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Sustainable economic diversification in the Mangystau region: Strategic pathways and prospects

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Abstract

Economic diversification is one of the key factors for the sustainable development of regions, especially those that are heavily dependent on the export of raw materials. International experience shows that countries that have successfully implemented diversification strategies, such as Australia and Norway, have not only reduced vulnerability to fluctuations in commodity markets, but have also developed sustainable economic models focused on innovation and human capital development. The purpose of this study is a comprehensive analysis of the economic situation in the Mangystau region in order to identify key problems and opportunities to reduce dependence on the oil and gas sector. Particular attention is paid to adapting the experience of Australia and Norway, which have successfully implemented diversification strategies that have ensured their economic sustainability. The study uses an integrated methodology that includes quantitative and qualitative methods of analysis, as well as a comparative analysis of the economic models of these countries, which allows us to identify the most relevant approaches for adaptation in regional conditions. The empirical base of the study is based on data from a structured survey involving 150 respondents from various social and professional groups, including representatives of business, government agencies, agricultural and tourism sectors. As a result of the analysis, priority areas of diversification were identified – tourism, agro-industrial complex and renewable energy. Norway's effective use of sovereign wealth funds and Australia's infrastructure reforms underscore the importance of strategic investments in sustainable development. To ensure successful diversification, measures have been proposed, including the creation of specialized industrial zones, improvement of the investment climate, and development of public-private partnership mechanisms. Long-term investments in renewable energy and the introduction of modern agricultural technologies can significantly reduce the region's dependence on the hydrocarbon sector, contributing to the creation of new jobs and an increase in household incomes. The implementation of educational initiatives aimed at training specialists for developing industries will increase the competitiveness of the region in modern economic conditions. The modernization of the transport and logistics infrastructure, including the expansion of port facilities and railway networks, will strengthen the region's trade ties, attracting foreign investment and expanding export potential. In addition, the development of ecotourism based on the natural and cultural heritage of the region will contribute not only to economic growth, but also to the social integration of the local population into sustainable development processes.

Keywords: Australia, Diversification, Government regulation, Mangystau economy, Non-resource sector, Norway.

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1. Introduction

The relevance of this research topic is due to the need to reduce the economic vulnerability of regions whose economies significantly depend on the extraction and export of natural resources, such as the Mangystau region of the Republic of Kazakhstan. The region's significant dependence on hydrocarbon revenues creates risks associated with fluctuations in global commodity prices, which increases the instability of the economic system and limits opportunities for long-term growth. In addition, such dependence hinders the active development of innovative and high-tech industries, which are key factors in the formation of a sustainable and competitive economy.

The purpose of this study is to study and evaluate the feasibility of implementing effective elements of the Australian and Norwegian economic models in the Mangystau region of Kazakhstan.

A hypothesis for the study. Mangystau region can reduce its dependence on the export of raw materials and solve the problem of lack of technological progress by including elements of the economic policy of Australia and Norway in its own economic plan.

In order to support the choice of Mangystau in Norway and Australia as models of diversification, it is important to emphasize the following.

1. Mangystau is very interested in Norway's special approach to natural resource management, especially in the oil and gas industry.
2. Despite Australia's heavy dependence on commodity industries, Australia's successful practice in infrastructure development and economic diversification is a driving force in choosing a development plan based on its experience.
3. Extraction and export of natural resources such as minerals and oil have long been associated with Australia, Norway and Mangystau.
4. One of the effective mechanisms for managing income from natural resources used by Norway is its unique State pension fund (Fund for Future Generations).
5. Norway is actively investing in innovative and environmentally sustainable technologies, including the development of renewable energy sources and the introduction of green technologies.
6. Australia has effectively achieved economic diversification by fostering extensive infrastructure development and cultivating a conducive business environment, thereby facilitating increased investment in non-resource sectors.

Mangystau region can significantly benefit from the analysis of the experience of Norway and Australia in overcoming economic downturns and adapting to the transformations of the global market, especially in the context of commodity price volatility.

This study may face the following limitations.

1. The limited information available may make it difficult to comprehensively analyze the specifics of the Mangystau region. In particular, differences in legal systems, levels of economic development and the degree of investment attractiveness may lead to the fact that strategies and approaches successfully implemented in Australia and Norway will be less effective in the conditions of Mangystau.
2. Local institutions, business structures, and community groups may resist the introduction of new strategies because they are oriented towards an established economic model.
3. Economic crises, energy market transformations, and commodity price volatility can significantly hinder the process of introducing renewable energy sources and promoting economic diversification.

The experience of Australia and Norway is a significant example of a strategic approach to economic development that can be adapted to implement economic diversification processes in the Mangystau region.

The Australian experience demonstrates a successful model of economic diversification through the rational use of natural resources, the formation of a favorable business climate and infrastructure development, which helps attract investment and the growth of high-tech industries. This approach can be adapted for the Mangystau region in order to create infrastructural conditions conducive to the development of small and medium-sized businesses, as well as stimulating non-resource sectors of the economy.

The Norwegian model of economic development is based on the principles of sustainable management of natural resources and the introduction of innovative solutions in the oil and gas industry. The use of advanced technologies and the integration of scientific developments allow Norway to efficiently distribute revenues from the extraction of natural resources, minimizing the economy's dependence on the raw materials sector. This experience can be adapted in the

Mangystau region to improve the operational efficiency of the oil and gas complex and implement sustainable development strategies.

Adapting the experience of Australia and Norway helps strengthen the economic foundation of the region through the integration of advanced technologies, modernization of infrastructure and diversification of the industry structure. This approach can contribute to the expansion of employment opportunities, the development of human capital and increase the investment attractiveness of the territory.

The scientific contribution of this study, which draws upon the advanced economic models of Australia and Norway, lies in the development and justification of a comprehensive strategy for diversifying the economy of the Mangystau region.

2. Literature Title

Currently, many countries and regions in the process [1] of their development face many structural obstacles and are in search of effective solutions and priority areas that would contribute to both sustainable development and the ability to withstand internal and external negative impacts [2]. In conditions of constant changes [3] one of the ways to successfully implement the development strategy, overcome barriers and maintain economic stability is to increase the level of diversification of the regional economy [4]. Identifying industries with high potential for diversification plays a significant role in reducing the vulnerability of regions, and choosing the right priority areas has a significant impact on improving their economic performance [5].

Economic diversification [6] has become an important development goal for middle-income countries [7] especially those that depend on commodity exports such as Chile, Peru, Saudi Arabia and Kazakhstan. Given past research, the obvious intuition is to follow a pragmatic strategy focused only on related activities [8]. For the most part, researchers working on network diffusion use strategies focused on nodes with certain characteristics [9] such as highly connected nodes or central nodes.

The need for economic diversification in countries with rich oil resources is explained by a number of key factors [10]. First of all, oil revenues are subject to significant volatility due to price instability in the global market. In addition, Oyewunmi [11] the increasing global pressure to reduce the use of fossil fuels is driven by the need to mitigate the effects of climate change and prevent further global warming [12]. Unlike many other commodity-based economies, Norway has not used oil revenues to fight poverty or support specific political regimes. Instead, the country has built a stable political, economic and legislative system, which has made it possible to avoid dependence on the so-called resource curse [13].

Norway has shown mixed results in the field of institutional and regulatory development, which indicates the need to strengthen the framework conditions to support small and medium-sized businesses in the process of economic diversification [14]. As part of recent policy initiatives to reduce administrative barriers, a "regulatory improvement council" has been established. Achievements in selected areas include easing social security reporting requirements for employers, simplifying building and planning regulations, and simplifying tax regulations for business partnerships [15].

Australia and Norway have reached modern levels of development as resource-based economies, thus avoiding the so-called resource curse [16]. Their ability to achieve this was largely based on diversification into new resource products and industries [17]. These processes relied heavily on innovation, confirming the close links that existed between resource-based industries and sectors of society that produce and disseminate knowledge Obradović, et al. [18]. Ville and Merrett [19] have developed a resource-based diversification model that analyzes the interaction between "providing" sectors and resource-based industries and applies it to the historical experience of the two countries.

The analysis of dynamic relationships between sectors of the Australian stock market allows us to explore the interaction of these sectors using time regression methods [20]. However, the research focuses exclusively on the stock market, without taking into account the consequences for the real economy. The study also lacks an understanding of the mechanisms linking the stock market to regional diversification programs [21].

In examining general trends in cobalt production and processing, the study focuses on global perspectives, leaving aside local Australian conditions and strategies for the use of rare earth resources [22]. It also does not address the prospects for internal recycling and cost increases [23]. Exploring the potential of processing raw materials locally and integrating them into production chains, such as battery production, may be useful [24].

The study of human settlement in Central and Southern Sahul reveals cultural diversification and migration processes in the history of Australia [25]. However, it does not link these results to current trends in economic diversification, especially with regard to the role of indigenous communities. Exploring how indigenous groups contribute to economic diversification and resource management is a vital area for future research [26].

The diversification of Kazakhstan's oil and gas complex is aimed not only at the development and development of new oil and gas fields, but also at the development of the refining industry, including the construction of new and modernization of existing oil refining facilities.

Previous studies, such as those from Saudi Arabia and Chile, show that dependence on natural resources creates economic vulnerability. The Mangystau region faces similar challenges, including weak infrastructure and geopolitical risks [27].

Norway used sovereign wealth funds to stabilize the economy, while Australia actively developed technology-oriented industries and services. Your research suggests a combination of both approaches — the creation of stabilization funds and the promotion of green energy and tourism [28].

In both countries, the education system and innovation play a crucial role. The study on the Mangystau region also focuses on the need to reform the educational sector in order to train highly qualified specialists in the field of sustainable technologies [29].

Previous studies have focused on analyzing government initiatives aimed at creating industrial zones and stimulating investment activity. For the Mangystau region, an urgent task remains to improve the regulatory framework, as well as strengthen public-private partnership mechanisms in order to increase the effectiveness of the socio-economic development of the region [30].

The analysis of the research shows that the key factors hindering the diversification processes are institutional barriers and limited financial resources [31] Similar challenges are typical for the Mangystau region, including a high degree of dependence on the oil and gas industry, as well as a shortage of qualified specialists.

Effective diversification of the Mangystau region's economy requires consideration of regional specifics based on international practices. The priorities in this process are the formation of a favorable investment environment, the development of human capital and the active introduction of innovative technologies.

According to Dadabaev and Sonoda [32] this strategy involves developing ties with a number of prominent countries, dividing global problems into smaller parts, adapting their interests to different partners and reducing the possibility of excessive dependence on any one partner state.

All oil and gas consortia must comply with the rules of working with regional companies in the oil and gas industry of Kazakhstan. However, due to agreements reached more than 20 years ago, these strict rules do not fully apply to the three large oil and gas consortia operating in the region [33].

The goal of stable growth in the welfare of the population is a fundamental component of the new economic strategy of Kazakhstan as an independent state. This goal is closely linked to improving living standards and sustainable income growth. The National Security Strategy of the Republic of Kazakhstan for 2021-2025, approved by presidential decree, is one of the key documents in this system. Since the country gained independence, six documents similar to this one have been published [34]. The development strategy of Kazakhstan of the first president, aimed at creating a welfare society based on a fortified state, a developed economy and Kazakhstan's desire to become one of the 30 most industrialized countries in the world, served as the basis for the development of a national security strategy until 2050 [35].

Kazakhstan is developing a new economic model based on accumulated knowledge and international experience, as part of its active integration into the world community. According to official data, the Gross regional product (GRP) of the Mangystau region nominally increased 2.7 times between 2010 and 2023 [36]. About half of the GRP structure is still accounted for by the mining industry, which continues to be the largest sector of the region's economy, despite a 10% decline compared to 2010 [37].

