ISSN: 3104-4727

JOURNAL OF
Economics

THE REPUBLIC OF AZERBAIJAN

JOURNAL OF
ECONOMICS

Volume: 2 Issue: 2

Baku - 2025

International Indices

ISSN: 3104-4727
DOI: 10.36719

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DOI https://doi.org/10.36719/3104-4727/3/4-9

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Tasks and Implementation of Economic Education Ways

Abstract

The article is devoted to the problem of economic education, which is one of the most relevant topics of the modern era. In the educational process, young people receive more information and acquire new knowledge and skills.

By providing economic knowledge to young people economic, consciousness is formed in them. The article provides the oretical provisions on the implementation of this problem in the educational process.

The acquisition of new knowledge and skills related to the educational process is not only considered, but also the development of logical, creative and critical thinking in economic education. Providing information about entrepreneurial activity to young people leads to the development of their economic education at the level of current reguirements.

The author touched upon the instillation of social skills, collective qualities, economic skills and the acquisition of economic culture in them and expressed a critical attitude. The article analyzes the concept of economy from a social aspect.

Keywords: *economy, economic education, entrepreneurship, thrift, wastefulness, time budget, economic activity*

Introduction

The economy of our republic has embarked on a path of rapid development and a sharp turnaround has been achieved in all social spheres, including education. This development has found its broad manifestation in both the state and non-state spheres.

The main line of development of the economy is formed by needs. Needs constantly influence human activity and activate it. This activity itself directly influences the formation of human (society) needs and necessitates the qualitative improvement of its development. Need is the need for anything necessary to maintain the active activity of the organism, the person (individual), the collective and society as a whole (Trade economics, Part II, 2022, p.180).

Taking into account the experience of countries around the world, the country's socio-economic development strategy is being successfully implemented in the republic in close cooperation with international organizations. The main content of the strategy depends on achieving stable socio-economic development and improving the living standards of the population through the improvement of the market economy.

Research

M. Rovshan, explaining the essence of the issue in an economic sense, shows that the power of the state is that its economy, first of all, expresses the interests of the people for a long time. The state can function normally when all the groups that make it up are in a harmonious, mutual relationship. Also, a necessary condition for activity is the participation of all parts of the system, both ideologically and administratively, in order to achieve a common goal (Trade economics. Part I, 2022, p. 87). The process of mastering economic knowledge, turning them into beliefs, and forming economic thinking is economic education. Economic education is a planned, organized activity carried out at school in order to form business, entrepreneurship, thrift and other such qualities in young people based on arming them with relevant knowledge, skills and habits related to the economic sphere, a system of complex influences applied in a thoughtful way.

Among the factors that raise the level of young people, economic education is of great relevance. Because young people living in a market economy must, first of all, acquire economic knowledge. It is from this perspective that there is a need to create a system of information provided to high school students regarding entrepreneurial activities (Badalova, 2009).

The information provided to young people, in addition to developing their economic education, also directs them towards entrepreneurial activity. Experience and observations show that the majority of young people are interested in working in production. Taking into account their interests, there is a pressing need to prepare training modules for young people involved in entrepreneurial activity that reflect information on the content of entrepreneurship, the structure of business activities, the content of leasing services, and the establishment of franchising.

Economy is understood in the same sense in all languages, combining the concepts of household, economy, and law. Thus, in Russian it is used as "ekonomics", in Greek as "oikonomike", etc.

The scientific meaning of the word "economy" corresponds to its literal meaning to a certain extent on a national scale, that is, the economy is the production of material goods in the country,distribution, exchange and consumption, constitute the scientific basis of economic education and possess such valuable qualities. Such young people, like our wise ancestors, understand and believe that without economy, society cannot survive, they adhere to thrift, and do not allow waste. Although our grandfathers and grandmothers did not receive economic education in special schools, they solved economic issues very wisely. They also had strict labor discipline. Hardworking people were competent in the forms of labor organization, the efficient use of earned labor (or income), how to care for the land, where, when, and how to plant to get a good harvest, when to harvest the crop, what type and what area of the economy to engage in in the relevant region, and the poet gained rich experience in such economic issues, they were distinguished by the correct use of the time budget, business and entrepreneurial qualities (Badalova, 2013). They passed on the knowledge and experience they gained in the economic field to the younger generation through the “see and take” method, as well as by showing and explaining examples. In this process, they also widely used figurative sayings and proverbs that were the product of their own (or previous generations’) thoughts. The unique values of Azerbaijani folklore have a significant place in economics. The ancestors said that “Savings are half of livelihood”, “The blackness of the soil whitens the face”, “He who plays on the soil does not remain hungry”, “The soil says: beat me, I will feed you”, “The soil says: kill me, I will resurrect you”, “The soil says: you give me sweat, I will give you gold”, “Time is gold” and so on. Let us just say that in the modern era, when special attention is paid to the development of national self-awareness among young people, parents, teachers and educators should familiarize children with the fact that the natural and geographical conditions of the republic are taken into account in the cultivation of productive forces, as well as with historical and national factors, traditions and folklore examples related to the economic sphere of the people. Because such acquaintance not only helps them develop national self-awareness, but also creates a reliable basis for the formation of new economic thinking.

The process of acquiring economic knowledge, transforming it into beliefs, and forming economic thinking is called economic education.

"People's. The active role of public groups representing various strata and categories of citizens in regulating the socio-political and socio-economic processes of society, thanks to the maturation of socio-political consciousness and self-determination, is one of the main factors characterizing a higher level of development of the state and human society. (Republic of Azerbaijan. Baku.2001.”

The main tasks of economic education, a product of recent times, in educational institutions are as follows:

-to create an idea of the place of the economy in the development of society and the scientific foundations of economic policy in the country, including in the regions;

-to expand young people's knowledge about the market economy;

-to strengthen young people's interest in entrepreneurship;

-to form characteristics such as hard work, economy, and thrift, and to introduce students to relevant economic concepts;

-to teach and recommend a caring attitude towards public property, public property, including the environment;

- to instill in young people useful skills such as using their time effectively, being ready to engage in economic activity in the production process, having an economically educated approach to food products (especially bread), appreciating hard-earned income, saving electricity and generating income, etc.

In the modern era, when serious attention is paid to the development of national identity among young people, the work carried out in Azerbaijani schools should be organized in such a way that young people become closely acquainted with the national specifics of the republic in relation to economic issues. For this purpose, it is necessary to provide them with relevant information, for example, about the traditional sectors of the national economy in Azerbaijan (i.e. oil and gas production, mechanical engineering, chemical industry, agriculture, livestock, cotton growing, viticulture, tobacco growing, tea cultivation, fruit and vegetable growing, etc.), raw materials reserves, currency obtained from the sale of products produced in the republic, national income, average per capita production indicators, a regulated market economy, etc., and to acquaint children with the fact that the specific natural and geographical conditions are taken into account in the deployment of productive forces, as well as with historical and national factors, and with the traditions of the people. Such acquaintance and information, in addition to contributing to the development of national identity among schoolchildren, also creates a reliable basis for the formation of a new economic mindset. Without these, it will not be possible to fundamentally improve economic life and ensure its rapid and efficient development (Huseynova, 2013).

There is a serious need to develop and implement an active and comprehensive strategy for regulating the labor market. The special importance of such problems as the selection of means and mechanisms for regulating employment, the connection of state and private initiatives, and the encouragement of business activity increases. Other important tasks are facing the policy of regulating employment. Preservation and increase of professional potential, increasing the flexibility of the workforce and its adaptation to structural changes, regulation and strengthening of the social partnership mechanism. Employment of the population is the most difficult problem from a theoretical, methodological and practical point of view due to its socio-economic nature, the complexity, multifacetedness, various models of the factors affecting it, and the large number of options for the intersection of the interests of individual labor market subjects (Mustafayev, 2015, p. 220).

Labor collectives play an important role in accelerating the socio-economic development of the country. The labor collective is the main core of aggregate economic activities, which combines the main aspirations and features of the lifestyle of workers, their activities and efforts. It is the unification of each of its members from the point of view of joint economic and moral interest. Therefore, the strength of the labor collective in economic activity, together with the efforts of each of its members, determines the potential strength of the organization (enterprise) (Trade economics. Part II, 2022, p. 180).

Let us also note one aspect in particular: forming economic thinking in young people at the level of current requirements is an important stage in preparing them for productive labor. Thus, a person with formed economic thinking knows the importance of time budgeting well, actively participates in the protection of public property, is able to effectively use advanced experience, new methods and modern labor tools in his work, understands technical documents, skillfully coordinates quality and quantity indicators in work, and possesses valuable qualities such as thrift, business acumen, common property, and land ownership. Such a person understands and believes, like our wise ancestors, that society cannot survive without an economy, that those who practice thrift will become rich and will not fall into poverty, that those who indulge in wastefulness will become poor, that thrift is half of the

livelihood, that the smell of bread is as pleasant as the smell of honey, that it is sacred, that it is the greatest discovery of human intelligence, that “he who loses bread will not find bread,” that he who despises bread will remain hungry, that they do not step on bread, that if it falls to the ground, they kiss it and keep it in their sight,” that “time is booty,” that it is gold, that not a single minute of it should be wasted, that “he who loses time loses his fortune,” that “he who saves penny by penny will give manat by manat,” that “if you sow everything on time, it will reap a harvest,” and so on.

