studying sustainable development of regions // Regional Economics and Management: electronic scientific journal. - 2013. - No. 4 (36).

9.Barrientos A. The future of social assistance in developing countries // Social Assistance in Developing Countries. – 2013. – R.201–223. – DOI:10.1017/CBO9781139856058.012

10.Boltvinik J. Counting the Poor: New Thinking about European Poverty Measures and Lessons for the United States // Journal of Social Policy. – 2013. – No. 42(4). – R. 852–855. – DOI:10.1017/S0047279413000433

11. Clasen J., Daniel C. European labor markets and social policy: recent research and future directions. – 2022. – DOI: 10.4337/9781802201710.00020

12 Hakovirta M., Skinner C., Hiilamo H., Jokela M. Child Poverty, Child Maintenance and Interactions with Social Assistance Benefits Among Lone Parent Families: a Comparative Analysis // Journal of Social Policy. – 2020. – No. 49(1). – R.19–39.

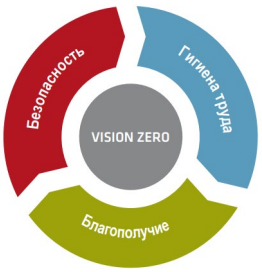
13 Barrientos A. The future of social assistance in developing countries // Social Assistance in Developing Countries. – 2013. – R.201–223. – DOI:10.1017/CBO9781139856058.012

14 Clasen J., Daniel C. European labor markets and social policy: recent research and future directions. – 2022. – DOI: 10.4337/9781802201710.00020

15 Alderman H. Multi-Tier Targeting of Social Assistance: The Role of Intergovernmental Transfers // The World Bank Economic Review. – 2001. – No. 15(1). – R. 33–53.

A. SARIEV,
Deputy
Director General of Biotech,
Kazphosphate LLP

KAZFOSFAT'S EXPERIENCE OF USING DIGITALISATION AND THE 7 GOLDEN RULES OF VISION ZERO TOOLS TO ACHIEVE ZERO INJURY CONDITIONS



VISION ZERO

At the end of 2022, after a series of accidents that claimed the lives of more than one employee, the Shareholders set an ambitious goal - to achieve the conditions of Zero Injuries using any of the available methods. At the end of September 2022, the Company becomes one of the first Vision Zero participants in the region.


VISION ZERO
Safety.Health.Wellbeing.

THIS CERTIFIES THAT

"KazPhosphate" JSC

IS A COMPANY
OF THE VISION ZERO CAMPAIGN

Marcelo Abi-Romia Caetano
Secretary General

Prof. Dr Joachim Breuer
President

developed by issa

www.visionzero.global
#VisionZeroGlobal

This concept has long-standing roots and proven effectiveness around the world and, not coincidentally, has been chosen to embody the following 7 Golden Rules.

Golden Rule 1: Become a leader - show commitment to principles

This rule emphasises the importance of leadership's role in ensuring a safe workplace. Leaders must actively demonstrate their commitment to safety and health standards, thereby setting standards of behaviour for all employees.
Realisations have been made:

- Signing by the Management of personal commitments in the field of Labour Protection, as well as the «Right to Stop Unsafe Work»
- In the mobile application, covering 98% of employees (more than 7,000 at the time of implementation), Corporate Notices were implemented, consisting of an OSH News Bulletin, safety contacts, lightning and incident bulletins - at the moment, employee awareness in some of the branches reaches over 80%. In this way, the requirement of ISO 45001 standard «Consultation with employees» is also realised, but in digital format.

Golden Rule 2. Identify threats - control risks

This rule includes processes for identifying potential safety hazards in the workplace and developing effective measures to control and mitigate those risks.

Following the implementation of the PAB module in January 2023, each employee was given the right to prevent Dangerous Actions, Unsafe Situations and to exercise their right to Stop Unsafe Work.

Already at the end of 2023, the number of PABs has reached 3,229, with 96.8 per cent closure.

Ensuring that processes are as transparent as possible has enabled this module to become a success.