Depletion of oil reserves in the fields leads to a decrease in dependence on the oil sector. At the same time, the share of the manufacturing industry in the region increased from 5% to 7%, and the share of the transportation and storage business increased from 7% to 8%. A significant obstacle to the region's growth is the lack of economic diversity. For example, over the past five years, 30,500 small and medium-sized enterprises have been created in the country, which is 60% more than last year. However, their contribution to the country's GDP of 1.2% is still quite small. Significant deterioration of the engineering infrastructure is another important factor. For example, the wear rate of sewer systems in urban areas is 51%, and water supply networks is 67% [33].

3. Methodology

3.1. Introduction and General Approach

The need for a detailed study of the previous experience of economic diversification in Australia and Norway led to the choice of a retrospective analysis as the main research method. This made it possible to identify key success factors and barriers that may affect the adaptation of similar strategies in the Mangystau region. A comparative analysis of various approaches to natural resource management and infrastructure development in the context of Kazakhstan's economy provides an opportunity to assess their applicability in regional conditions. In addition, conducting high-quality interviews with experts and stakeholders provided a deeper understanding of the specifics of the region, as well as identifying variables that affect the effectiveness of the proposed methods. Systematizing information for the creation of well-founded findings and recommendations was made possible by the use of content analysis in the processing of opinions and suggestions obtained from the interviews. Twenty interviews were done with important participants, which included four academic specialists, four public figures, five government officials, and seven corporate representatives. Based on the idea of data saturation, which is reached when new interviews stop yielding new information and validate the representativeness and adequacy of the data gathered, the sample size was calculated. Depending on the respondents' availability, interviews were done over the phone and in person. With the participants' permission, all interviews were videotaped, guaranteeing accuracy for later analysis.

Two methods were used in the data collection process: semi-structured interviews and questionnaires. Conducting interviews allowed us to get detailed answers, which contributed to a deeper analysis of the prospects and problems associated with the diversification process. The survey included both closed and open-ended questions, which provided a balanced combination of quantitative and qualitative analysis (Figure 1).

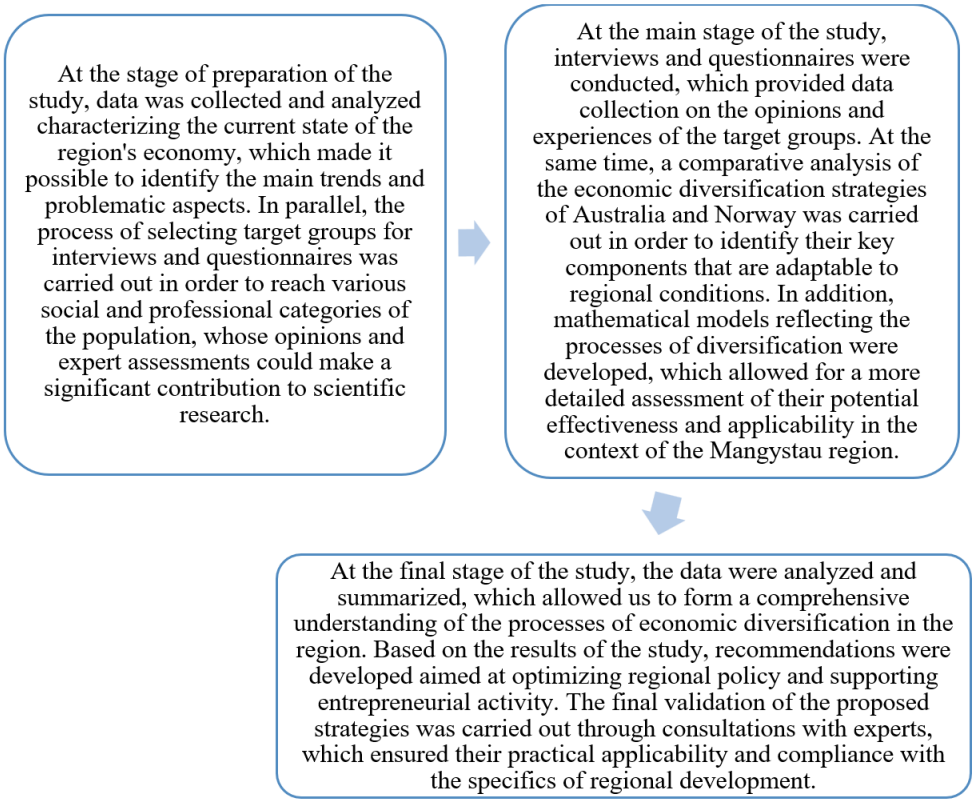


Figure 1.
Stages of research.

Figure 1 shows a block diagram of the study.

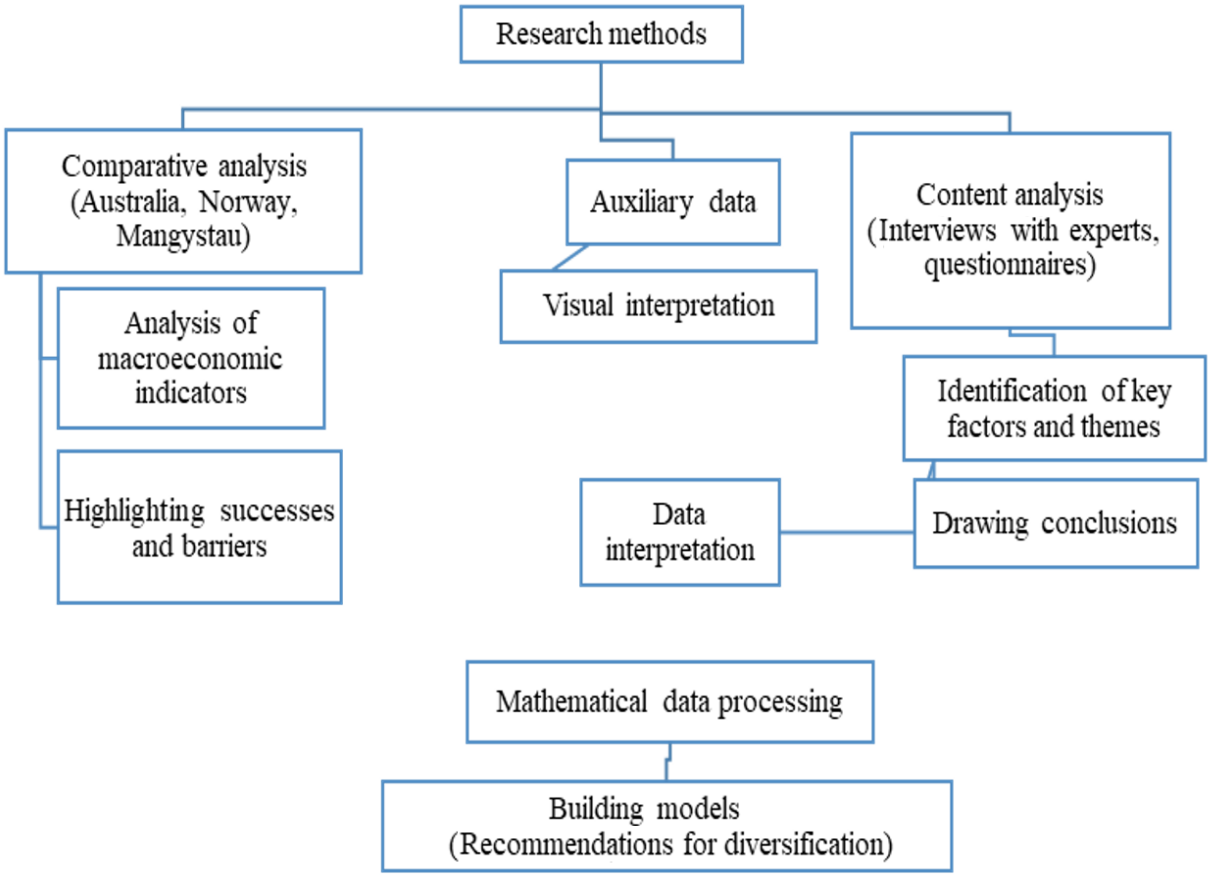


Figure 2.
Research methods.

The reliability of the study is based on the use of up-to-date data from the National Report on the State of Industry of the Republic of Kazakhstan, which serves as a reliable source for analyzing the current state of the economy. The use of a combined approach, including interviews and questionnaires, enhances the reliability and completeness of the collected data. However, for even greater accuracy, it is recommended to consider the possibility of increasing the sample, which will increase the statistical significance of the findings and strengthen the overall validity of the proposed recommendations.

3.2. Research Design

The methodological basis of the study was divided into two key areas:

- A qualitative approach implemented through semi-structured interviews with key stakeholders.
- A quantitative approach based on the analysis of data obtained as a result of a survey of respondents representing various social and professional groups.

3.3. Semi-Structured Interviews

Qualitative research methods are used to achieve these goals. The basic approach is to conduct 20 in-depth interviews with key stakeholders who represent a variety of perspectives and expertise.

Among the interview participants:

4 academic experts.

4 public figures.

5 representatives of the public sector, as well as 7 business leaders and owners.

Semi-structured questions are used to collect the most detailed information, which helps to gain a deep understanding of the problem and possible solutions (Table 1).

Table 1.
Responses from respondents.

Question	Response
What is your opinion of the Mangystau region's economic situation right now? Which main obstacles and chances do you see?	The Mangystau region's economy is highly reliant on the extraction of oil and gas, which leaves it susceptible to changes in the world energy markets. However, diversification has become more and more popular in recent years. Opportunities include the growth of the agro-industrial complex, infrastructure, and tourism.
Which economic sectors in Mangystau, in your opinion, offer the most room for diversification? Why?	Agriculture and tourism both have a lot of promise. There are distinctive natural features in Mangystau that can attract travelers. Given the vast amounts of undeveloped land, there are potential in agriculture to increase production and processing.
What can encourage non-resource sectors to grow?	infrastructure projects, financial assistance from the government in the form of tax breaks and subsidies, and the creation of specialized training programs.
What part do policies and plans from the government play in encouraging economic diversification? Which actions do you think are the most successful?	Government initiatives, such the development of industrial parks and subsidy schemes, are crucial. Good practices include making direct infrastructure expenditures and fostering an environment that is conducive to business.
What actions or modifications to policy might make diversification more successful?	Legislation must be strengthened, investor conditions must be made more clear, and money for educational initiatives must be increased.
How would you rate the present climate in Mangystau for non-resource investments? Exist difficulties luring in investment?	The climate for investments is getting better, but there are still obstacles to overcome, like a lack of knowledge about opportunities and political instability risks.
Which funding options and financial instruments are most important for the economic diversification of the area?	International financial institutions, private investments, and government grants are important sources of funding. Public-private alliances are crucial as well.
Which social and cultural elements could have an impact on the process of diversification? What alterations in public opinion and conduct are required for plans to be successful?	Diversification may be hampered by social issues such as a dependence on conventional sectors. New sectors and inventions require a shift in public perception.
What kind of human and educational resources are needed to help diversification?	In order to ensure that skilled professionals are trained to operate in these growing areas, it is imperative to design educational programs relating to new industries.
What suggestions would you make to strengthen the existing plans and methods for broadening Mangystau's economic base?	I suggest boosting infrastructure development, promoting private investment, and bolstering government support for emerging businesses.

The main purpose of the interview was an in-depth study of the specific features of the region, as well as the identification of key factors and obstacles affecting the effectiveness of the proposed strategies. The sample size was

determined in accordance with the principle of data saturation: information collection stopped at the moment when new interviews stopped making additional contributions to the analysis. The format of the interview depended on the availability of the respondents: some of the interviews took place in person, and some in the form of telephone interviews. To ensure high accuracy of data processing, all interviews were recorded in audio format with the prior consent of the participants.