The content of economic education is the "market economy", that is, the market relations of the economy, which should attract the attention of every young person who enters life. The main goal of economic education is to help the younger generation to cope with the new economic conditions. Therefore, in order for our future to be in safe hands, every young person should know the features of the "market economy" and should model useful qualities such as entrepreneurship, economy, thrift, etc (Guliyev, 2002).

The student himself plays an important role in the economy as a consumer. Each student must prepare himself not only as a consumer of material and spiritual goods, but also as a specialist who creates and produces these goods. In order to realize this goal, a special course - economics - that directly serves the economic education of students should be approved in all schools without exception.

The concepts covered by the economics course deepen and expand all of their knowledge and skills by forming economic thinking in students. One of the most important ways of economic education is the lesson. In the process of teaching various subjects, children master the concepts of economics, and while learning proverbs, they become familiar with the ideas of our people about thrift (The Holy Quran, 1997).

In accordance with the curriculum, high school students acquire necessary information in labor training classes on the importance of mechanization in intensifying production, the role of agrotechnics (i.e., agricultural machinery) in increasing agricultural products, families that increase labor productivity, fixed assets, extensive development, extensive and intensive systems of farm management, farm accounting and profitability, productive cost, profit, savings regime, and a number of other similar economic issues.

Opportunities for economic education exist in lessons taught in other subjects as well. The main issue is providing these opportunities and turning them into reality, which requires competence and pedagogical mastery from subject teachers.

In "Kalila and Dimna" it was said:

If you take hay from a mountain and say it's too much,

You'll also see that the mountain itself is not there.

Such information enriches the economic knowledge of young people. It would be useful to provide this knowledge based on advanced world experience.

Thrift is wealth, state. Scientists have considered it necessary not to skimp on studying only one science. Humanity rises through labor and perfection. A knowledgeable person lightens the heavy labor of man with his inventions and discoveries. M. Fuzuli considered labor and hard work to be the yeast of human life. He called on people to be thrifty and said that while thrift elevates a person, greed and extravagance degrade and destroy him. Nizami said that greed should be struck in the neck with the sword of thrift (Ilysov, 2013).

The possibilities of all subjects are used in the economic education of young people. Extracurricular activities carried out at school complement the educational work, strengthen the economic knowledge that schoolchildren did not acquire in the educational process, and enrich their knowledge of economic education. If one group of extracurricular activities forms economic thinking and the consciousness of being thrifty in children, the second group of activities directs them to the action of becoming businessmen. Economic thinking in schoolchildren is formed by lectures on economic topics, moral conversations, meetings with prominent economists, conferences, etc. In such activities, schoolchildren learn theoretical issues of economics. In the second group of activities, for

example, in the process of participating in disputes and socially useful labor, the most necessary concepts of economic education are formed in them, and a system of thrift education is formed in schoolchildren (Kazimov, 1983).

In order for the work carried out in the field of economic education to be effective, convincing and effective, both in the training process and during extracurricular activities, the teacher should not ignore the negative situations in the field of economics. Because, in addition, efforts are being made to expand the crisis situation, negative trends and various forms of situations in the school and in the country in general by all means.

In the process of teaching chemistry, physics, mathematics and astronomy, young people also acquire relevant economic knowledge, skills and habits. These subjects play an important role, for example, in forming the qualities of children to save food, electricity and fuel, to refer to relevant statistical calculations, specific indicators and economic formulas when necessary, and to find an effective way out of difficult situations (Kazimov, Hashimov, 1996).

In the lessons held in the aforementioned subjects, young people become familiar with the natural and scientific landscape of the world, the development prospects of the national economy in our country, the situation in social, economic and cultural life, the directions of constructive work, and the ways to accelerate scientific and technical progress and use outer space and atomic energy for peaceful purposes using these laws.

Extracurricular activities conducted with schoolchildren are not limited to forming economic thinking and thrift consciousness in them, they also help to form moral convictions, civic duty and perseverance, national consciousness and national dignity, deep love for the Motherland and its people, they cultivate sensitivity, kindness, friendship, honesty and truthfulness in schoolchildren, and they develop a sense of citizenship and the ability to see the world as a citizen.

In order to achieve good results in the work carried out in the field of economic education at school, a number of conditions must be observed. The most important of them can be summarized as follows (Kalila and Dimna, 1982):

-Work on economic education issues should be carried out systematically, in accordance with the age and level of understanding of the students;

- these activities should cover both economic sectors specific to the region and economic issues related to local conditions, and should inspire children to participate in the production of material goods within their capabilities;

-economic knowledge instilled in children during the educational process: a) should be derived from scientific regularities reflected in educational subjects and from facts and concepts explaining the foundations of the national economy and its economy; b) should reveal to them in an accessible way the practical importance of the labor process and the essence of economic issues that young people will encounter in this process; c) should be regularly enriched and strengthened by applying them in practical exercises and various types of extracurricular activities.

Conclusion

Adhering to all these conditions should be one of the main duties of teachers.

Relevance of the article: The formation of young people's economic skills in the educational process has enabled them to apply the knowledge they have acquired in practice, while also determining ways to develop their creativity and improve the quality of their training.

Scientific novelty of the article It is explained that the article, for the first time, shows that the assimilation of economic concepts by young people is an important tool in the development of cognitive activity in young people, and therefore it is necessary to take advantage of these opportunities in a purposeful, planned and organized manner.

Practical significance and application of the article: The ideas reflected in the article regarding the organization of economic education are of great practical importance. These thoughts and ideas can be used in the educational process and in the preparation of teaching resources.

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Received: 14.02.2025
Accepted: 18.05.2025

DOI https://doi.org/10.36719/3104-4727/3/10-14

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Economic Effects of Renewable Energy: Impact on Consumer Welfare and Industry

Abstract

The development of renewable energy technologies promotes innovation and the adoption of new methods in industrial enterprises to ensure more efficient energy use. These technologies help reduce carbon emissions, support environmental goals, and enhance the brand value of companies by aligning them with sustainable practices. According to IRENA (2021), the shift to renewable energy not only contributes to ecological objectives but also strengthens companies' market positions in an increasingly sustainability-focused economy. Government support in the form of tax incentives, subsidies, and financial aid accelerates the adoption of such technologies. Moreover, the use of renewable energy opens access to new markets and supports regional economic development by encouraging the creation of green industrial zones. As a result, renewable energy plays a critical role in advancing industrial growth while fostering environmental responsibility and long-term efficiency.

Keywords: *Renewable energy, economic effects, consumer welfare, industry, energy security*

Introduction

In recent years, the demand for renewable energy sources has been increasing worldwide. This increase is related to problems such as global climate change, depletion of fossil fuels and environmental pollution. Renewable energy, in addition to increasing the efficiency of using natural resources, has a positive economic and environmental impact. Since these types of energy are sustainable and renewable, they help to increase the energy security of countries and reduce their dependence on foreign energy.

The economic effects of renewable energy have a wide range. First of all, the development of these energy sources creates conditions for the creation of new jobs. Second, the reduction of carbon emissions in the energy production process strengthens environmental sustainability and stimulates the development of environmentally friendly technologies. Finally, investments in this area contribute to the stabilization of energy prices and the increase of consumer welfare in the long term. In this article, we will examine in more detail the impact of renewable energy on consumer welfare and industry.

Research

Renewable energy sources—such as solar, wind, hydro, and bioenergy—offer significant economic stability by promoting energy diversification. Investments in these areas stimulate job creation, encourage the development of new technologies, and reduce the influence of artificial monopolies. As Boyle (2012) explains in Renewable Energy: Power for a Sustainable Future, the economic impact of renewable energy is broad, encompassing employment, energy prices, state budgets, energy security, and environmental protection. The sector generates new jobs, as the demand for specialists in solar, wind, hydroelectric, and bioenergy technologies increases. This growth not only positively impacts the national employment situation but also boosts regional economies by attracting local workers and fostering the emergence of new business sectors (Boyle, 2012).

The use of renewable energy sources can result in a long-term reduction in energy prices, primarily due to their relatively low operating and maintenance costs, despite higher initial investment costs. As Ehrlich (2016) discusses in Renewable Energy: A First Course, energy sources such as solar and wind power are inherently profitable because they rely on the freely available natural resources of the sun and wind.

Additionally, as production increases and technology improves, the costs of these energy sources continue to decrease, making them even more economically viable over time (Ehrlich, 2016).

The economic impact of renewable energy is positive, and it is an important factor in ensuring long-term and sustainable economic development. It has numerous benefits, from creating employment to lowering energy prices to protecting the environment. As states and businesses invest more in the renewable energy sector, this impact will increase.