As a result, a single KPI for ITD for 2024 of at least 12 PABs/year was established, which implies the formation of a sustainable habit.

Figure.1. Definitions from the PAB Standard

Figure 2. PAB statistics for 2024

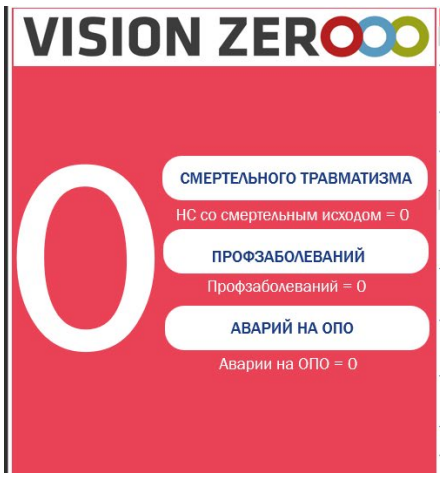
Golden Rule 3: Define objectives - develop programmes

At the end of 2022, a PBMS Development Plan was developed, which was transformed in 2023 into a PB&E Strategy 2023-2024 consisting of 5 main areas:

- BPMS development activities
- Labour Safety Culture Development Activities
- Risk management measures
- Training
- Health Protection

Exactly, the existence of the Strategy and the systematic implementation of activities has helped to structure and implement systematic approaches to reduce fatal injuries.

At the moment, the next version of the Strategy for 2024-2025, which sets more ambitious targets, is being agreed.



	Показатель	2024	2025
	Целевые показатели		
1	Смертельные НС	0	0
2	LTIFR	2.93	Цель – Порог*0,95; Вызов – Порог*0,75
3	Количество профзаболеваний	0	0
4	Количество аварий на ОПО, не более	0	0
	Оценка затрат для реализации стратегии, млн тенге		
5	Культура Безопасности Труда	24	16
6	Обучение	7	9
7	Промышленная Безопасность (*План Инженерно-Технических Мероприятий*)*	ГПК-58.5 ЖТК-10.1 ЗМУ-52	ГПК-333,4 ЖТК-5,5 ЗМУ- 4,0
8	Цифровизация процессов HSE	30	190**
9	Профессиональные Риски	30	50
10	ИТОГО	211.6	

Figure 3. PB&E KPIs

Golden Rule 4. Establish an occupational health and safety system - achieve a high level of organisation

The organisation should develop and implement a comprehensive health and safety management system that covers all aspects of the work process.

The following activities have been implemented for the period 2023-2024:

- Developed basic process documents in the amount of 29 procedures. At the same time, the concept of «standard» was introduced, which incorporates all Best Practices;
- Trained more than 60 people from among specialists and managers in such courses as «IOSH», «NEBOSH» -this allowed to form a pool of experts who cascaded the acquired knowledge at the line level;

The practice of Cross-Audits between branches was introduced - this allowed internal auditors to study the main production processes - to absorb and implement best practices

Golden Rule 5. Ensure safety and hygiene at workplaces, when working with machines and equipment

This rule includes ensuring that all workstations, machines and equipment comply with established health and safety standards

In the period 2023-2024 emergency buildings and structures, main equipment requiring modernisation as part of the implementation of the Safety and Health Strategy items were inventoried. As part of the implementation of the HSESAP strategy, an Engineering and Technical Action Plan was developed, consisting of the main areas. These measures are planned to be implemented in 2024-2025.

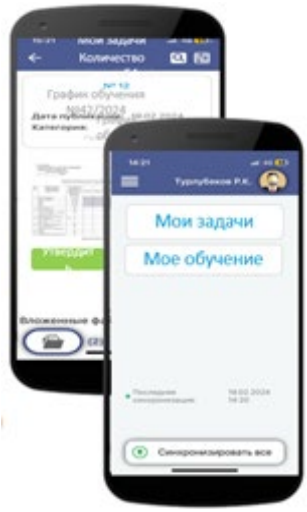
Figure.4. OHS expenditures by direction

Golden Rule 6. Raise qualifications - develop professional skills

Ongoing training and development of employee safety skills is key to preventing injuries and work-related illnesses. It has been implemented;

- A staff of 9 OHS training specialists established
- Some 29 training courses developed
- Developed a 3-hour PAB course (about 7,000 people trained or 21,000 hours of training)

All of the above was also one of the significant achievements and yielded results as early as 2024 in the form of reduced injuries



Golden Rule 7. Invest in people - motivate through participation

Investing in employee development and motivation, including training, participation in decision-making and the opportunity to contribute to safety improvement processes, is an important factor in the successful application of Vision Zero.