3.4. Survey

As part of this study, a survey was conducted in which 150 respondents from various social and professional categories took part. The sample included representatives of small and medium-sized businesses, the student and teaching community, as well as specialists employed in the agricultural sector and the tourism sector. The survey included both closed and open-ended questions, which allowed not only to collect quantitative data, but also to obtain qualitative information. This methodological approach provided a deeper analysis of the opinions, experiences and needs of various groups, which significantly enriched the empirical base of the study.

The objectives of the study were, first of all, to determine the current state of the region's economy, including identifying its key challenges and opportunities. Special attention was paid to the analysis of the economy's dependence on the oil and gas sector and the study of the prospects for the development of such areas as tourism and the agro-industrial complex. It has also become an important task to identify factors that contribute to or hinder the diversification process. The study focused on assessing the impact of government support, the level of infrastructure development, the availability of educational programs, and social factors such as public perception of change.

Based on the collected data, the task was to develop practical recommendations for improving the strategy of economic diversification. This included identifying concrete steps to stimulate investment, modernize infrastructure, and train qualified personnel, which together should contribute to creating a more sustainable and diversified economy in the region. After that, we'll look at the interviewees' responses

Table 2 shows the respondents' responses to the survey (Table 2).

Table 2.
Block of respondents' responses.

The name of the question	Variants	Percentage (%)	Frequency	Cumulative percentage (%)
How do you assess the current state of the Mangystau region's economy? What are the key challenges and opportunities you see?	Dependence on the oil and gas industry makes the economy vulnerable	40	60	40
	There are opportunities for the development of tourism and the agro-industrial complex	30	45	70
	Infrastructure modernization is needed	20	30	90
	I find it difficult to answer	10	15	100
In your opinion, which sectors of the Mangystau economy have the greatest potential for diversification?	Tourism	45	68	45
	Agriculture	25	38	70
	Production and processing	20	30	90
	Others	10	15	100
What do you think can stimulate the development of non-resource sectors?	Infrastructure investments	50	75	50
	Government support (Subsidies, tax benefits)	30	45	80
	Development of educational programs	20	30	100
What role do government programs and initiatives play in supporting economic diversification? What are the most effective measures?	Creation of industrial parks	35	52	35
	Direct investments in infrastructure	25	38	60
	Subsidizing enterprises	20	30	80
	Difficult to estimate	20	30	100
What measures or policy changes could contribute to more successful diversification?	Improving legislation and transparency for investors	40	60	40
	Increased funding for educational programs	30	45	70
	Attracting international partners	20	30	90
	Others	10	15	100
How do you assess the current conditions for investing in non-resource sectors in Mangystau? Are there any problems with	Conditions are gradually improving, but problems remain	50	75	50
	There is not enough information about the possibilities	20	30	70

The name of the question	Variants	Percentage (%)	Frequency	Cumulative percentage (%)
attracting investments?	Political instability scares investors away	20	30	90
	Conditions are favorable	10	15	100
What sources of financing are most relevant for the diversification of the region's economy?	Government grants	40	60	40
	Private investments	30	45	70
	International financial institutions	20	30	90
	Public-private partnership	10	15	100
What social and cultural factors can influence the process of diversification? What changes are needed?	The habit of traditional industries slows down changes	45	68	45
	Lack of qualified personnel	30	45	75
	Increased awareness of new opportunities is required	25	38	100
What educational and human resources are required to maintain diversification?	Development of educational programs in new industries	50	75	50
	Training of specialists to work in new sectors	30	45	80
	Improving the quality of technical education	20	30	100
What recommendations could you give to improve the current strategies for diversifying the Mangystau economy?	Strengthening government support for new industries	35	52	35
	Infrastructure improvement	30	45	65
	Stimulating private investment and creating benefits	25	38	90
	Others	10	15	100

3.5. Data Processing Methods

Correlation and data processing were performed using the Python, Statistical. For the analysis, we used tools that allowed us to work with data, create tables, calculate averages and standard deviations, as well as perform the necessary mathematical operations. The results of the analysis were visualized using graphs, which helped to better understand the relationships between the variables and make the conclusions more clear and understandable.

The following formula was used to compare the approaches:

$$R = \sum_{i=1}^{n} (X_i - Y_i)$$

R is the difference between strategies in different countries.

X_i, Y_i - performance indicators in countries (Norway and Australia) on key factors such as infrastructure, resource management, business support.

Qualitative interviews with experts and stakeholders were also conducted to identify the factors influencing the success of the implementation of strategies. The interviews were analyzed by the method of content analysis using data encoding, while formulas were used to systematize and highlight topics:

$$T_k = \frac{M}{n}$$

Statistical data processing was performed using the Python programming language. The analysis used tools designed to work with data, create tables, and calculate the average and standard deviation.

3.6. Limitations of the Study

Direct use of the experience of Australia and Norway in the conditions of Kazakhstan can be fraught with a number of difficulties due to social and institutional differences. Inconsistencies in legal and economic systems, as well as differences in the level of development of institutions, create certain obstacles to the adaptation of successful models of economic diversification.

In addition, the analysis process may be complicated by the limited availability and insufficient relevance of statistical data. This affects the accuracy of the conclusions and makes it difficult to form an objective view for evaluating economic strategies. Additional economic risks are caused by the high volatility of oil prices and global transformations in the energy sector. These circumstances significantly affect the sustainability and effectiveness of the proposed strategies, which requires their adaptability and consideration of external factors in the implementation process.

3.7. The Difference from Other Studies

This study focuses on taking into account the regional characteristics of the Mangystau region, including its socio-economic characteristics and natural and geographical conditions. Unlike most previous studies, which focused primarily on universal principles of diversification, this study focuses on adapting the international experience of Norway and

Australia to the specific conditions of the region. This approach allows us to develop practical recommendations that best meet the unique needs and development conditions of the Mangystau region.

3.8. Restrictions

The study faces a number of significant limitations that may affect the effectiveness of the strategies being developed. One of the main challenges is the significant differences in the institutional and legal systems of Kazakhstan, Norway and Australia. These differences make it difficult to adapt successful diversification strategies created and implemented in various social, economic, and political contexts. Additionally, the limited availability of up-to-date statistical information makes it much more difficult to form an objective and comprehensive analysis, which reduces the accuracy of the conclusions and recommendations developed. Another important factor complicating the implementation of new approaches is the economic instability caused by the volatility of oil prices and transformations in global energy markets. These circumstances increase the level of risks and require the development of flexible strategies that can take into account external economic conditions in the process of their implementation and implementation.

4. Results and Discussion

Economic diversification of regions based on the use of natural resources remains an important condition for sustainable development and reduction of economic risks. Theoretical and empirical research focuses on such key aspects as the introduction of innovative technologies, the transition to a green economy model, ensuring the principles of sustainable development and adapting international experience. However, despite the high level of scientific and practical interest in these issues, there are still a number of unresolved problems in this area that require further study.

First of all, modern research focuses on universal principles of diversification, while the specifics of neighboring regions often remain out of sight. This aspect is of particular importance for territories such as the Mangystau region, where economic development is largely driven by oil production and the availability of natural resources, and climatic and social factors require an adaptive and differentiated approach.

Secondly, the relationship between the processes of economic diversification and the principles of sustainable development remains insufficiently studied. Despite the widespread recognition of "green transformation" and environmentally friendly technologies as promising areas, their implementation in economic diversification strategies is currently being carried out on a limited scale.

In addition, insufficient attention is paid to the practical mechanism for implementing the diversification strategy. Aspects of adapting international experience, including the Norwegian and Australian models, to the specifics of individual regions require a more detailed analysis. In addition, there is a lack of research focused on the development of economic models and financial instruments capable of ensuring the effective implementation of diversification initiatives.

The work is aimed at eliminating these gaps. The main attention is paid to ensuring the sustainability of international strategies in the conditions of the Mangystau region, taking into account the development and socio-economic conditions of the region. This approach allows not only to enrich the theoretical basis, but also to offer practical recommendations for an effective transformation of the economy.

There is an extensive literature on innovation as a catalyst for economic diversification in transition economies. The researchers note that the deployment of innovative technologies leads to a decrease in dependence on extractive industries, however, insufficient attention is paid to ensuring the sustainability of approaches to the conditions of regions such as Mangystau.

The transition to a green economy is a promising direction for regions striving for sustainable development. The literature focuses on the need to create environmentally friendly technologies and the development of atmospheric phenomena. Nevertheless, the link between the green economy and the process of economic diversification in conditions of independence from resource extraction remains poorly developed. Moreover, there is a clear lack of understanding of how green transformation can integrate into the crisis of economic downturn.

Renewable energy, including solar and wind, is a factor in creating new economic opportunities and increasing activity. However, mechanisms for providing renewable energy in the economy of an economy focused on natural resources have not been sufficiently developed. For regions such as Mangystau region, adaptation experience is needed, which has successfully implemented the transition to renewable sources in these countries.

The examples of Norway and Australia are often called successful models of diversification in a resource-dependent environment. Norway effectively manages oil revenues through the development of sovereign wealth funds and support for innovation. Australia, in turn, has lost a diversified economy, including the agricultural sector and industrial production. However, these studies do not contain adapted recommendations for the use of these models in special conditions.

Kazakhstan's economy has been developing steadily in recent years, helped along by the adoption of cutting-edge technologies and the continuous advancement of important economic sectors. According to Aralbay [38] the nation is still actively adapting to the quickly shifting global economic landscape in 2024, which includes changes in commodity prices and other worldwide economic difficulties.

Kazakhstan's southwest is home to the Mangystau Region, formerly known as Mangyshlak. It was reestablished in 1990 under the name Mangystau after being founded on March 20, 1973, from the southern part of the Guryev area. The city of Aktau is the administrative hub.

The area located on the Mangyshlak plateau, east of the Caspian Sea. It is bounded to the northeast by the Atyrau and Aktobe areas, to the south by Turkmenistan, and to the east by the Republic of Karakalpakstan in Uzbekistan. Much of

Kazakhstan's oil is extracted from the industrial Mangystau region, which is crossed by the Aktau-Zhetybai-Uzen oil pipeline. Because of Aktau, the area is frequently referred to as Kazakhstan's "sea gateway" [35].

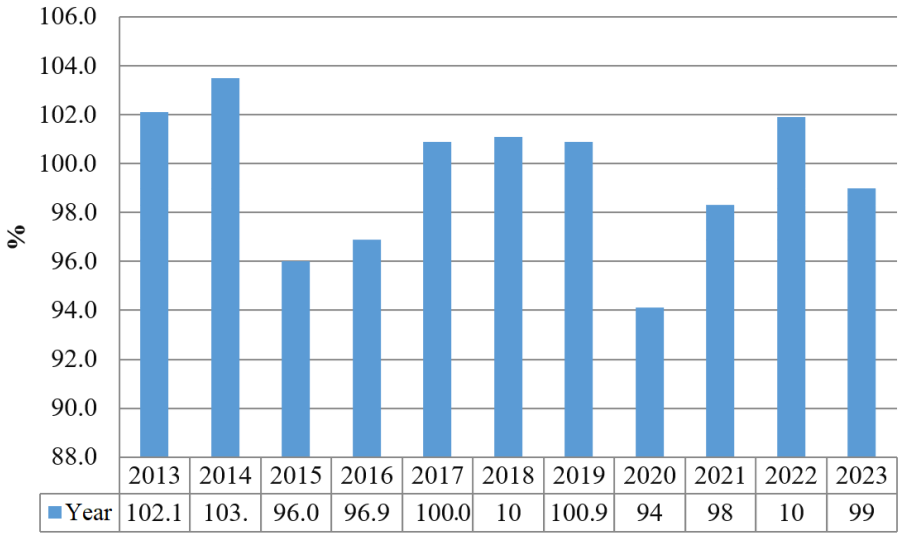
The Mangystau region had a population of 795.9 thousand as of July 1, 2024, with 364.2 thousand (45.8%) residing in urban areas and 431.7 thousand (54.2%) in rural regions. Between January and June of 2024, there was a natural population gain of 8,010, with a 1.9% reduction in births and a 17.4% increase in deaths over the same period in 2023. There was an improvement in foreign migration and a worsening of domestic migration, resulting in a positive migration balance of 1,076 individuals.