The development of renewable energy sources will not only contribute to the economy's flexibility and sustainability but also foster innovation and technological advancements. As MacKay (2009) explains in Sustainable Energy - Without the Hot Air, the use of solar and wind energy, in particular, presents significant opportunities for countries with favorable natural conditions. Azerbaijan, with its abundant geographical and climatic advantages, is well-positioned to harness solar and wind energy efficiently. The country benefits from between 2400-3200 hours of sunshine annually, far surpassing many developed countries like the USA and Central Asia, where solar energy potential ranges from 2500-3000 hours per year. This makes solar energy a viable option for electricity and heat production across various regions of Azerbaijan. Wind energy also holds great promise, with an estimated 800 MW of annual wind energy reserves, capable of generating 2.4 billion kWh of electricity annually. The utilization of wind energy not only bolsters electricity generation but also promotes environmental protection, as wind power is a clean, sustainable source. Areas such as the Absheron Peninsula, the Caspian Sea coast, and other wind-suitable regions are ideal for constructing wind power plants due to their high average wind speeds (MacKay, 2009).

In addition, water energy plays a crucial role in Azerbaijan's renewable energy sector. Hydroelectric power plants (HPPs) are a significant contributor to the country's environmentally friendly energy production, accounting for approximately 17.8% of Azerbaijan's total energy production. As Timmons (2017) explains in The Economics of Renewable Energy, the growth of small HPPs could further enhance Azerbaijan's energy supply, making a larger contribution to its overall energy mix. The development of more small-scale HPPs would increase the country's capacity to produce clean, renewable energy from water sources.

Azerbaijan also holds potential in the use of biomass and geothermal energy. Biomass energy is primarily derived from agricultural and industrial waste, providing an opportunity for heating buildings and other local applications. Meanwhile, geothermal energy, especially in regions like the Greater and Lesser Caucasus Mountains and the Absheron Peninsula, holds promise for supplying thermal energy to local communities (Timmons, 2017).

Azerbaijan holds significant potential for development in the field of renewable energy, with the expansion of this sector being crucial for ensuring energy security, addressing environmental challenges, and driving economic growth. As Bassetti and Cingolani (2015) discuss in their article The Impact of Renewable Energy on Economic Growth and Employment: A Review of the Literature, investments in renewable energy can stabilize energy prices in the long term, providing consumers with access to more affordable energy sources. Furthermore, the creation of new jobs and economic activities within the renewable energy sector enhances consumer purchasing power, driving economic progress.

Renewable energy also plays a vital role in ensuring the sustainability and competitiveness of the industrial sector. By lowering energy costs, industrial enterprises can reduce production costs, enabling them to produce cheaper, higher-quality products. Additionally, the shift to green technologies ensures the long-term sustainability of the industrial sector by mitigating environmental risks (Bassetti & Cingolani, 2015).

As this sector develops, countries apply various subsidies and tax breaks to this area. These subsidies can initially be provided using state budgets or taxpayer funds. However, in the long term, the use of renewable energy reduces the costs of energy imports for countries, which has a positive impact on the state budget.

Renewable energy sources increase energy security because they can be obtained locally. This reduces countries' dependence on foreign energy suppliers and achieves a more independent energy supply. This is especially important economically for countries with weak energy resources.

Renewable energy production generates significantly lower carbon emissions compared to fossil fuels, helping to mitigate global warming and positively impacting the environment. As Kannan and Suresh (2017) highlight in their article Industrial Energy Efficiency and Renewable Energy: A Critical Review of Existing Literature and Research, environmental protection also brings economic benefits. By reducing pollution, health costs and investments in environmental restoration can be minimized in the long term.

Moreover, the renewable energy sector is attracting substantial investment, both domestically and internationally. Technological advancements and innovations in this field stimulate ongoing research and development to discover new energy solutions. This fosters economic growth, as emerging technologies lead to more cost-effective and efficient energy production (Kannan & Suresh, 2017).

The impact of renewable energy on the industrial sector is multifaceted and leads to changes in the sector. This impact is related to the change in energy supply on the one hand, and to the innovations associated with the application of renewable energy technologies on the other. The impacts on the industrial sector can be listed as follows:

The application of renewable energy can significantly reduce energy costs for industrial enterprises. Sources such as solar and wind energy offer lower long-term operating costs compared to traditional energy sources. As Johnson and Cooper (2019) discuss in Renewable Energy and the Industrial Revolution: Historical and Modern Perspectives, industrial enterprises that adopt solar panels or wind turbines can cut energy expenses and achieve long-term financial benefits, especially in sectors with high energy demand.

Additionally, since renewable energy sources are locally available, industrial enterprises can reduce their dependence on foreign energy suppliers. This diminishes the risks associated with energy supply disruptions and price fluctuations in global markets, providing stability and security in energy supply. As a result, companies benefit from a more reliable energy source, ensuring the continuity of operations and minimizing potential economic losses due to energy shortages (Johnson & Cooper, 2019).

The development of renewable energy technologies is encouraging innovation and the application of new technologies in industries. Industrial enterprises are looking for new methods for more efficient energy use, which stimulates technological developments. Companies that use innovations in the field of renewable energy are also implementing new methods to ensure more efficient use of energy, for example, the development of energy storage technologies and the optimization of energy use (Esgerova& Abbasova & Ibrahimova & Hasanov, 2025).

As the manufacturing and industrial sectors transition to more environmentally friendly energy sources, they demonstrate their commitment to “green” and environmentally responsible practices. This can enhance their market value, as modern consumers and business partners increasingly prefer to engage with companies that prioritize sustainability. As the International Renewable Energy Agency (IRENA) (2021) highlights in Renewable Energy and Jobs – Annual Review 2021, adopting renewable energy not only supports environmental goals but also boosts the brand value and reputation of companies. This shift towards sustainability can offer a competitive edge in an increasingly eco-conscious market.

The use of renewable energy significantly reduces the carbon footprint and overall pollution of industrial enterprises, which has a profound impact on the industrial sector. This is especially relevant for countries committed to reducing carbon emissions and addressing global warming. As Kuchukahmetoghlu (2017) discusses in Renewable Energy Sources and their Future, renewable energy helps enterprises comply with emission quotas, thus avoiding potential fines for exceeding pollution limits (Ahmadova, 2019).

Moreover, renewable energy technologies provide industrial enterprises with the opportunity to enter new markets. Enterprises that offer green energy products and services can capture a larger share of the growing market for environmentally friendly products, giving them a competitive advantage as consumer demand for sustainable and responsible products continues to rise (Kuchukahmetoghlu, 2017).

Renewable energy projects are often supported by governments through various forms of incentives, such as tax breaks, subsidies, and financial assistance. Industrial enterprises can leverage

these opportunities to attract investment, accelerating the adoption of renewable energy technologies and allowing companies to implement these technologies under favorable conditions. As Abdullayev et al. (2024) highlight in their study Global Challenges of Regional Management in The Modern World: The Main Factors Shaping the Infrastructure Base of Regional Management, such governmental support plays a crucial role in enabling industrial enterprises to transition to renewable energy efficiently and cost-effectively (Abdullayev et al., 2024)

The implementation of renewable energy can accelerate industrial development in certain regions. Industrial enterprises are likely to be established in areas that can take full advantage of solar and wind energy, resulting in positive impacts on the local economy. Additionally, renewable energy sources help reduce dependencies in supply chains, promoting regional economic growth. As Guney (2018) discusses in *Environmental Economics and Energy Policies*, the adoption of renewable energy encourages industrial enterprises to implement more sustainable and efficient resource management. For instance, optimizing energy consumption in production processes, incorporating energy storage systems, and developing industrial parks powered by renewable energy can lead to more efficient and environmentally friendly production practices (Guney, 2018).

The impact of renewable energy on the industrial sector is very positive and long-term. This transition benefits industrial enterprises both financially and environmentally and socially. The transition from traditional energy sources to more cost-effective and sustainable alternatives also increases the competitiveness of enterprises and increases the overall efficiency of the industrial sector (Adigozalova & Mammadova, 2020).

Investing in the renewable energy sector is crucial for Azerbaijan to increase its economic sustainability. As Cevdet Öztürk points out in his article "The Place of Renewable Energy in the Turkish Economy and Sustainable Development", renewable energy sources not only increase consumer welfare but also ensure the sustainable development of the industrial sector. In addition, increasing economic efficiency and protecting the environment once again emphasize the importance of renewable energy. In this context, investments in this area are of strategic importance for Azerbaijan from both an ecological and economic perspective (Ozturk, 2020).

Conclusion

The results of this study shed light on the impact of renewable energy sources on consumer welfare and industry. The development and use of renewable energy sources mainly increases the economic impacts related to energy supply, providing consumers with cheaper and more sustainable energy options. This has positive results, especially in terms of reducing energy prices and stabilizing energy supply.

At the same time, the application of renewable energy sources for the industrial sector creates significant financial savings and technological developments. This also has a positive impact on job creation and economic growth. The renewable energy sector, by increasing innovation and new job opportunities, changes industrial structures, and provides more environmentally and economically efficient alternatives to traditional energy production.

In addition, the wider application of renewable energy sources reduces energy dependence within the country, minimizes the demand for foreign energy resources, and creates conditions for a more secure and sustainable supply of energy. This also serves to increase economic independence.

Overall, the economic impacts of renewable energy sources are broad and they positively shape not only the energy sector but also the economy as a whole, increasing social welfare and ensuring sustainable development. However, for this process to fully materialize, investments, technological developments and public policy support are essential.