Safe Behaviour Incentive Programme - Employees are rewarded on a monthly basis with a minimum of 24 employees and are categorised accordingly:

Category 1 - violations of the requirements of standards, instructions and rules (conducting briefings/compliance with the frequency of training, examinations, qualification upgrading/ frequency and fulfilment of job standards) - 6 candidates;

Category 2 - absence or non-application of safety measures, non-use of personal protective equipment/unsafe conditions associated with faulty fixtures, tools and equipment/ lack of controls and safety equipment - 14 candidates;

Category 3 - identification of hazards associated with high-risk work and hazards created by technical devices, equipment, tools, materials and substances - 2 candidates;

Category 4 - hazards and combinations of hazards reflected in other categories, categorised as ‘stopping unsafe work’ or ‘suspension from work’ - 2 candidates;

Category 5 - selection of «Safety Champions» from among the monthly remunerated (category 3, 4), with interviews, publications on websites and awarding of certificates by Senior Management - 2 candidates.

Kazphosphate LLP has two types of incentives available to employees who have used proactive approaches to accident prevention and whose identified violations have a high potential risk of harm to the health and lives of personnel - the following scheme is currently agreed:

1. 60% - gifts of property
2. 40% - cash bonuses

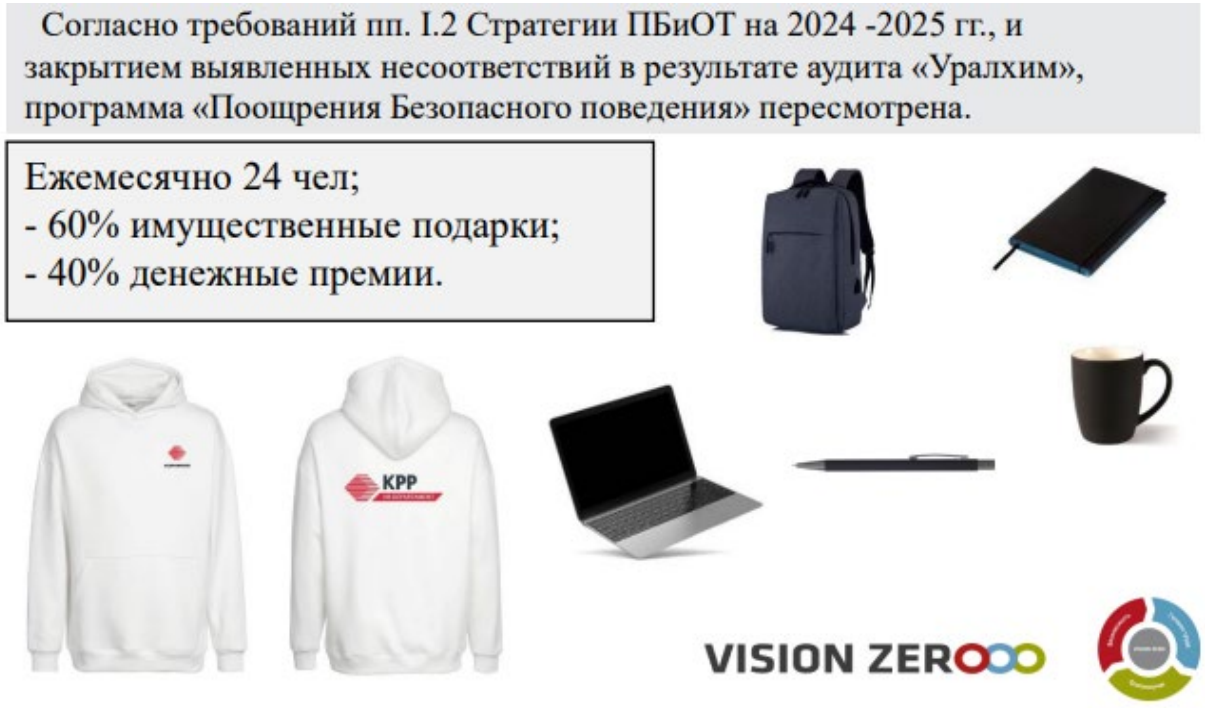


Figure 5. Safe Behaviour Incentive Programme

In doing so, the Bradley Curve also demonstrates an increasing level of Workplace Safety Culture;

It should be noted that the employee survey according to the 7 Golden Rules of Vizion Zero is conducted via a mobile application and at the moment the level of employee engagement is over 70%.

Figure 6. Bradley curve plotted with the 7 Golden Rules applied

Summarising the practice of using Vizion Zero approaches and tools together with digitalisation, it can be stated that these approaches are quite applicable, but only if managers and specialists take a conscious approach to them.

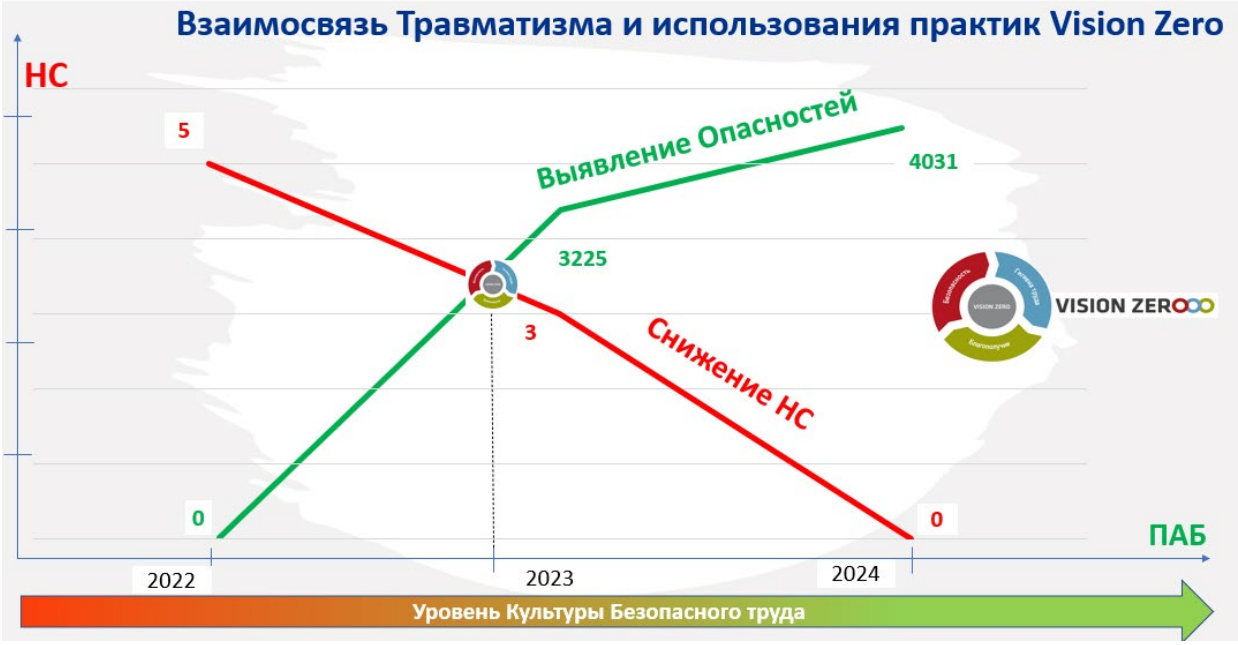


Figure 7. Relationship between fatal injuries and Vision Zero practices (if properly implemented)