With 18,000 unemployed people in the second quarter of 2024, the unemployment rate as a percentage of the workforce was 4.9%. The percentage of the labor force that was jobless as of August 1, 2024, was predicted to be 17,741, or 4.8%. The average nominal monthly wage in 2024's second quarter was 579,838 tenge, 9.2% more than in 2023's corresponding period.

In the second quarter of 2024, the real wage index was 100.4%. In comparison to the first quarter of 2023, per capita nominal cash income increased by 13.6% to 235,295 tenge in the first quarter of 2024. During the same time frame, the real income index increased to 103.1% [36].

There are 71 oil fields in the Mangystau area, and their combined oil reserves are 2,813.8 million tons, or 12% of Kazakhstan's total reserves. There are 154.1 billion cubic meters of recoverable gas reserves. The Khazar and Kalamkas-Sea fields will begin to be developed in 2028, and the first oil is anticipated by 2030. In this regard, the area offers great potential for the growth of petrochemicals and the manufacture of premium fuel and lubricants. As a flagship project, it is suggested to start building a fourth oil refinery at Mangystau. Furthermore, the region has significant potential in the transportation and logistics industry because to the seaports of Aktau and Kuryk. The region's overall cargo transshipment through the ports of Aktau, Kuryk, and the northern terminal has increased from 3.5 million tons to 6.5 million tons during the last five years. This is a nearly twofold increase.

The region's tourism industry has grown as a result of the climate, the wealth of historical sites, the shoreline of the Caspian Sea, the steppes, the mountains, the natural sceneries, and the canyons. The Mangystau region's underground mosques, which are treasures of architectural design, may be the distinctive hallmark of its tourism potential [39]. The Mangystau region's industrial production volume is depicted in Figure 3.



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Year	102.1	103.	96.0	96.9	100.0	10	100.9	94	98	10	99

Figure 3.
Industrial production volume in Mangystau from 2013 to 2023, %.
Source: Compiled by the author based on source [36].

At current prices, the industrial production volume from January to July 2024 was 1,692,643 million tenge, 3.4% more than during the corresponding period in 2023. Production volumes rose by 3.3% in the mining sector and by 12.4% in the manufacturing sector, while there was a 6.5% decrease in the supply of gas, electricity, steam, hot water, and air conditioning. There was a 3.1% increase in the activities related to pollution eradication, waste collection, treatment, and disposal, and water supply [36].

Between January and July of 2024, the total value of agricultural products and services produced was 15,839.4 million tenge, representing a 97% increase over the same period in 2023. Figure 4 displays Mangystau's foreign trade turnover throughout the last ten years.

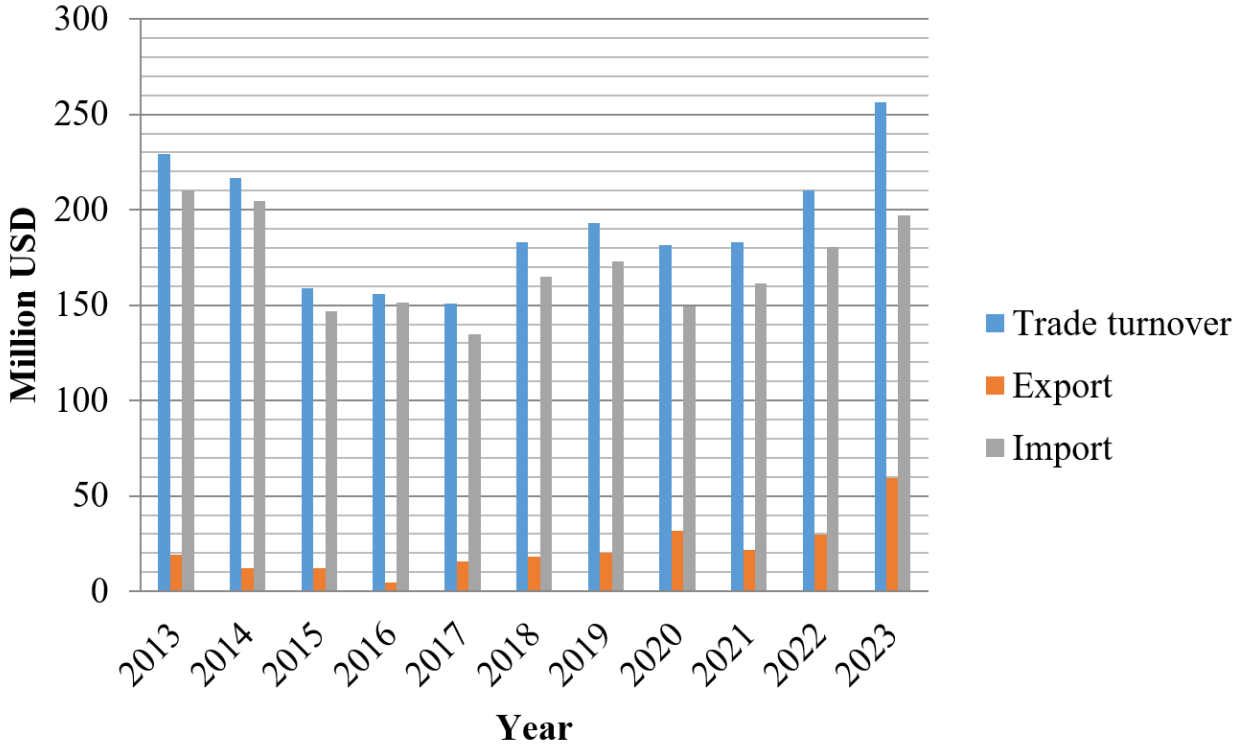


Figure 4.
Foreign trade turnover of Mangystau, million USD.
Source: Compiled by the author based on source [39].

From 2013 to 2016, trade turnover consistently decreased, most likely as a result of external or economic causes. Trade turnover has been steadily improving since 2016, with a notable uptick in 2023.

The trade balance has been negatived for the whole period under consideration since imports have been far higher than exports. Nonetheless, export quantities have been rising since 2016, with 2023 seeing a particularly significant acceleration. In the meantime, import levels have stayed mostly steady with the exception of a notable rise in 2023. The Mangystau investment index for the previous ten years is displayed in Figure 5.

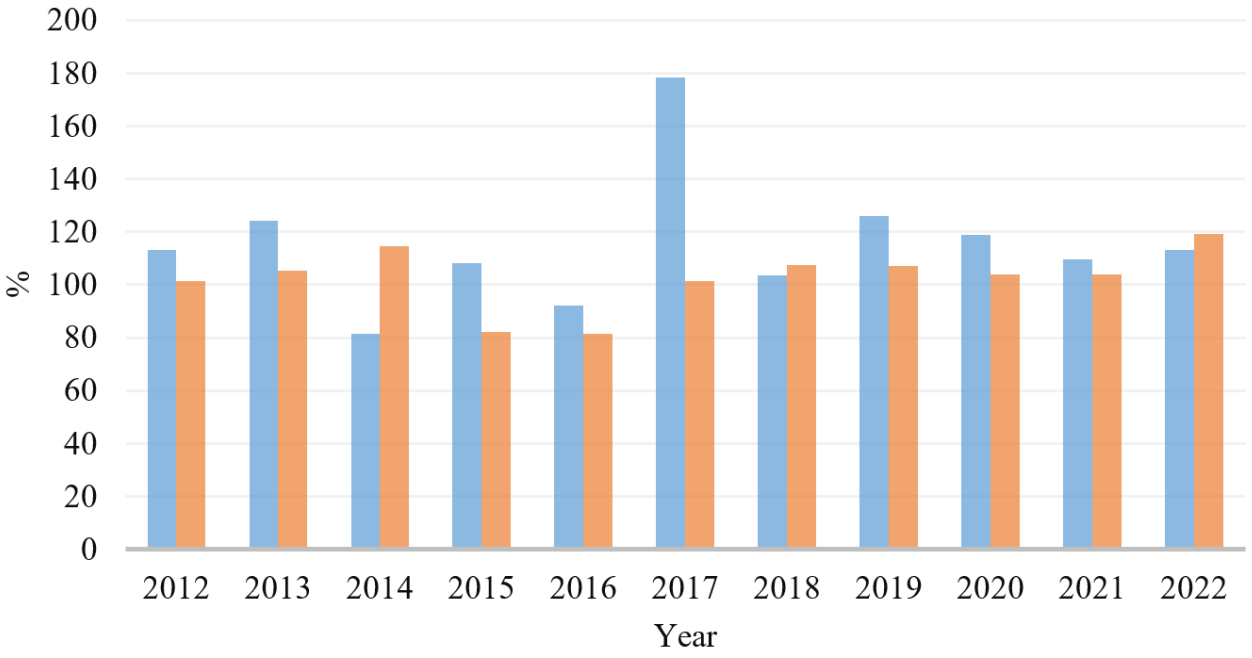


Figure 5.
Investment index of Mangystau over the last 10 years, %.
Source: Compiled by the author based on source [36].

Over the course of the observation period, fixed capital investments have showed largely steady growth with some volatility. 2014 had the biggest increase even as spending in building new homes decreased. 2015 and 2016 saw a decline in investments, which was followed by a rebound in growth. Over the course of the analysis period, fixed capital investments peaked in 2022.

Investments in the building of homes have shown a great deal of volatility over the years, with abrupt downturns and increases. Notably, investments peaked in 2013 and then sharply declined in 2014 and 2015. With the exception of a little increase in 2019, investment growth has been gradually declining from a rebound after 2016 that peaked in 2017.

We will next examine the data on Mangystau's culture over the previous ten years.

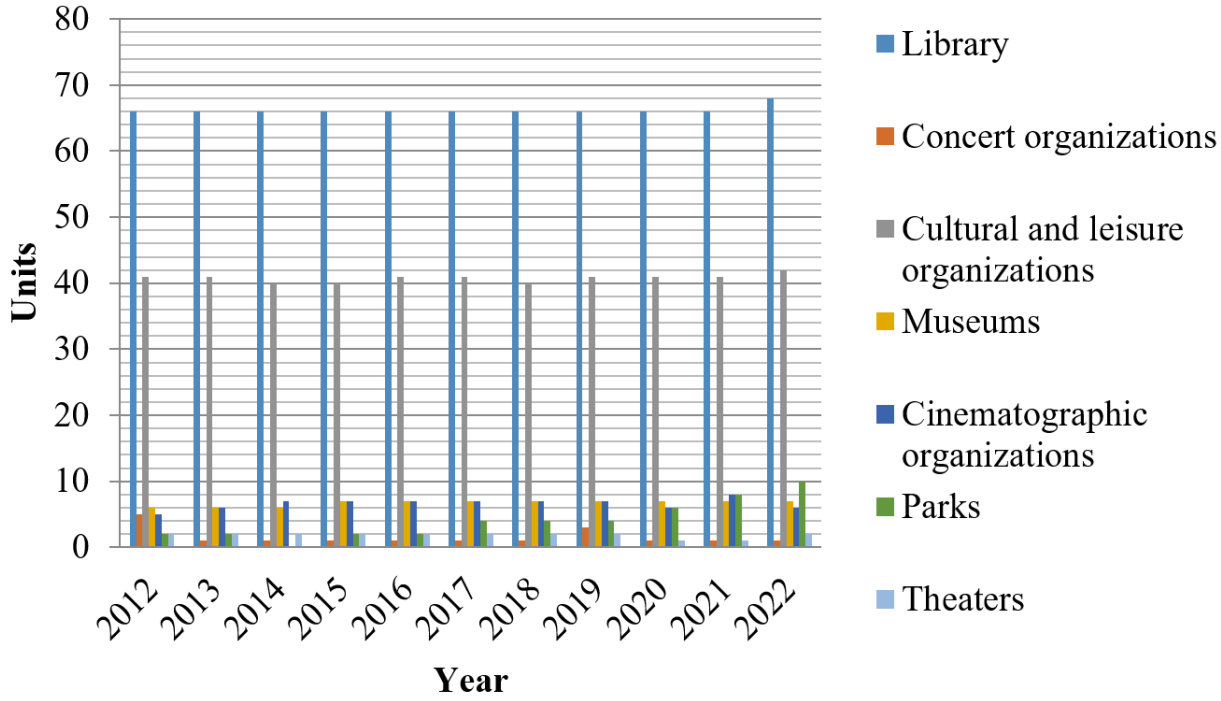


Figure 6.
Cultural statistics of Mangystau.
Source: Compiled by the author based on source [36].