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Received: 23.01.2025
Accepted: 30.04.2025

DOI https://doi.org/10.36719/3104-4727/3/15-17

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Ways to Solve Social Problems in the Agribusiness Sphere

Abstract

Improving social security is considered one of the most urgent problems of modern society. The sharp increase in social problems related to socio-economic changes in the society and the deficiencies in the existing social protection system of the population are more pronounced in the agribusiness sphere. Studies show that it is not possible to solve the social problem only by administrative methods. In general, social problems are characterized by a number of characteristics - scale, development trends, etc. The lens that has reflects the current situation. Therefore, to get information about the state of any social problem, the quantitative characteristics of the problem are highlighted. Solving problems in such ways aims to ensure efficiency in the social sphere.

In the sphere of agribusiness, there is increasing attention to theories that can be used practically for analyzing and solving social problems. Among the theories that have emerged in recent years are the system theory, field theory, rational choice theory, etc., which are involved in the analysis of both social problems and their solution possibilities. can be shown. Thus, within the framework of social problem research, an opportunity is created to try to create a unified explanatory theory of social problems, with the help of which it is possible to further analyze social problems.

Keywords: *agribusiness sphere, social problem, approach, communication, to solve*

Introduction

The model of social problem analysis in the agribusiness sphere is based on the basic premises of the sociology of social problems, which shows not only the principles of defining a social problem, but also the methodology of its study. As is known, there are different approaches to social problems in the sociology of social problems, the essence of which differs from each other. The most famous definition of a social problem, which is usually cited by various authors, is the definition given by E. Rubington and M. Weinberg, who are well-known authorities in the field of social problem theory. They define a social problem as a situation that does not correspond to the values of a large number of people who claim that action needs to be taken to change it. Thus, based on this understanding of the social problem, it is possible to analyze based on the main methodological premises of the traditions in the study of social problems (Amrahov, Mirzazadeh, Taghiyev, Muradov, Hamidov, Karimova, 2023).

The objective component of a social problem is a real situation or objective conditions that have a stable and quantifiable set of external signs. It has its own tradition of research in objectivist sociology, and it intends to consider it in the context of two rather opposite approaches from a methodological point of view. One of them is the systematic approach traditional to objectivism and its well-developed methodology (Vartanova, 2016). Another approach is based on socio-cultural field theory, which is an alternative to systems theory. Both theories have their considerations, advantages and disadvantages, and both of them can be used to analyze the objective component of a social problem (Zubareva, Pilipenko, 2016).

Research

Application of systems theory allows to consider both society, group and individual as a system, to approach their problems as problems of open social systems. In this context, social problems, such as internal problems of the system, are associated with the hierarchy of subsystems and their relations, the lack of identity status of any of its subsystems, as well as the boundaries of subsystems. Social problems such as system functioning problems or "systemic problems" are considered system dysfunctions. Among them, there are three main types of dysfunctions: functional loss, when systemic goals are not met; functional errors when the "meaning" of the social system is destroyed; functional

conflict that develops when parts of a system act against each other, do not cooperate, and block the system. Intersystem problems are caused by the interaction of two or more systems (Amrahov, 2014). They are associated with systems incompatibility and negative inter-system relations, which in turn result from the absence of inter-system connections or the absence of extraneous or even counter-objective connections between systems (Uskova, Selimenkov, Anishchenko, Chekavinsky, 2014).

To clarify the complexity of the social problem in the sphere of agribusiness, the system model proposes to consider society at three levels: macro, meso and micro. At any of these levels, social problems arise, which determine its properties - scale, location, social consequences, etc. determines. To analyze the objective component of a social problem, in addition to the system model of society, one can also use the socio-cultural field model, which in many ways opposes the system model. According to the socio-cultural theory, society is not understood as a rigid system, but rather as a field of social interaction. The interpersonal domain is in constant motion and in that sense it is soft – it undergoes constant change and is subject to communication networks, relationships, dependencies, etc. is available in the form From this point of view, the smallest analysis is understood as any momentary state of the social field. Social problems, first of all, are associated with the immediate situation of the field, the rupture of the socio-cultural fabric or falling from the networks (appearance or disappearance of resources); secondly, with the interaction of social sphere levels; third, with the level structure of the social field, with the macro effects of micro events and the micro effects of macro events (Mirzazadeh, 2024).

Since there is no consensus about the advantages of the heuristic possibilities of a certain model, it seems possible to use the conceptual apparatus of both the system model and the field model to study the objective component of the social problem. Thus, it is possible to analyze the "objective basis" of the problem, that is, the externally observed situation. It should be noted that studies are not only based on quantitative characteristics, but also need to interpret the problem in a systemic approach or context. This can allow a deeper understanding of the real situation, its adequate assessment, and separate a person from unreasonable approaches that occur when trying to transform a newly emerging social problem into a simpler problem known to everyone (Mirzazadeh, 2023). However, it is necessary to pay attention only to the objective component of the social problem, but this is not enough for its analysis. It is also necessary to analyze the subjective component of the social problem, that is, the people who are directly affected by the identified problem (Amrahov, Rahimli, Mirzazadeh, Ibrahimli, Valizadeh, 2023).

The subjective definition of a social problem makes it possible to distinguish subjects of problem solving with different motives who define the analyzed situation as a "problem for themselves". Here we can distinguish the main groups of subjects: those who participate in the problem and those who deal with the problem (Dewanta, Sidiq, 2023). Participants in the problem include all people whose task or activity is determined by the existence of a social problem and has a concrete meaning for them. Those who deal with the problem, in turn, are those who suffer from the situation regardless of the problems and are aware of it. Those involved in the problem include those who deal with an existing social problem because of their professional duties or who are involved voluntarily because of their own interests. Professionals include, first of all, administrators who are responsible for making decisions about the social problem that has arisen; secondly, they are representatives of auxiliary professions (Vodyasov, 2016).

Conclusion

Various professions can provide public funds to solve a problem and thereby create jobs for themselves. In the process of solving the problem, both those who deal with the problem and groups of people who deal with the problem are actively involved or involved in the life cycle of the problem, which goes through several stages. It begins with the problem awareness stage of those concerned with the problem, followed by the public recognition or legitimization stage, and finally the institutionalization stage completes the process, i.e. defining social policy in relation to the process. All of these groups participate in the problem-solving process, have different opportunities to defend their interests, and use different strategies to achieve their goals.

It is necessary to note the special role played by communications in the process of legitimizing a social problem, that is, in the process of public recognition of the existence of a problem in society. Domestic research conducted in recent years shows that there is a disproportion between the so-called

problems in the mass media and the real problems confirmed by statistics. As a result, if the priority of solving certain social problems in the state is not accidental, it still depends on the interests of the administration, which has the opportunity to influence communications and the information they cover.

It should be noted that the most important sign of the emerging social problem is the destruction of social justice. This is a situation that always violates people's rights. Therefore, the solution of a social problem should not only be based on the analysis of all groups involved in the problematic situation, but should also be aimed at achieving social justice and thereby restoring the value consensus of society. It can be noted that there is no such comprehensive analysis of the problem in current studies of social problems. This allows, first of all, to attract the attention of researchers to the fact of the structural nature of the social problem, which must be taken into account in order to obtain complete information about the problem. Secondly, when describing the situation of the problem, it is possible and necessary to analyze it not only with quantitative figures, but also in the context of a systemic approach or the concept of the socio-cultural field.

Thus, researchers can study real social problems in more detail and then, based on the results of theoretical and praxeological analysis, propose solutions to the problem that are more adequate to the real situation. Such an approach creates preconditions for the transition from the currently dominant administrative method to methods based on the development of social partnership in solving social problems.

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Received: 19.02.2025
Accepted: 06.05.2025

DOI https://doi.org/10.36719/3104-4727/3/18-21

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Improving the Social Aspects of Management

Abstract

The social development of the country takes place in the context of the formation of systemic interaction, interdependence and integrity on a global scale. At the same time, the social development of the state cannot be realized without the integration of its components into a single macroeconomic and social space, as well as the independent formulation and implementation of the state's social policy. Social development is determined by many factors of the process of social transformation into economic development. The social sphere acts as one of the main subsystems of society, because the state of its sectors is important, sometimes decisive, affects every person, determines the quality of life. Finally, social policy is a type of capital that makes a decisive contribution to the country's economic development. However, the external influence of the areas of the social sphere is not limited only to the increase of the potential of the population as a labor force. It also includes social components that characterize the possibility of individual self-realization.

Keywords: *financial, commercial, market, social aspect, integrity*

Introduction

In modern conditions, these principles manifest themselves more prominently at potential levels. Unequal access to financial resources leads to an unequal area of minimum social security. This situation encourages a one-sided approach in the consideration of the social sphere, which is evaluated and evaluated as a factor limiting the growth of economic transformations. The desire of the social sphere to put an end to social dependence, to involve everyone in the self-financing of social costs, forces the commercialization of social spheres and the entire burden of its maintenance. In such conditions, society significantly reduces consumption: the increase in the volume of paid social services and their rather high price significantly narrows the circle of potential consumers of social services to the wealthiest layers of society (Ariabod, Moghaddasi, Zeraatkish, Mohammadi Nejad, 2019).

In modern reality, there are prerequisites for the emergence of the sphere of commercial social services not alongside and parallel to the social sphere, but through its reorientation. The process of denationalization of many organizations in the social sphere actually frees the state from the function of providing direct social services to citizens. Although support to the social sphere has traditionally been the responsibility of the state, at the current stage of economic and political development, it cannot and should not provide full social services to citizens. We are talking about the ratio of market and public sectors of social services.

Research

Studies show that following the market principles of management should not reduce the degree of responsibility of the state for the state of affairs in the sectors of the social sphere. The main directions of social policy have been defined as follows: legislative acts have been adopted, numerous social-oriented programs have been developed and implemented at different levels (Mirzazadeh, 2023). However, the problem of ensuring the social development of the country and its regions, especially the most sensitive part - the management of the social sphere, remains largely open today. It is impossible to talk about the existence of a serious and consistent social policy, both at the national and regional levels (Amrahov, Rahimli, Mirzazadeh, Ibrahimli, Valizadeh, 2023). The main causes of this imbalance include:

- lack of a consistent state social policy in the field of providing the population with socially important services;

- low-level interaction and coordination of state bodies on the problems of managing the social sphere of the regions;
- insufficient development of the system of criteria and mechanisms for the practical limitation of powers and duties on social sphere management problems;
- the predominance of traditional management models without determining the ability of the social sphere to work in market conditions does not allow for full management taking into account social processes;
- lack of effective feedback mechanism with consumers of social services, level of satisfaction of needs.

The main subjects of the management of the social sphere are state authorities and public self-government bodies (Uskova, Selimenkov, Anishchenko, Chekavinsky, 2014). Speaking about the state management system of the social sphere, in general, it can be noted that it has changed little over many decades. The rest are administrative bodies represented by ministries, regional institutions represented by departments, and municipalities. However, the nature and functions of vertical management have changed significantly, they have become less rigid and more liberal. This leads to changes in the internal structure and functions of management bodies. State institutions manage the social sphere in order to achieve positive changes ensured by the formation of the optimal structure of regional and local self-government bodies and the implementation of laws at all levels (Omoshev, Zhoroeva, Abyshov, Kaparova, Mamyrkulova, 2024).

At the same time, the activity of social sphere management subjects is often characterized by inconsistent decision-making and inconsistency, which is caused by the disruption of regional organizational structures of social sphere management. At the regional level, the social sphere is taking place under the conditions of transformation of management systems. Moreover, the qualification level of personnel does not always allow leaders to think in terms of modern social policy and shape the functions of state bodies accordingly. This is primarily due to the fact that the reconstruction of the centralized management system of the social sphere, in particular, is not accompanied by the formation of adequate market structures and mechanisms. Regional management systems and local budgets are often unable to implement expanded management functions as a result of decentralized management and financing. At the same time, improvement of organizational structures is one of the priority areas of reforms in the management system of the social sphere. This will strengthen the fragmented management vertical, pooling financial, material and human resources, which is particularly important in the context of centralization of management and lack of funding (Gazizov, 2014).

The high level of uncertainty in the development of the social sphere requires constant amendments to the legislative framework. The new social strategy and the current situation in the regions require an optimal distribution of responsibility for the state of the social sphere among authorities, creating a full-fledged legislative and resource base for social policy. Only such an approach meets the goals of increasing the role of the state in the social process, strengthening the common social space, and implementing centralized control over it. Thus, the main reason that hinders the planned development of the social sector is not the lack of financial resources, but the lack of an efficient management system. Incorrect assessment of the management factor leads to negative social consequences and deformation of society (Amrahov, Mirzazadeh, Guliyeva, Gazanfarova, 2024). The lack of practical social management theories hinders the development of regional markets for social services.

What has been said allows us to conclude that it is necessary to pay attention to the main problem that forms the basis of modern social policy - the methodological issues of the development of flexible and innovative management systems. At the same time, it should be noted that the main directions of social development for both the state and the region may be the same, but the organizational, legal and economic mechanisms for the state and the region should be the same. "Regionalization" of the management system of the social sphere is also related to the fact that it is possible to assess the impact of the latter on the quality of life of the population under market conditions only in the regional context.

The formation of regional management systems, including the social sphere, is a fairly new phenomenon. Social policy is implemented on the basis of established principles. The management of the social sphere of the regions combines both national principles and regional characteristics in

its content. Of course, the characteristics of social processes require adequate reflection in determining social sphere regulation measures (Amrahov, Hajiyeva, Mirzazadeh, Taghiyeva, Karimova, Karimov, 2023). At the same time, specific tasks of the social development of the regions should be solved by the subjects themselves. They play a leading role in the preparation and implementation of regional social programs that take into account the level of socio-economic development of the territories.

A comprehensive review of the social sphere prompts us to group and classify areas of socially important services, taking into account the territorial factor, depending on the degree and form of the impact of the results of their activity on the satisfaction of people's needs. This situation defines a clear connection between a person, his quality of life and the social sphere of the region. This is another thesis in favor of turning a balanced regional policy capable of adequately and promptly responding to the diversification of the population's needs into an integral element of the general management system of the social sphere.

The most general definition of social sphere management should be understood as a process of active interaction between the object of management (social sphere of the region, social infrastructure) and the subject of management (multilevel structure). The main goal of the management of the social sphere is to ensure the process of continuous development of social spheres through the introduction of new organizational forms of state services that ensure the production, delivery and consumption of social services (Shchevyev, Bykov, Zyablitseva, 2020). The meaning of managing the social sphere is to coordinate, adapt, and improve the structure of this extremely complex social system. The complexity of the structure of the social sphere makes it necessary to pay attention to the fact that this field of activity is a necessary component of the economic complex of any region and plays a key role in maintaining the labor potential. Therefore, it is important to consider the following in the management of the social sphere:

- the place of the social sphere operating in the market environment as an organic component of the economy;
- a link in the social division of labor and cooperation system;
- its importance as a certain segment of the market of important services that determines the quality of life of the population.

Modern markets of socially important services are a complex system of economic relations connecting consumers and producers through the interaction of the supply and demand mechanism in a competitive environment, the economic and legal independence of business entities, and free pricing (Zubareva, Pilipenko, 2016). However, despite the fact that social spheres are actively included in market relations, every member of society should freely use the minimum socially important services provided by the state. The specificity of social spheres requires that their main activities are mainly carried out by state (municipal) structures. In this way, it is possible to prevent the shortcomings inherent in economic exchange relations between the producers and consumers of social services, and realize the requirements of social justice inherent in the state ideology. At the same time, the use of other forms of customer service should not be intrusive. The dominant role of public administration, together with the flexible use of market regulation methods, is the main factor that ensures the dynamic functioning of the social infrastructure.

Conclusion

The solution to the problem of improving the management systems of the social sphere also involves changes in the sphere of planning, forecasting and programming of social development as the main tools of the implementation of the state's social policy. A developed market cannot be imagined without planning, but it must be transformed from a tool of administrative coercion into a tool for finding reasoned, science-based, balanced solutions to achieve social development goals.

The most effective method of managing the social sphere is the program-goal method, developed taking into account the internal capabilities of territorial self-government. To date, enough experience has been accumulated in the development of such programs, which requires its generalization. There is still no clear understanding of which economic and social problems require programmatic solutions, and which can be solved within the framework of current action or medium-term planning and forecasting. At the same time, in order to ensure the solution of the most important problems of

social development with program methods, special attention should be paid to the justification of the criteria for determining regionally oriented targeted programs.

In the regulation of social processes, the problem of social partnership plays an important role as a way to achieve consensus in society, as well as a means of joint preparation of decisions on social issues by the state, regions and public organizations. A necessary component of the market strategy for the development of the social sphere is the system of marketing research, which can significantly increase the level of profitability and competitiveness of organizations in the social sphere. Thus, it seems quite reasonable to follow the principle of a comprehensive approach to the management of the social sphere, taking into account the organizational, management, functional and economic means of regulation. At the same time, it is necessary to take into account that the nature and structure of the social sphere undergoes changes under the influence of various factors of its internal and external environment. At the same time, the process of internal reform of the social sphere itself is ongoing, new principles, methods and mechanisms of its management are being developed. This situation requires a systematic study to increase the efficiency of the activity and development of the social sphere. What has been mentioned suggests that it is necessary to build a methodology and a methodology based on scientific, innovative methods and management principles, taking into account the modern requirements for market relations, social policy of the country and regions.

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Received: 15.01.2025
Accepted: 12.04.2025

DOI https://doi.org/10.36719/3104-4727/3/22-24

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Features of Formation of Risk-Management System in Enterprises

Abstract

At present, one of the most important aspects of the success of enterprises is the professional management of risks due to the formation of a risk management system. Risk management determines the ways and means of ensuring the stability of the enterprise, its ability to withstand adverse situations. The need to start developing and implementing risk management practices is mainly due to the fact that currently there are no real mechanisms for their financial support in crisis situations. On the other hand, risk management is a rather complex activity that requires significant costs of material and human resources. The lack of a common understanding of risk management leads to an unclear interpretation of the concept of "risk" itself and the diversity of its manifestations and the factors affecting its value, nature and content.