According to the analysis of Figure 6, Mangystau's cultural institutions have generally been developing steadily, with some indications of growth, especially in parks and museums. The dramatic decline in concert organizations and the volatility of the movie theater industry, however, might point to problems in these domains.

Mangystau is one of Kazakhstan's top ten areas with the most potential for growth in the travel industry. While the surrounding areas are perfect for eco-ethno tourism, Aktau itself offers prospects for beach tourism. A thorough plan aimed at augmenting tourism in the area has been established, and vital aspects for industry enhancement have been pinpointed. Because of this, the area saw more than 117,000 visitors this year, of whom more than 67,000 stayed at the "Rixos Aktau" resort complex, which opened in July. The "Rixos Aktau" project, which is Central Asia's largest resort-style hotel, is spurring the growth of the travel industry in the area [38].

The Kuryk seaport's capacity is to be increased by designating it as a Special Economic Zone (SEZ), emulating the SEZ "Seaport Aktau." Kuryk port has a capacity of 6 million tons, however it only handles 2 million tons of cargo annually.

But with a 1-meter sea level decrease expected by 2030, climate change threatens the ports' ability to function and makes cargo transit more difficult [39].

Thus, taking into account the nation's territorial and geographical development, the regional center—Aktau—along with Aktobe, Oral (Uralsk), and Atyrau—plays a crucial role in creating a Western macro-region's sustainable spatial structure. Oil and gas extraction is the main focus of the monotown Zhanaozen's economy in terms of future economic specialization.

The data analysis demonstrates that the establishment of a welcoming business environment and the state's active involvement in natural resource management were the key factors in the diversification of the economies of Australia and Norway. However, the Mangystau region differs from Norway in that it faces a difficulty of scarce resources for the creation of stabilization funds, necessitating the customization of solutions to the unique circumstances of the area. Excessive dependence on the hydrocarbon sector, combined with insufficient infrastructure development for other industries, is one of the key problems. This limitation highlights the need to implement long-term reforms and attract investments aimed at improving the business climate and stimulating private capital.

An analysis of the results of the interviews shows that one of the main barriers to economic diversification is high dependence on the energy sector. At the same time, the development of non-resource industries, including tourism and the

agro-industrial complex, creates favorable conditions for expanding the structure of the economy. The effective functioning and growth of these sectors require significant investments, active government assistance and the training of highly qualified specialists.

Effective promotion of diversification processes can be ensured through the implementation of practical tools such as the formation of industrial parks and the introduction of subsidy mechanisms. At the same time, this process is subject to a number of factors, including political risks, limited access to information, and the need to improve the investment climate. The key sources of financing for diversification programs are international financial institutions, private investments, and government grants.

As part of the study, a survey of specialists was also conducted to assess the prospects for diversifying the economy of the Mangystau region. The main objectives of this survey were to identify priority industries with the greatest development potential, as well as to identify factors contributing to or limiting their growth. The survey was aimed at collecting expert opinions on the current investment climate, necessary government support measures and strategies aimed at increasing the sustainability and efficiency of the regional economy.

An analysis of the survey results shows that the majority of experts (40%) note the significant dependence of the regional economy on the oil and gas sector, which makes it vulnerable to fluctuations in global energy prices. At the same time, 30% of respondents point to the prospects for the development of tourism and agriculture as areas contributing to economic diversification. Another 20% of the respondents emphasize the need to modernize the infrastructure, while 10% of the participants found it difficult to give an unambiguous answer.

According to respondents, tourism has the greatest opportunities for economic diversification (45%), followed by agriculture (25%) and manufacturing with processing (20%). The remaining sectors are considered less important (10%). Half of the specialists (50%) believe that the main driving force for the development of non-resource industries is investment in infrastructure. Government support (subsidies and tax incentives) — 30% and the development of educational programs — 20% were also noted.

Respondents believe that the most effective measures to support diversification are the creation of industrial parks (35%) and direct investment in infrastructure (25%). Government subsidies also play an important role (20%), but many experts believe that the effectiveness of government programs is limited (20%). Respondents believe that improving legislation and increasing transparency for investors (40%) is the most important aspect. It is also important to increase the financing of educational programs (30%) and attract international partners (20%).

Half of the experts (50%) noted that the conditions for investing are getting better, but problems remain. The main difficulties are related to the lack of information and political instability, so it is important to inform investors and create a stable political environment.

According to the majority of experts (45%), focusing on traditional industries hinders the development of new directions in the economy. In addition, the lack of qualified specialists (30%) is a significant obstacle, which indicates the importance of raising public awareness and introducing educational programs aimed at training personnel for promising sectors.

From the respondents' point of view, the key priority measures are the development of specialized educational programs focused on promising industries (50%), as well as the training of highly qualified specialists (30%). As additional recommendations, experts note the need to strengthen government support for new sectors of the economy (35%), modernize infrastructure (30%) and stimulate private investment through tax incentives (25%).

The results of the analysis indicate that the key obstacles to economic diversification in the Mangystau region are high dependence on the oil and gas sector and insufficient investment in alternative industries. According to experts, in order to solve these problems, it is necessary to improve the legislative framework, modernize infrastructure and strengthen state support for the development of non-resource sectors of the economy.

Special attention should be paid to the development of tourism, agriculture and industry, as they can become the basis for diversification. It is also important to develop educational programs and create industrial parks for sustainable economic growth in the long term. Next, we will make a correlation (Table 3).

Table 3.
Correlation with processed data.

	Option 1 (%)	Option 2 (%)	Option 3 (%)	Option 4 (%)	Average value
Option 1 (%)	1.0	0.27	-0.43	-0.82	0
Option 2 (%)	0.27	1.0	0.09	-0.62	0.18
Option 3 (%)	-0.43	0.09	1.0	-0.08	0.15
Option 4 (%)	-0.82	-0.62	-0.08	1.0	-0.13
Average value	0.0	0.18	0.15	-0.13	0.05

The correlation analysis revealed a positive relationship between the improvement of infrastructure and the development of educational programs, which underlines the importance of an integrated approach to economic diversification (Table 4).

Table 4.
Correlation analysis of the survey.

Question	Correlation with diversification (r)
Assessment of the current state of the economy	-0.45
Potential of industries	0.60
Obstacles to diversification	-0.55
Measures for the development of non-resource sectors	0.70
Investment climate	0.50
Sources of financing	0.65
Social and cultural factors	-0.30
Human and educational resources	0.55
Measures to improve the investment climate	0.75
Long-term prospects of the sectors	0.80

Data visualization confirms that the key areas for the development of the region include tourism, agro-industrial complex and infrastructure, as well as the need to improve the legislative framework and attract international partners (Figure 7).

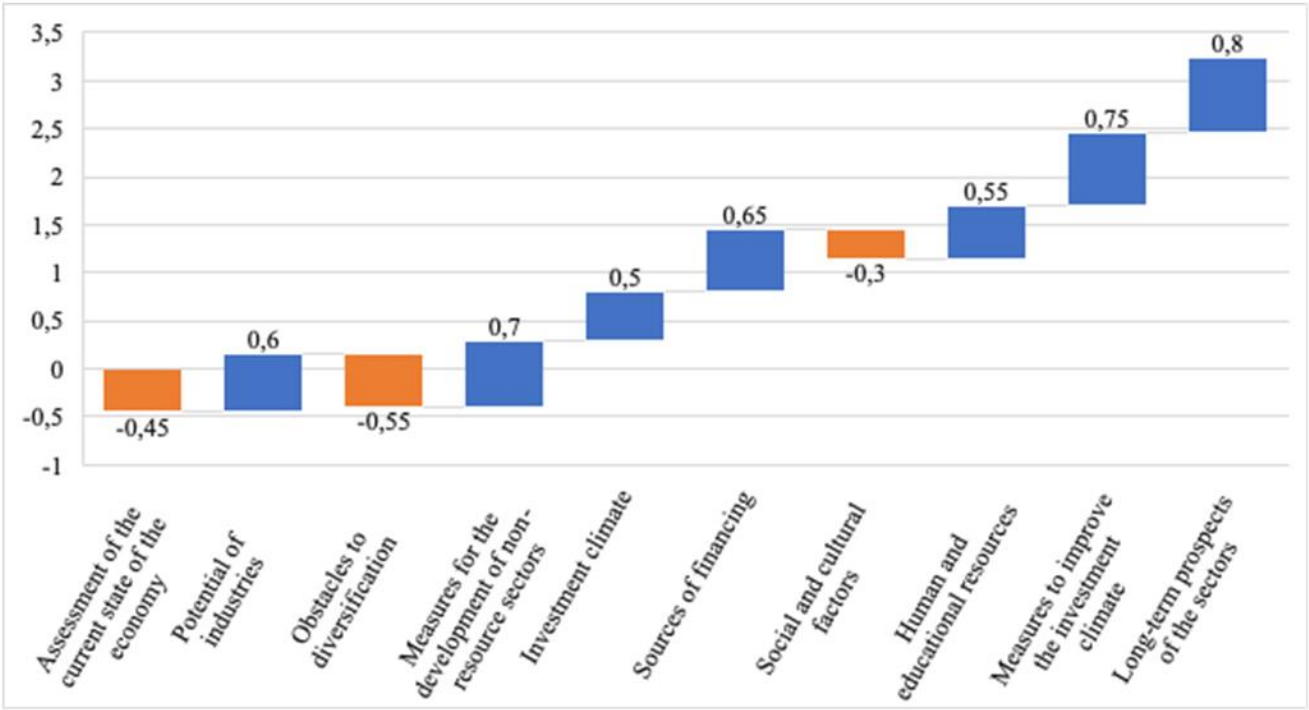


Figure 7.
Survey data.

Next, the heat map shows a detailed correlation between the different answer options for all questions (Figure 8).

Figure 8.
Correlation heat map.

The correlation between "Option 1 (%)" and "Option 4 (%)" is -0.82, indicating a strong feedback loop. This means that when respondents choose Option 1 more often, they are less likely to choose Option 4. The correlation is -0.62, which also indicates a moderately strong negative relationship. Thus, the choice of option 2 is associated with a lower preference for option 4. These negative correlations indicate competing preferences of the respondents. For example, priorities for choosing investment strategies or evaluating government programs may be mutually exclusive for some participants. If you need to analyze these relationships more deeply or get additional visualizations, please let me know.

Figure 9 shows the correlation heat map.