It should be noted that many authors understand the process of risk management aimed at reducing the degree of risk. The main goal of risk management is to determine ways to reduce it, given that time and resources are limited. Purposeful actions to limit and minimize risk in the system of economic relations are called risk management.

Keywords: *risk, management, decision, strategy, enterprises*

Introduction

Risk management can be viewed as "a multi-stage process aimed at reducing or compensating damage to the facility during adverse events. It is important to understand that harm minimization and risk reduction are not adequate concepts. At the same time, various financial management mechanisms, such as insurance, provide compensation without affecting either the size of the damage or the probability of its occurrence (Ekimova, 2013).

The risk management system includes the development and implementation of economically justified recommendations and measures for a given enterprise aimed at reducing the initial level of risk to an acceptable final level. Such definitions are associated with the assessment of risk as a potential threat. Risk assessment and analysis processes are an integral part of the risk management process, and what is called risk management in the sources mentioned above should be referred to by decision makers as a possible response to risk. In addition, risk management should also allow for risky decisions (Amrahov, Mirzazadeh, Taghiyev, Muradov, Hamidov, Karimova, 2023). Therefore, taking into account the comments made, it can be argued that in practice it would be appropriate to understand how the management subject affects the object in the context of enterprise risk management (Isakov, 2010).

Research

Subjects of the risk management system are those related to decision-making in all areas of the enterprise and at all levels of management. Thus, the subject of risk management is, first of all, the head of the enterprise, as well as heads of structural divisions and risk managers. The objects of management in risk management are economic relations both inside and outside the enterprise. Undoubtedly, risk management should be based on the general principles of management, which include systematic, integrated, systemic, dynamic, purposeful, flexible and object-oriented management (Amrahov, Hajiyeva, Mirzazadeh, Taghiyeva, Karimova, Karimov, 2023):

- the sequence in which it is necessary to take into account all their interactions and interactions in order to manage risks. In addition, systemic relationships between different risk management tools should be considered;

- complexity - consists in the need to take into account the complexity of the management object and to use all risk management tools without exception to achieve positive results;

- dynamism that requires taking into account the constant development of the enterprise of risk management;

- sustainability, that is, it is necessary to continuously deal with risk management;

- purposefulness, which suggests that risk management should be carried out not randomly, but with certain goals in mind;

- flexibility and adaptability, indicating that the risk management system must adapt to rapidly changing conditions;

- it means taking into account the features of the management object, even characterizing the same enterprises with specific features that affect the efficiency of the application of a specific risk management tool.

It should be noted that the nature of the risk management system is specific, and this is reflected in the specific principles on which it should be based, namely:

It should be noted that the nature of the risk management system is specific, and this is reflected in the specific principles on which it should be based, namely:

Among the issues of risk management methodology for enterprises, the most important is the identification of the main stages of this process. When studying this aspect, a number of authors dealing with risk management problems are of the opinion that the beginning of the risk management process is the identification and analysis of risks. But again, in the first stage of risk management, it is necessary to define the objectives in accordance with the above principles, for this it is necessary to define the object of risk management1 and the desired result. At the stage of identification for enterprises, the enterprise takes risks and determines the factors necessary to realize and describe all possible risks in this type of activity by determining its factors and causes. It is important to identify as many co-occurring risk factors as possible (Ismayilov, 2019).

The main point of the management process is analysis and evaluation, depending on criteria such as the degree of impact on the enterprise's activity, etc. It should be noted that in the analysis and assessment process, risks, risk-creating factors are separately classified according to external and internal factors. Nevertheless, the last step should be a comprehensive assessment based on the interaction of internal and external factors (Amrahov V., Rahimli F., Mirzazadeh N., Ibrahimli G., Valizadeh, 2023).

The risk-management system in enterprises includes the activities of the enterprise management as a whole, the enterprise's position in a certain market, any project, product, operation, etc. is related to Determining the acceptable level of risks, as a rule, is carried out depending on which assets of the company and to what extent they are negatively affected by risk factors. Depending on the scale of losses, based on the concept of acceptable risk, a scheme is drawn up that includes a risk-free zone, a zone of acceptable, critical and catastrophic risks. However, the allocation of a risk-free zone corresponding to profit contradicts our understanding of the economic nature of risk, because it is the expectation of large profits associated with possible large losses, therefore, it is illogical to allocate a risk-free zone according to this criterion (Mirzazadeh, 2023).

Conclusion

In enterprises, the risk management system is the control of the existing process at each stage. The main task of control is to identify deviations from the planned results, to evaluate the effectiveness of the used risk management methods. The link in this system is a risk management information center that forms databases by collecting and processing data streams, namely:

- a lot of extrapolated information summarizing the previous development experience of the enterprise and the market;

- information obtained during the preparation of the solution;

- information obtained in the process of implementing the decision or the chosen strategy, including information about emergency situations;
- information obtained during risk analysis and assessment;
- information obtained during the application of risk management methods, etc.

The processing of these data streams leads to the creation of:
- risk monitoring archive;
- catalog of risk factors;
- bank of risk analysis methods;
- a bank of risk management methods.

It is well known that businesses are currently facing many types of risks. At the same time, the market risk is becoming more and more important, keeping a fairly high degree of influence of natural and climatic factors. This, in turn, suggests that it is necessary to strengthen the information block on market research. The database formation block is of great importance in the risk management process, as most of the steps in this process are based on existing data. In addition, this block should form a bank of information about the decisions made and the results of their implementation.

Risk management system includes management strategy and tactics. Strategic risk management in enterprises is the decision of the management to choose the direction of response to the main types of risks in order to achieve the goal. goals. A risk management strategy predetermines its tactics - specific techniques and methods for achieving the set goal under specific conditions. The task of risk management tactics in enterprises is to choose the most optimal solution and the most acceptable risk management methods in these economic conditions.

As part of the risk-management system in enterprises, it is appropriate to find the appropriate balance between threats and profitability and to understand what influence the management subject has on the object in order to ensure the successful operation of the enterprise in general. At the same time, risk management in enterprises should be carried out on the basis of general management principles, taking into account the characteristics of risk management and its special principles.

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Received: 28.01.2025
Accepted: 11.04.2025

DOI https://doi.org/10.36719/3104-4727/3/25-32

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Development of Research on Groundwater Pollution and Economic Protection During Well Construction

Abstract

The polluting properties of the drilling mud are determined by the mineralogical composition of the drilled rock and the remaining drilling mud residues. Analysis of the phase, fraction and component composition of the mud, as well as its physicochemical properties, shows that due to the adsorption of chemical reagents used to clean the drilling mud on the surface of the mud particles, it exhibits obvious polluting properties. Thus, its composition includes a significant amount of oil and oil products, organic substances hazardous to the natural environment, and soluble mineral salts toxic to soil and vegetation. Thus, it can be concluded that drilling waste is dangerous for the natural environment, since it contains a large number of pollutants. In this regard, it is impossible to give a completely unambiguous description of the processes occurring in the natural environment associated with its pollution during well drilling and to assess the consequences of this negative impact.

This pollution leads to not only ecological, but also economic consequences. Modern technologies and protective measures applied to prevent pollution during well drilling also require efficiency from an economic point of view. It is important to develop innovative methods to reduce and manage groundwater pollution, as well as to assess the economic efficiency of these methods. Compliance with environmental restrictions, waste reduction and effective resource management in the oil and gas sector affect production costs. In addition, economic analysis of pollution risks and development of appropriate compensation mechanisms allow for the preservation of environmental and economic balance in this area.

Keywords: *drilling mud, environmental impact, economic efficiency, protection measures, environmental and economic balance, innovative methods*

Introduction

The assessment of damage caused by emergencies should be achieved using approaches and methods (techniques) agreed upon and permitted for use by management bodies at various levels of the national economy (state, territorial, sectoral). At the same time, it is possible to improve and refine industrial methods for assessing damage, develop more substantiated methods for assessing damage, taking into account new economic conditions, the impact of damaging factors of emergencies, changes in the regulatory and legal framework, and a number of other factors. It should be borne in mind that both the approaches and methods used in practice and new ones allow us to obtain an assessment of damage, which is a more or less reasonable approximation to its actual value. In practice, damage is often considered justified when all interested parties agree on its amount (and, accordingly, the calculation method). In this regard, the reliability of the damage assessment method can be considered a subjective concept. If all interested parties agree with the assessment obtained on its basis, then this method is not considered reliable, its reliability must be confirmed by law.

The assessment of damage caused by an emergency should be formulated in such a way as to reflect the entire composition of cause-and-effect relationships from the moment of the emergency to the damage caused to economic entities and individuals. This can be expressed as the following chain: “the scale of the emergency taking into account its source” - “the nature and strength of its impact on the socio-economic system” - “the scale of disruption (degradation) of the socio-economic system” - “the impact of the damaging factors of the emergency on the economic object” and the size of the natural factors resulting from the natural losses of the economic object of the emergency” - “economic

assessment of damage". In general, the entire complex of approaches and methods for assessing economic damage from emergencies, implementing them, is divided into two main groups: direct calculation methods and indirect assessment methods (Imanbekov, Bozov, Ordobaev, Abdykeeva, 2013, pp. 65-95).

Damage (loss) is determined not by the content of the emergency itself, but by its consequences. The same emergency can lead to the same result as a result of different emergencies, but can lead to different specific consequences.

To assess the damage caused by an emergency, an expert approach can be used to determine the value of damage for various categories of economic facilities based on the requirements of relevant regulatory legal documents, direct inspection of the facility by an expert, as well as the collection and generalization of market data on the value of similar economic facilities.

The final value of the damage caused as a result of an emergency, indicated in the damage assessment act, drawn up on the basis of the Methodology and in accordance with the procedure, may be considered recommended for the purposes of carrying out legal actions (transactions) with the object of assessment, if no more than 6 months have passed from the date of drawing up the assessment act to the date of assessment of the object (submission of the legal act) or to the date of submission.

Personal risk – the risk (frequency of occurrence) of certain types of harmful effects arising from the implementation of certain hazards at a certain point in space (where a person can be located). It characterizes the distribution of risk. For emergencies – the probability of a certain type of damage (fatal outcome, disability, severe injuries without loss of working capacity, moderate injuries and minor injuries) arising from the implementation of certain hazards at a certain point in space. The quantitative value of individual risk is equal to the probability (frequency) of a certain type of harmful effects.

Indirect economic damage includes unavoidable expenses, losses, damages resulting from secondary effects (actions or inactions resulting from the main actions) of a natural, technogenic or social nature. Indirect damage, unlike direct damage, can manifest itself long after the moment of the initial action; does not have a clearly defined territorial affiliation and in most cases has the so-called cascade effect, i.e. secondary actions (inactions) lead to a series of subsequent actions (inactions) and, accordingly, indirect damage.

Indirect damage from emergency situations – damage resulting from an emergency situation, but not included in direct damage. Indirect damage consists of the following components:

• damage associated with disruption of the activities of economic facilities – damage associated with the suspension (stoppage) of the activities of the facility or the injured person (including damage associated with lost profits);

• damage to "third parties" – indirect damage caused to subjects as a result of an emergency;

• costs associated with the elimination of emergencies.

A specific feature of the assessment of indirect economic damage is that its components, as a rule, cannot be documented. They are determined using appropriate methods or are assessed, including by experts. In addition, due to the systemic nature of economic damage from emergencies and cascading factors, controversial provisions inevitably arise regarding the inclusion or exclusion of individual components in the composition of indirect economic damage. In this regard, calculations and/or assessments of indirect economic damage, especially those that claim to fully take into account all components of the "emergency factor", objectively have a sufficiently high degree of uncertainty and insufficient reliability.

Direct calculation methods, as a rule, reflect all elements of the chain of causal relationships that cause economic damage to economic entities. They include the assessment of the effects arising between all links of this chain and the calculation of various components of the losses of the economic entity, expressed in value. Approaches to the assessment of damage caused by emergencies based on the use of direct calculation methods are quite widely used in the assessment of losses of objects as a result of technogenic accidents and natural disasters, terrorist attacks. This is due to the fact that objects (territorial and natural complexes, enterprises, residential areas) damaged by such events are usually characterized by a fairly clear structure, the value of its elements can be estimated more or

less accurately. In this case, the loss of elements can usually be associated with the power of the event (the power of the earthquake, the power of the explosion, the duration of the fire). To obtain reasonable and objective estimates of damage caused by emergencies (taking into account the causes and factors of damage occurrence), a direct calculation method is used, which predetermines the high accuracy of the damage assessment based on them. However, these methods are quite labor - intensive and difficult and require a large amount of initial information. As a result, their application in practice is not always possible.

Indirect assessment methods are less labor - intensive. They are based on the principle of transferring general patterns of action of harmful factors to a specific economic object. This principle is implemented using a number of standard indicators that convert the type and magnitude of the impact of the damaging factor into economic damage to the economic entity.

At the same time, the emergency factor should be taken into account at all levels of data collection, its generalization and generalization, analysis and forecasting of indicators of socio-economic development of organizations (enterprises), territorial entities and the Russian Federation as a whole. It is appropriate to distinguish three main levels of formation of information on economic damage from emergencies: lower, middle and upper (macroeconomic).

The lower level is the level of the "primary link" (organization (enterprise), municipality).

This is the main level of collection of primary data on the emergency factor - economic damage caused as a result of an emergency, since accounting and planning and economic services in organizations (enterprises) keep records of the state of property of organizations (enterprises), its disposal for various reasons, including as a result of an emergency. The task is to provide this information for use by state statistical bodies and, on this basis, to use it for its further processing, analysis and generalization at the middle and upper (macroeconomic) levels.

At the level of municipalities, initial data on economic damage caused by emergencies in the social sphere, including non-accounting data, should be obtained.

Proposals for forms and indicators - basic data on damage caused by emergencies - are presented below.

The intermediate level is the level of federal subjects and industries (ministries and departments).

Damage caused to the state from emergencies - a comprehensive assessment of the socio-economic consequences of emergencies in monetary terms.

DAMAGE TO INDIVIDUALS - includes injuries and damage to the health of individuals.

ACTUAL DAMAGE FROM EMERGENCY SITUATIONS - damage from the emergency that has occurred.

ACTUAL ECONOMIC DAMAGE - losses that have occurred as a result of the damaging factors of the emergency and are estimated in monetary terms. For practical purposes, actual economic damage is usually calculated on an annual basis and expressed in prices (rates) of the previous year. This "delay" is explained by the features of statistical reporting. In economic calculations, an annual delay is considered normal and is taken as a basis.

VALUE – property (money), intangible assets, as well as their properties and relationships.

ECONOMIC DAMAGE – material losses and expenses associated with damage (destruction) of production and non-production objects of the economy, its infrastructure and disruption of production and cooperation relations. When determining economic damage:

• firstly, the transition (recalculation) of physical damage indicators to cost (money) units is carried out;

• secondly, the economic processes of the activities of economic and social infrastructure objects are directly or indirectly reproduced (modeled).

The average damage from an emergency can be determined using statistical data. The average damage for rare events can be estimated using data calculated for various scenarios of the onset and development of man-made, natural or terrorist emergencies and subsequent average calculations taking into account the scenarios.

When justifying measures to prevent accidents and disasters and mitigate their consequences, risk is usually considered as an integral indicator that includes both the probability of an undesirable event occurring within a year and the damage associated with it.

Depending on the nature of the damage under consideration, the type of risk is determined - economic, social, environmental, etc.

Depending on the tasks to be solved, risk is presented in the following forms:

• the mathematical expectation of a certain type of loss each year;

• the probability of an adverse event occurring within a year.

In the first case, the risk is determined by the formula:

$$R = pЧg ,$$

Here, p – probability of occurrence of an emergency (frequency of accidents, disasters) per year; g – potential damage from an emergency.

The risk dimension is consistent with the nature of the damage and has the form: damage/year. In the second case, the risk is determined from the ratio:

$$R = pЧs ,$$

Here, p – probability of an emergency occurring in a year; s – probability of an adverse event occurring given the occurrence of an emergency.

In the second case, the risk measure, taking into account the dimensionlessness of the parameter s, has the form: 1/year.

Taking into account the main task - the protection of the population, it is usually considered a negative event as a degree of danger to human life.

The probability of an emergency situation occurring p (the frequency of an accident or disaster) is determined using hazard zone maps or statistical data.

The potential damage from an emergency situation is determined taking into account the probabilistic nature of the processes, such as the mathematical expectation of damage M(U).

Given the occurrence of an emergency situation, the probability of an unpleasant event P can be determined using the mathematical expectation of damage to elements of a settlement or population:

$$P=MVU;\ P = M_N N ,$$

M(U) – mathematical expectation of damage to elements of a populated area; V – number of elements in a populated area (buildings, structures, utilities, etc.); M(N) – mathematical expectation of population losses; N – total population.

Total damage is the sum of direct and indirect damage. Total damage is determined at a certain point in time and is intermediate compared to total damage that will be quantified over a long period of time. The need to take into account the time-distributed or remote manifestations of damage is especially important for emergencies associated with the impact on environmental components or exposure to radioactive materials. Thus, the duration of the manifestation of damage from an accident at a nuclear power plant can reach 100 years.

The total economic damage accompanying an emergency, based on the above, can be determined as the sum of direct economic damage and indirect economic damage.

The calculated dependencies are presented by the formula:

$$U = U^p + AU^k,$$

Here, A – coefficient of reduction of costs at different times (discount coefficient);

U – economic damage from emergencies; U^p – direct economic damage; $U^к$ – indirect economic damage.

Anthropogenic impact on groundwater in the areas of development and exploitation of oil and gas fields has become especially noticeable in recent times due to the intensive technogenic impact of drilling and exploitation processes. At the same time, the most negative impact on groundwater and

subsurface waters is associated with the well construction processes. The main reasons for the penetration of pollutants are the low quality of the waterproofing of slag pits and the discrepancy between their volumes and the volumes of waste generated, mainly liquid waste, due to their high accumulation capacity and mobility. It should be noted that fresh groundwater used for drinking, domestic and technical purposes and relatively shallow water under pressure are more susceptible to pollution.