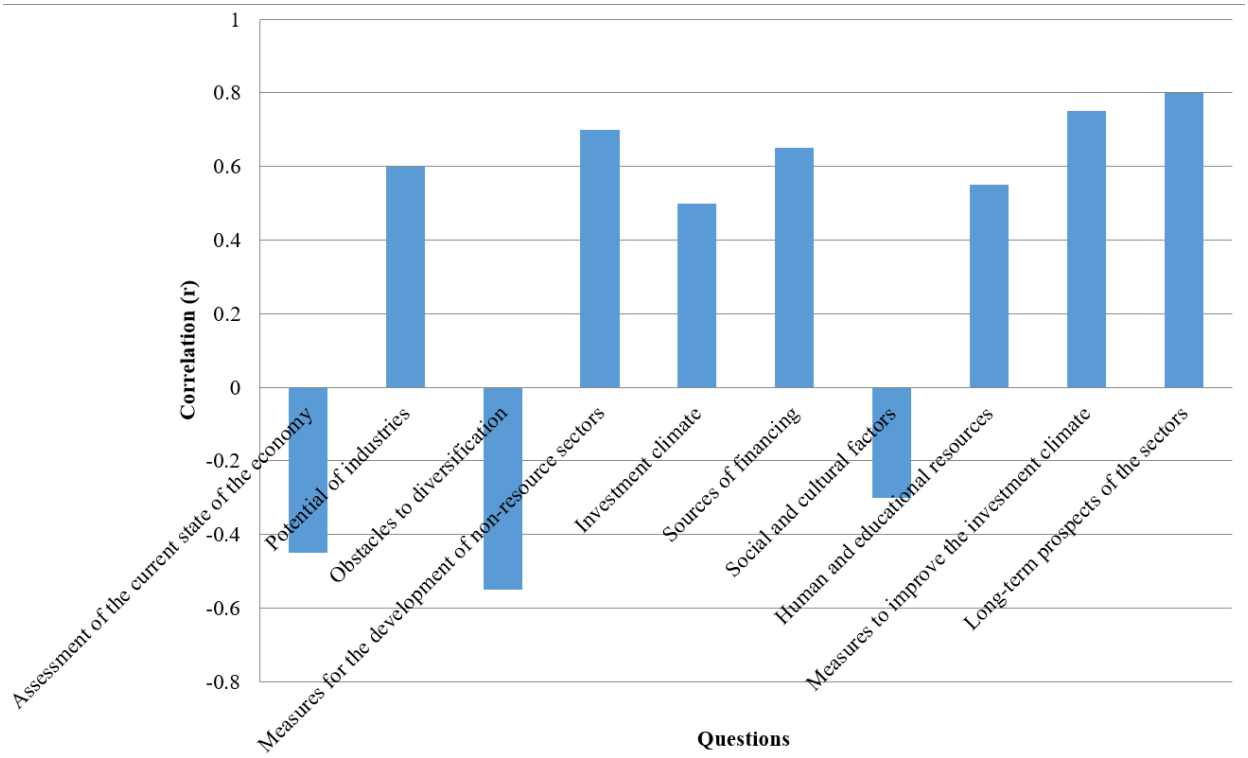


Figure 9.
Correlation with diversification (r).

Thus, it can be said that measures to improve the investment climate and the long-term prospects of the sectors have the greatest correlation with successful diversification.

4.1. Export Diversification Challenges

Although Kazakhstan is still working to diversify its economy, almost 70% of its exports are made up of mineral resources, with oil making up the remaining 42% [40]. By contrast, Kazakhstan's economy exhibits an uneven distribution of export flows, heavily dependent on oil and other natural resources; the Netherlands, where information technology makes up 15% of exports without any other goods or services representing more than 3%, and Turkey, where transport and tourism make up 9% and 7% of exports respectively, with no other goods or services exceeding 3% [31].

Official figures for 2022 show that 31% of Kazakhstan's total exports were non-resource exports. However, the degree of raw material processing must be taken into account in order to evaluate export diversification appropriately [41].

First-stage processed goods like metals, products from oil refineries, and unprocessed agricultural products should not be included in exports that are not resources [42]. Although high average wages are noted in the Mangystau and Atyrau areas, these incomes show little growth or stagnation when compared to the capital and other important cities such as Almaty [44]. This may point to inefficiencies in the development of these areas, as the activities of big oil extraction corporations primarily drive high pay while other economic sectors remain underdeveloped.

A financial expert highlights the significant possibility of encountering a scenario akin to a monotown, albeit spanning two regions, in the absence of diversification in the western areas [43]. The extraction of natural resources and the processing of primary products are currently the main sources of competitiveness in the Mangystau region. Certain industries, like light industry and agriculture, are not as competitive as others.

The difficulties with diversification in the Mangystau area are shown in Figure 10.

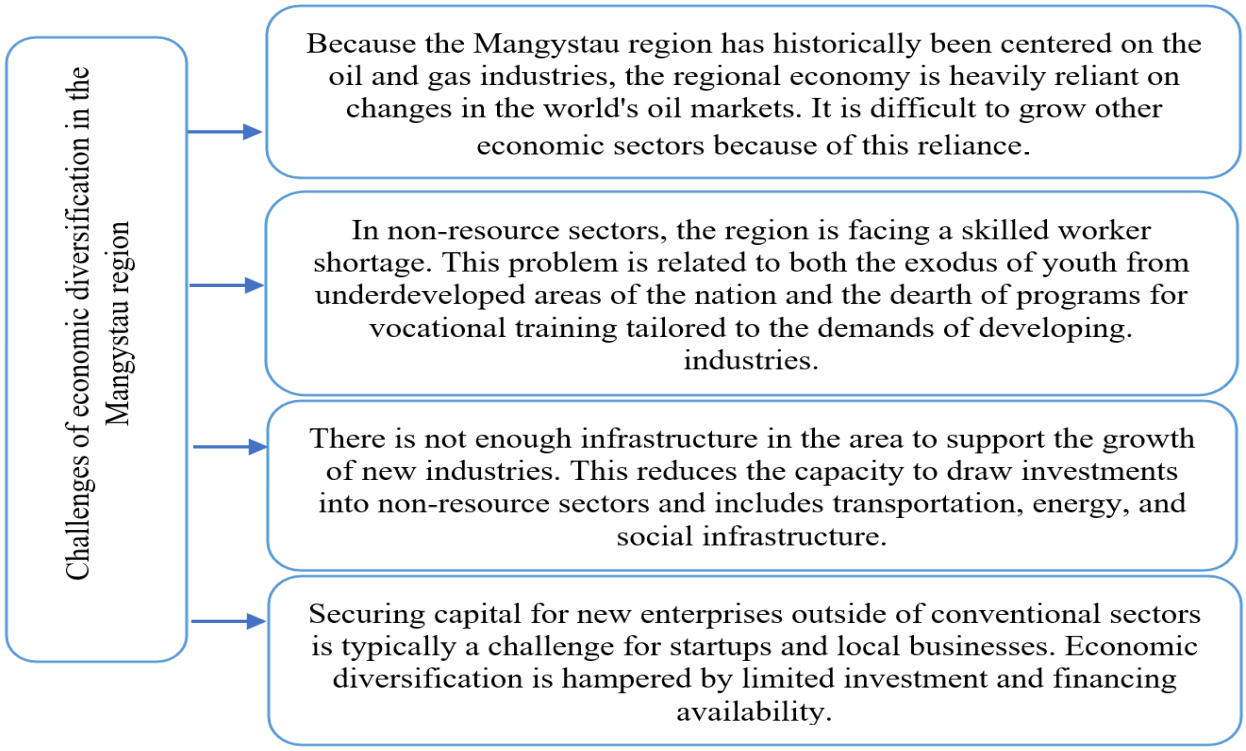


Figure 10.
Challenges of diversification in the Mangystau region.
Source: Compiled by the author based on source [36] .

The economic diversification of the Mangystau region faces a number of significant challenges related to its historical dependence on the oil and gas sector, institutional constraints, lack of human resources and infrastructure constraints [44]. The main problems hindering export diversification are described in detail below.

1. More than 70% of the region's exports are related to hydrocarbons, which makes the economy vulnerable to fluctuations in oil and gas prices on world markets. This leads to income instability, especially during global energy crises.
2. The underdevelopment of the processing industries leads to the export of crude oil and gas, instead of creating high-value-added products. This limits the region's potential to increase revenue from exports of processed goods such as plastics, chemicals, or lubricants.
3. Due to significant investments in the oil and gas sector, other sectors such as agriculture, tourism and industrial production remain underfunded, which limits their export potential.
4. Diversification requires professionals in areas such as innovative technologies, resource management, agricultural technology, and tourism. However, the lack of educational programs in these areas is exacerbating the personnel crisis.
5. Young people and qualified professionals leave the region in search of better opportunities in the more developed economic centers of Kazakhstan or abroad. This leads to a "brain drain" and exacerbates the personnel problem.
6. The population's dependence on traditional industries makes it difficult to adopt innovative approaches and new forms of employment.
7. Insufficient transport networks, including roads, railway lines and seaports, makes it difficult to export goods. For example, despite the availability of Aktau and Kuryk ports, their throughput and logistical connectivity remain low.
8. The energy supply needs of non-resource industries, such as renewable energy sources, often face the limitations of existing power grids, designed mainly for oil and gas enterprises.
9. The dry climate and water scarcity limit the development of agriculture and eco-tourism, which could form the basis for export diversification.
10. Difficulties in registering businesses, obtaining licenses, and accessing subsidies limit the flow of investment into non-resource industries. This slows down the creation of new export-oriented enterprises.
11. The lack of clear rules and a high degree of corruption deter potential investors. It is difficult for many foreign and local companies to do business in the region due to the unstable institutional environment.
12. Legislation regulating export procedures has not been adapted to stimulate non-primary exports. For example, there are no measures to support export-oriented small and medium-sized businesses.
13. The location of Mangystau far from major markets and logistics hubs makes it difficult to transport products. The region also faces high export costs due to its distance from consumer markets.
14. The region's hot and dry climate requires significant costs for maintaining infrastructure and adapting to climate change. The decrease in the Caspian Sea level threatens the operation of ports and logistics routes.

15. Small and medium-sized enterprises are experiencing difficulties in attracting financing, as banks prefer to invest in low-risk oil and gas projects.
16. High political risks and lack of attractive conditions for investors limit the region's access to international grants and private capital.
17. The local population and businesses accustomed to working in the oil and gas sector are resisting the transition to new economic models such as ecotourism or green energy.
18. The lack of information about the opportunities of new economic sectors reduces the motivation of the local population and businesses to participate in the diversification processes.

The effective implementation of an investment and structural policy targeted at attracting investments from varied sources, including foreign capital, is necessary to diversify the Mangystau region's economic potential and enable structural changes in the economy. The region's priorities for investment activity include supporting small and medium-sized enterprises and adding more jobs.

4.2. Analysis of Economic Diversification in Global Regions

Persian Gulf nations like Saudi Arabia and the United Arab Emirates have effectively adopted diversification policies to lessen their reliance on oil. According to Mishrif [45] these nations are devoting substantial resources to the advancement of tourism, technology, financial services, and renewable energy. Given the region's advantageous geographic location, such strategies might be used in Mangystau to boost the non-resource sectors of the economy, particularly in tourism and logistics. Chile has been able to diversify its economy by increasing the growth of its fisheries, agricultural, and high-tech industries and decreasing its dependency on copper exports. Investments in these areas have been greatly aided by government incentive programs [28].

This experience shows that export-oriented industries like raw material processing and agriculture can achieve sustained development, and this might be a component of Mangystau's strategy. Local examples can provide insightful information as well. For example, the Kostanay region has improved employment and reduced its reliance on raw materials by increasing agriculture and the food sector. This demonstrates the flexibility with which diversification policies may be adjusted to Kazakhstan's geographical setting, underscoring the need of government assistance and economic development initiatives [46]. Malaysia's economy shifted from being resource-based to being centered on high-tech services and manufacturing. Key success elements included the creation of industrial parks and luring foreign direct investment [30]. Mangystau can benefit from Malaysia's experience in establishing special economic zones and luring in foreign capital to bolster regional economic diversification. By including cases from other parts of the world, the study's scope is expanded and the variety of ways to economic diversification is demonstrated. This makes it possible to comprehend more fully which strategic components, given Mangystau's particular circumstances, would work best for the region. Such an approach offers a greater range of instruments for putting the research's practical suggestions into practice, in addition to strengthening its theoretical underpinnings.

4.3. Feasibility of Implementing Norway's Economic Diversification Strategy

Norway's economy, which is based on knowledge, innovation, technology, and sustainable development, is very competitive. The nation is a leader in industries like energy, shipbuilding for the maritime industry, oil and gas, and seafood production. For nations with large hydrocarbon reserves, Norway's experience in growing the oil and gas industry is a good model, as this sector changed quickly and became a vital component of the national economy. To achieve these results, effective government regulation was crucial. Norway's overall exports in 2023 were $176 billion, a 36% decrease from 2022. In particular, from $276 billion in 2022 to $100 billion in 2023, the nation's goods exports decreased [29].

This shows how flexible Norway is in responding to market fluctuations and emphasizes the value of adaptable policies for nations like Mangystau, where the oil and gas industry is dominant. In addition to emphasizing effective resource management, the Norwegian model also incorporates innovation, sustainability, and government participation—elements that may play a crucial role in determining Mangystau's own diversification plan.

Norway is a liberal democracy with a robust parliamentary system, a well-developed market economy, and strong private property rights protection. The nation enjoys the advantages of a strategic location in the financially developed region of Western Europe and with access to maritime routes. In Norway, engineers and businesspeople are always bringing new and cutting-edge products to the market. Along with other Scandinavian nations, Norway's society is notable for its unwavering adherence to the equality concept. Norway has some of the lowest worldwide income gaps between top executives and workers. As of right now, the Norwegian government does not give any particular economic diversification plan priority. The fundamental tenet of regulatory agencies is non-intervention, with an emphasis on fostering competition in the marketplace [47]. For instance, Statoil's public listing and partial privatization were intended to boost the company's accountability to private investors and encourage it to compete with global public oil giants. Norway's economy has become more diversified naturally as a result of its quickly growing oil and gas industry. Instead of offering financial incentives, the government supported the growth of industrial clusters by offering advisory and organizational assistance. The laws of the nation mandate that all government operations be carried out in full public view [48]. Norway's economic model is an example of a successful diversification strategy, especially for countries rich in natural resources. This model is based on sustainable oil revenue management, innovation, and long-term planning. State Pension Fund (Sovereign Wealth Fund). Norway uses oil and gas revenues to form a State Pension Fund (also known as the "Future Generations Fund") that invests in international assets. This ensures the stability of the economy and minimizes the impact of price fluctuations on hydrocarbons. The Mangystau region may create a similar stabilization fund to finance long-term projects such as

infrastructure, education, and technology development. Norway is actively investing in scientific research, renewable energy and technology startups. These investments contribute to the creation of new sectors of the economy. For Mangystau, this may be relevant in areas such as solar and wind energy, agrotechnology, and eco-tourism.

In Norway, the development of SMEs is supported by tax benefits, simplified procedures and access to finance. This contributes to the development of entrepreneurship in non-resource sectors. Mangystau can adopt these practices to stimulate the growth of local businesses, especially in the fields of tourism, processing of raw materials and high technology. Norway pays great attention to environmental sustainability. The development of natural resources is accompanied by strict regulation and the deployment of technologies that minimize the impact on the environment. This is especially important for Mangystau, given its natural conditions and the need to develop environmentally sound technologies. The application of the Norwegian model in the Mangystau region seems to be a logical step, given the common features of the two economies, such as high dependence on hydrocarbons and the need for diversification. Norway's lessons, including long-term planning and a focus on sustainable development, can help the region overcome the "resource curse".

1. The Norwegian experience in managing oil and gas revenues through stabilization funds is an effective mechanism for minimizing fluctuations in budget revenues. The creation of a similar fund in the Mangystau region will ensure sustainable long-term investments in the development of non-resource sectors of the economy.
2. Norway's experience demonstrates that strategic investments in education and innovation can provide a long-term foundation for sustainable economic growth. In the context of the Mangystau region, this strategy can be implemented by creating educational and research centers focused on the development of advanced technologies and effective management of natural resources.
3. Adapting Norwegian experience, including the introduction of tax incentives and subsidy mechanisms, can contribute to the dynamic development of sectors such as tourism, agricultural processing and high-tech manufacturing.

Although the Norwegian model is an attractive example of economic transformation, its adaptation in the Mangystau region faces a number of significant challenges. Unlike Norway, the region does not have comparable revenues from oil exports necessary for the formation of a large stabilization fund, which necessitates the attraction of international investments and the use of grant programs. The Norwegian strategy includes effective mechanisms for building a sustainable and diversified economy, and its application in Mangystau can be a key step towards reducing dependence on the hydrocarbon sector and forming a more balanced economic system. However, the successful implementation of this model requires comprehensive institutional reforms, active involvement of financial resources and significant investments in the development of human capital. A key factor in adapting this experience is a flexible approach based on regional specifics and supported by consistent political support, which will effectively integrate international practices into the economic development of the Mangystau region.

4.4. Feasibility of Implementing Australia's Economic Diversification Strategy

Geographically and historically, the Asia-Pacific area has constituted the core of the Australian Union's foreign policy agenda. Neither party's foreign policy strategy has ever placed a high focus on relations with the European Union or Australia. But Australia's foreign policy is heavily influenced by its bilateral relations with the European Union, especially in light of the country's economic growth [49].

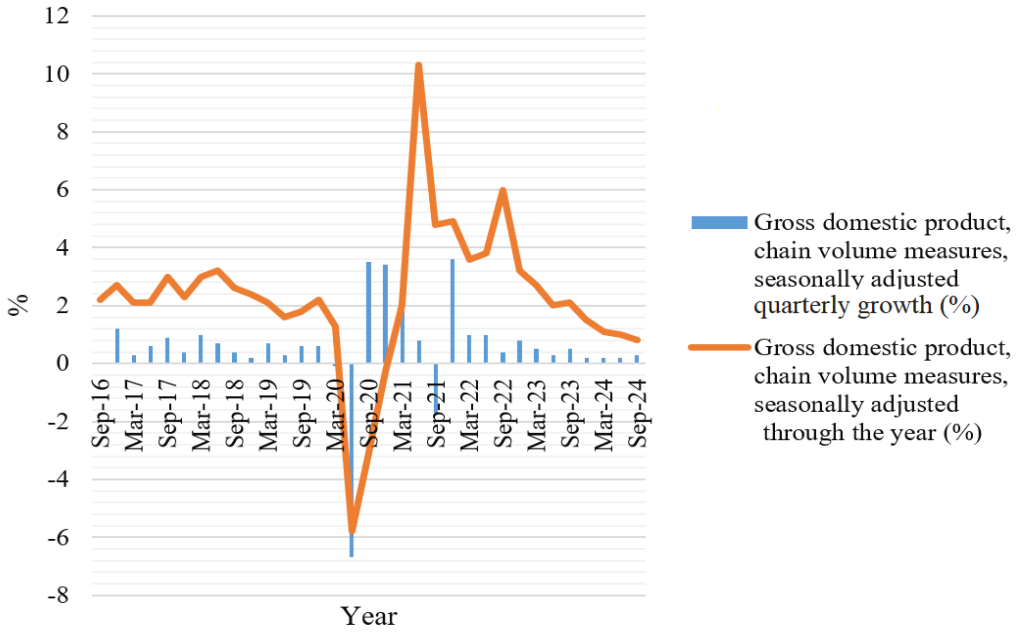


Figure 11.
Australia's GDP growth.
Source: Compiled by the author based on source [43].

The increase of shares and sectors in each market has resulted in substantial changes to the stock markets during the last ten years. The majority of the biggest stock markets in the world are now more concentrated as a result of this expansion. Australia is a noteworthy exception, though, since its sector and share diversification has improved.

Domestic final demand contributed 0.6 percentage points to GDP growth. The public sector supported domestic demand through government expenditure (+0.3ppt) and public investment (+0.3ppt). Private demand through household consumption and business investment were weak and had no contribution to GDP growth. Net trade contributed 0.1 percentage points to GDP growth as imports (-0.3%) fell and exports (+0.2%) rose. Changes in inventories detracted 0.4 percentage points from GDP growth, as a drawdown in inventories followed a buildup in the June quarter. Mining inventories were rundown as exports exceeded production during the quarter. Retail Trade inventories were rundown as subdued household demand saw previously imported stocks not replenished, particularly in clothing, household items and motor vehicles [43].

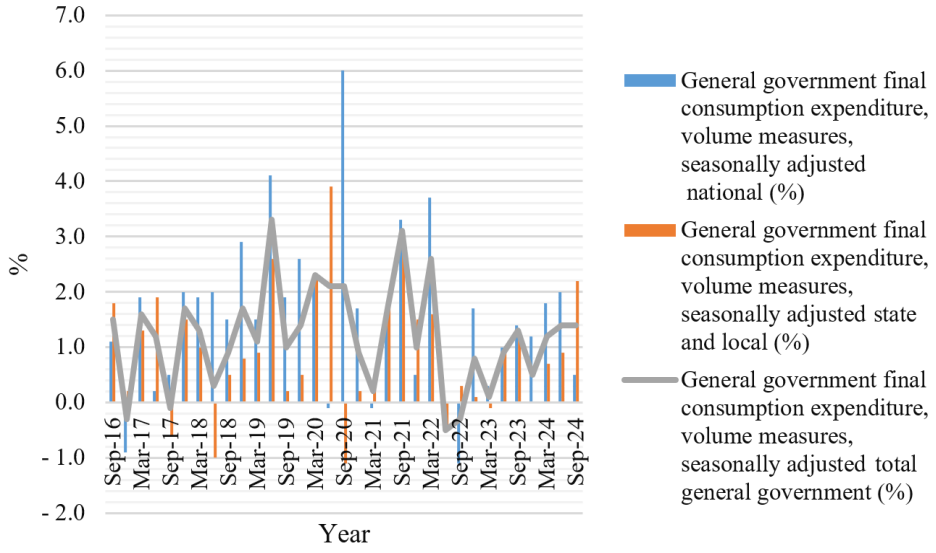


Figure 12.
Analysis of government reconstruction costs.
Source: Compiled by the author based on source [43].

Public investment (+6.3%) increased after three quarters of falls. General government investment rose though imports of defence equipment and investment in hospital and road projects. Investment by state and local public corporations also contributed to the rise with increased activity across states on major road and renewable projects. Private investment (+0.1%) increased modestly driven by dwelling construction through improvement in work done on new home commencements. This follows the recent period of construction bottlenecks due to labor and materials shortages. Ownership transfer costs (+1.6%) rose due to continued turnover in the property market. Non-dwelling construction (-2.7%) partly offset the rise, although remained at elevated levels with recent investment in warehouses and data centers [43].

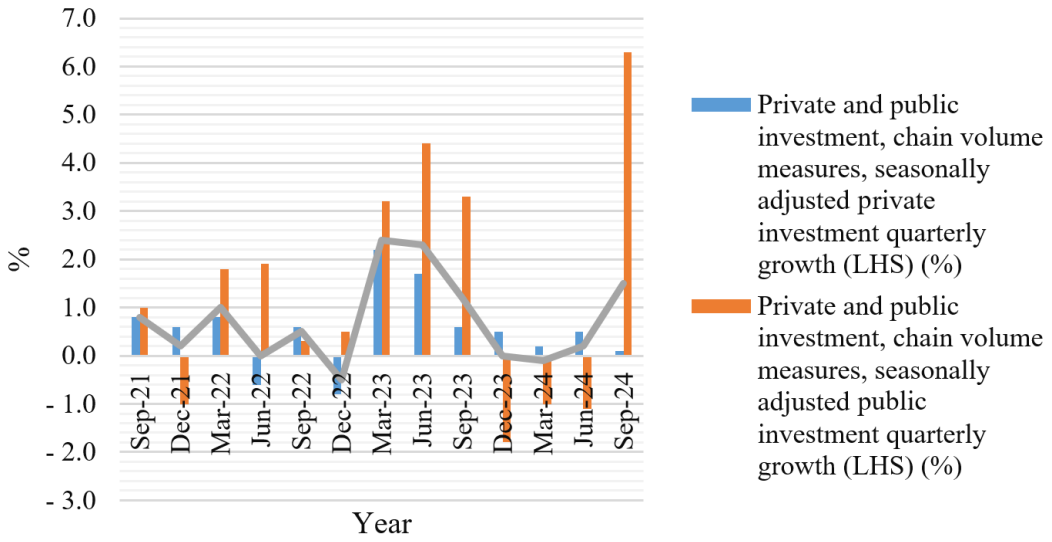


Figure 13.
Investment activity in the private and public sectors.