Fresh groundwater is concentrated mainly in the upper part of the earth's crust (in the pedosphere), in the zone of active water exchange at a depth of up to 150-200 m, rarely deeper; below, in the zone of slow groundwater flow, there are waters of increased mineralization.

Many natural and technogenic factors affect the change in the natural chemical composition of fresh groundwater, the main of which are the physicochemical properties and composition of polluted wastewater and its movement from the feeding zones to the discharge areas or its physicochemical interaction with host rocks of various composition and structure during the subsidence of the aquifer. The penetration of pollutants into aquifers occurs as a result of the process of leaching of wastewater through low-permeability layers and lithological windows, the attraction of river flows, irrigation systems, etc. In addition, the nature of pollution depends on climatic conditions, the nature of soil cover and vegetation, its relief, density, and the hydrographic network.

The entry of pollutants contained in wastewater into groundwater, first of all, leads to a change in the oxidation-reduction state in the infiltration area; this leads, in particular, to an increase in the concentration of iron, calcium, and magnesium sulfates in water as a result of the oxidation of finely dispersed pyrite contained in the rocks.

In peaty and swampy areas, along with the decrease in groundwater levels, organic matter in rocks decomposes, which, as a result of the enrichment of water with organic matter and carbon dioxide, leads to an increase in the amount of nitrogen-containing substances extracted from rocks and iron in water (Gabibov, Gabibova, 2015, pp. 91-94).

Various organic substances that leach into aquifers from waste stimulate the intensive growth and activity of microorganisms in the aquifer, which leads to a further deterioration in water quality.

Local and regional groundwater pollution differs in terms of the scale of impact on aquifers.

Under the local source of pollution (sludge pits), a groundwater contamination area is formed, which is very diverse in terms of shape and size in plan, as well as in terms of penetration into the aquifer and depends, firstly, on the intensity and nature of the ingress of the pollutant (permanent, periodic), on its chemical composition, density of the polluted water and its secondary filtration, secondly, on the hydrorheological conditions of the area from the pollutants - the lithological structure, the hydrogeological parameters of the aeration zone and the aquifer, the direction and speed of movement of groundwater; thirdly, on the nature of the manifestation of the processes of physicochemical interaction between the polluting components and groundwater and rocks. With the multicomponent composition of filtered polluted wastewater (drilling wastewater), a complex contamination area is formed.

The aggregate acquires a regional character under the influence of numerous local sources, which determine the territorial nature of pollution. Such pollution is characteristic of large oil and gas fields, especially for intensive drilling networks. The main source of groundwater pollution is industrial and technological drilling waste and sludge pits, which are products of well development. The cause of pollution should be considered, first of all, the poor waterproofing of the bottom and walls of the pits, especially those built in permeable rocks. Studies have shown that pollutants penetrate the soil with a soil filtration coefficient of more than 105 cm/s. Groundwater, in general, is better protected from pollution than surface waters, since the aquifer is covered with a more or less thick layer of soil and rock. However, if the cover layer is permeable and has a small thickness, then polluted water seeping from the surface quickly penetrates the aquifer and pollutes it. Only when impermeable rocks are above the aquifer can it be protected from pollution (Kurchenko, 2007, pp. 138-145).

Groundwater not covered by impermeable rocks is usually less protected than the main horizons of confined groundwater and usually receives the main part of the pollutants that seep from the surface. Pollutants then penetrate from groundwater at low pressure into deeper confined and unconfined horizons - through lithological windows in aquifers, during flow from separate horizons

with low permeability, through the annular gap of wells due to poor-quality cementing, etc (Gabibov, Amrakhov, Odzhagov, 2011, pp. 39-43).

The degree of natural protection of groundwater from surface pollution depends on factors that determine the possibility, speed and time of seepage of pollutants from the surface into the aquifer. Such factors include: thickness, permeability and active porosity of the overlying rocks;

the value of the difference in levels (pressures) between the contaminated and groundwater of the aquifer in question, taking into account the decrease in water level during the operation of the water intake facility; type and chemical composition of pollutants, intensity and nature of their penetration into groundwater, physicochemical, especially sorption, properties of overlying rocks and pollutants, determining the possibility of complete or partial absorption of pollutants of a certain composition or their transformation into a harmless state.

When assessing the protective capacity of clay and clayey rocks located above the used aquifer, it should be taken into account that in the aeration zone, clays often have vertical macroporosity and increased water permeability due to the presence of cracks and drying macropores formed as a result of the development of plant roots and shrinkage during alternating wetting and drying. As the depth of formation of clayey rocks increases, their porosity and water permeability decrease. At great depths, in calm tectonic conditions, clayey rocks are characterized by a very low filtration coefficient (<10-8 m/day) and are therefore practically water-resistant.

The diversity of geological and hydrogeological conditions, the composition and structure of overlying rocks, as well as the characteristics of individual types of pollution (microbiological, chemical) determine large differences in the natural protection levels of groundwater (Guignet, Walsh, & Northcutt, 2016, pp. 10-25).

When it comes to the issues of protecting groundwater from pollution during well drilling, it is necessary to assess the degree of their natural protection.

Protected waters include pressurized and non-pressurized interlayer waters that have a continuous impermeable roof covering in the area under consideration and that have not been recharged here either in natural or disturbed conditions, and are recharged from groundwater, rivers and reservoirs through separating layers or hydrogeological windows.

Insufficiently protected groundwater includes groundwater recharged in the distribution zone, as well as pressurized and non-pressurized interlayer waters that are recharged from upper groundwater, rivers and reservoirs with direct hydraulic connection through separating layers or hydrogeological windows.

The most negative pollutants of groundwater and groundwater are oil and oil products. Oil and most oil products are immiscible with water, their solubility is relatively low. For example, for liquid paraffins and naphthenic hydrocarbons, it is 40-150 mg/l, which is many times higher than the MAC. The solubility of aromatic hydrocarbons is higher and reaches 500 mg/l for toluene and 1800 mg/l for benzene (Morris, Lawrence, & Chilton, 2013, pp. 62-85).

With a small amount of dispersed petroleum products, they remain in the aeration zone, cover the surface of grains and cracks in the rock, and when they reach the capillary fringes, they spread horizontally to a certain distance. In this case, groundwater contamination with dissolved hydrocarbons occurs as a result of washing out the rocks of the aeration zone by atmospheric precipitation. Seasonal fluctuations in the surface of groundwater slightly change the height of petroleum products concentrated in the capillary fringe, which increases the size of the contaminated part of the rocks in the aeration zone. The movement of petroleum products through the aeration zone is accompanied by their partial stratification, adsorption on rocks, biochemical decomposition and evaporation. With a large number of penetrated petroleum products, during vertical infiltration, they fill the entire aeration zone, capillary fringes and spread to the surface of groundwater in the form of a layer of various thicknesses.

Emulsified and dissolved hydrocarbons migrate in the aquifer with groundwater flow in the direction of groundwater flow. Lenses of petroleum products can also move, the speed of their spread is usually lower than the speed of groundwater flow and depends on the physical properties of petroleum products (viscosity, density, surface tension) and water-borne samples (granulometric composition, fracture, permeability, water content). At high flow rates, the formation of aggregates

from asphaltene particles occurs as a result of turbulent diffusion and turbulent transport. These structures are unstable and can break up into individual particles as a result of the fragmentation of aggregates under the influence of shear flow, and as the shear rate increases, the equilibrium shifts towards the formation of individual particles. At high flow rates, the formation of aggregates from asphaltene particles occurs as a result of turbulent diffusion and turbulent transport. These structures are unstable and can break up into individual particles as a result of the fragmentation of aggregates under the influence of shear flow, and as the shear rate increases, the equilibrium shifts towards the formation of individual particles (Kelbaliyev, Rzayev, Rasulov, Suleimanov, Guseynova, pp. 246-250).

During anaerobic biochemical reactions in the aquifer, oxidation of petroleum products occurs, which is accompanied by the development of a sharply expressed reducing environment. Under these conditions, dissolved oxygen and nitrates disappear from the water and the amount of sulfates decreases, but ammonium, hydrogen sulfide appears, the amount of iron, manganese and free carbon dioxide increases (Guignet, Walsh, & Northcutt, 2016, pp. 10-25).

The ingress of organic substances into wastewater used in the technological stages of well construction also causes pollution of groundwater and subsurface waters. Such pollutants undergo biodegradation with the formation of harmless substances under the influence of the microbiological factor of the soil environment. However, with a large influx of organic substances, the biological activity of microorganisms is so enhanced that this leads to a change in the oxidation-reduction conditions, composition and quality of groundwater and subsurface waters.

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Received: 06.02.2025
Accepted: 20.05.2025

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Signed: 24.06.2025
Online publication: 28.06.2025
Format: 60/84, 1/8
Stock issuance: 4,25 p.s.
Order: 61

It has been published in the printing house
“ZANGAZURDA”
Address: Baku city, Matbuat Avenue, 529,
“Azerbaijan” Publishing House, 6th floor
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