Household consumption (0.0%) was unchanged from the previous quarter. Essential spending fell 0.1% led by a strong fall in electricity, gas and other fuels (-16.7%). The fall is from reduced underlying demand for heating from milder winter conditions, combined with expansion of energy bill relief schemes which reduced household electricity bills. Slightly offsetting the fall are the other essential categories, including rent and other dwelling services (+0.4%) and health (+0.8%), which remain among the top contributors to household consumption, in line with continued population growth. Discretionary spending rose 0.1% led by clothing and footwear (+2.2%). Spending by Australian travelers overseas also contributed to growth in tourism categories including hotels, cafes and restaurants, and recreation and culture [43].

Australia authorized a list of important technologies in May 2023 that are vital to the nation's interests, including social stability, economic development, and security. These technologies are essential to sustaining dependable access and demand the growth of indigenous industrial, scientific, and intellectual capacities in addition to safe supply chains [50]. Since 2021, the government of Australia has financed two programs aimed at diversifying the country's telecommunications sector, which was estimated to be worth $33.7 billion in 2023. With a $22.1 million budget, the first initiative is called the Australian 5G Innovation Initiative, and it supports 19 projects that test, demonstrate, and investigate innovative applications of 5G technologies.

The Territorial Connectivity Development Program has been given an even larger budget of $32 million. This program will support practical projects like the deployment of open architecture radio access networks (Open RAN) as well as fundamental research on the applications and regulatory implications of new standards and 6G networks [50].

Australia implemented a number of reforms in the financial sector, labor market, tax system, and corporate regulations to achieve economic success and stability during the global financial crisis. Additionally, the nation leveraged foreign investments and provided support to small and medium-sized enterprises.

Australia's economic diversification is an outstanding example of a successful transition from dependence on natural resources to a more sustainable and balanced growth model. For example, rail projects such as Inland Rail (the construction of a 1,700-kilometer railway network) have linked the hinterlands to key ports, increasing export opportunities for agriculture and mining. For Mangystau, such modernization of transport infrastructure may include the expansion of Aktau and Kuryk seaports, the construction of railway lines connecting the region with the rest of Kazakhstan and foreign markets, which will significantly improve logistics and reduce transportation costs.

Australia has made the agricultural sector highly efficient through the implementation of modern technologies. The use of precision farming, irrigation, and digital monitoring systems has enabled Australia to become one of the world's leading exporters of wheat, beef, and dairy products. For the Mangystau region, which has an arid climate, water resource management and land reclamation technologies can become key to the development of agriculture. For example, the implementation of solar desalination plants, the use of drought-resistant crops and agricultural drones to monitor the condition of fields.

Australia is successfully developing ecotourism, which includes visits to national parks, marine reserves and cultural attractions such as the Great Barrier Reef or Kakadu National Parks. This sector brings billions of dollars to the economy and creates jobs.

Australia has achieved technological leadership through the formation of specialized innovation clusters, including the Technology Park in Adelaide and Innovation Zones in Sydney, which have contributed to the development of cutting-edge research and technology initiatives. These centers support startups, attract international investors, and promote the development of high-tech industries such as fintech, biotechnology, and renewable energy. For Mangystau, the creation of innovation hubs can stimulate local entrepreneurship and attract investments in areas such as green energy, waste recycling, and natural resource management technologies.

Australia is actively developing renewable energy sources. Solar and wind power projects such as the Hornsdale Power Reserve (one of the largest batteries in the world) have allowed the country to reduce its dependence on coal and gas. Similar projects can be implemented in Mangystau, where the climatic conditions are ideally suited for the development of solar and wind energy. This will not only reduce the region's carbon footprint, but also create new jobs and opportunities for exporting electricity to neighboring regions.

In Australia, small and medium-sized businesses account for about 35% of GDP. The government promotes the development of SMEs through tax incentives, access to finance and simplification of bureaucratic procedures. In Mangystau, the development of SMEs can focus on such industries as agricultural processing, tourism, logistics and IT services. For example, providing subsidies or grants to startups in the field of ecotourism or agrotechnology can be an important tool for stimulating the economy.

The application of the Australian model in Mangystau seems particularly relevant due to the similarity of the challenges associated with resource dependence and climatic conditions. However, the adaptation process requires full consideration of the following factors.

1. Unlike Australia, the Mangystau region has limited financial resources to implement large-scale infrastructure projects. In this context, attracting international investments, including financing from institutions such as the Asian Development Bank and the World Bank, is an important tool for ensuring sustainable economic growth in the region.
2. The arid climate of the Mangystau region creates significant constraints for the development of the agricultural sector, which necessitates the introduction of modern technologies for rational and sustainable water resources management.

3. The shortage of qualified specialists necessary for the development of new economic sectors in the region makes it necessary to implement targeted educational programs, as well as establish partnerships with leading international universities to train competitive personnel.

The economic diversification strategy implemented in Australia is a comprehensive model based on innovation, principles of sustainable development and long-term strategic planning. In the conditions of the Mangystau region, the adaptation of this approach can help reduce dependence on the oil and gas sector and form a new economic structure. However, the successful implementation of this model requires significant investments, institutional reforms, and the active involvement of the private sector. The Australian experience highlights the key role of integrating innovative technologies, supporting small and medium-sized businesses, and ensuring environmental sustainability, which can form the basis for the economic transformation of the Mangystau region.

4.5. Development of a Diversification Model

A model of optimal economic diversification has been developed for the Mangystau region, based on a comparative analysis of the experience of several countries. This model takes into account the specific economic, social and environmental factors of the region, as well as the adaptation of the most effective diversification strategies successfully applied in international practice.

1. In order to rationalize the use of oil production revenues, Norway has created a National Welfare Fund that invests in foreign assets, ensuring long-term economic stability and financing promising initiatives. In this context, it is recommended to consider the possibility of creating a regional stabilization fund in the Mangystau region, formed at the expense of oil revenues, in order to support the processes of economic diversification. The optimal strategy provides for the allocation of part of the fund for the implementation of social programs, modernization of infrastructure and development of creative industries, which will increase the stability of the regional economy.
2. Australia is implementing a diversification strategy aimed at reducing dependence on the coal and mining industries through the active development of agricultural technologies, ecotourism and renewable energy sources. In this context, it is advisable for the Mangystau region to develop a comprehensive policy focused on the formation of a "green" economy, including the construction of solar and wind energy facilities, as well as the development of the ecotourism industry. This approach not only helps create new jobs, but also ensures sustainable economic growth in the region, reducing its vulnerability to fluctuations in commodity markets.
3. After the discovery of oil fields, Norway invested heavily in the development of shipbuilding, fishing and marine technologies, which contributed to the successful diversification of its economy. In the context of the Mangystau region, it is advisable to focus on the development of non-resource industries, such as manufacturing and chemical industries, fishing and aquaculture. Achieving this goal is possible through attracting investments, including the creation of special economic and industrial zones that provide tax incentives and other incentive measures to potential investors.
4. The experience of Norway and Australia demonstrates that the successful achievement of economic diversification is largely due to large-scale investments in research, education and innovative developments. These measures have contributed to the development of advanced technologies and the accumulation of intellectual capital. In this context, the creation of research institutes and educational institutions specializing in natural resource management, sustainable development and technological innovation is a priority for the Mangystau region. An important component of this strategy is the development and implementation of educational programs in such promising areas as environmental and information technology, which will allow us to train qualified personnel for future sectors of the economy.
5. Australia is implementing comprehensive measures to stimulate small and medium-sized enterprises, including the provision of preferential loans, subsidies and simplification of administrative procedures. In order to develop entrepreneurial activity in the Mangystau region, it is advisable to create a favorable business environment by reducing administrative barriers, expanding access to financial resources and introducing tax incentives. Of particular importance is the support of small and medium-sized businesses in non-resource sectors of the economy, such as information technology, agriculture and tourism, which will contribute to sustainable economic growth in the region.
6. Australia's practice demonstrates that reducing administrative barriers and simplifying regulatory procedures contribute to accelerated business development. In this regard, it is advisable for the Mangystau region to initiate reforms in the field of state regulation, giving priority to simplifying business registration and licensing procedures, as well as minimizing administrative barriers for investors and enterprises. These measures will help create a more favorable business climate and attract additional investments to the region.
7. Allocating Funds to Social Programs to Promote Stability: In Norway, social programs are funded to promote social stability and enhance the standard of living. It is suggested that social initiatives be put into place in Mangystau with the goal of raising living standards, strengthening the healthcare and educational systems, and lowering unemployment in order to promote social stability in the area.

Table 5 presents the suggested economic diversification model for Mangystau and outlines the measures needed to implement it in a phased manner that will achieve this complete approach to sustainable development for the region.

Table 5.
Phased implementation of the economic diversification model for the Mangystau region.

№	Name	Year	Description	Effect of implementation	Risks
1	Preparatory	1	The objective of establishing an oil-derived stabilization fund is to provide capital for upcoming economic diversification initiatives. A thorough plan of action for putting suggested policies into practice is included in the creation of strategies and action plans. This includes setting aside money for small company support, industrial diversification, and the advancement of the green economy.	establishing the framework for long-term, sustainable growth and boosting investor confidence .	Risks include a lack of initial funding and potential resistance from local authorities or the population.
2	Development of infrastructure and business	2-3	1. To supply the area with clean energy and encourage the creation of new jobs, investments in green energy entail the installation of wind and solar power facilities. 2. To improve trade routes and increase the effectiveness of products transportation, the development of transport and logistics infrastructure requires the upgrading of road networks and ports. 3. The implementation of special loan programs and tax advantages, notably in the tourism and agro-industry sectors, is one way to support the small and medium-sized business sectors.increase in the GDP of the area, the development of new jobs, and a decrease in reliance on natural gas and oil resources.	Increase in the GDP of the area, the development of new jobs, and a decrease in reliance on natural gas and oil resources.	Potential delays in the completion of infrastructure projects and a lack of interest from private investors are two examples of risks. .
3	Diversification and sustainable growth	4-5	1. Investments in subjects like engineering, the chemical industry, and other promising areas contribute to the development of non-resource sectors. 2. Promoting eco-tourism and continuing the development of renewable energy sources are essential components of supporting an environmentally sustainable economy. 3. Improving social infrastructure entails putting policies into place targeted at raising the standard of healthcare and education provided to the populace in order to raise their standard of living.	As a result, sustainable economic development is expected, along with a reduction in unemployment, an improvement in the quality of life, and an increase in the share of non-resource sectors in the overall economy.	Potential risks include possible economic crises that could slow down growth, as well as fluctuations in global energy markets.

By developing an implementation plan for the diversification model, an approximate estimation of the expected economic impact can be calculated (Table 6).

Table 6.
Projected economic effect for the next 5 years.

Year	Mangystau GDP growth (%)	Jobs created	Infrastructure investments (Billion tenge)	Share of non-resource sectors in the economy (%)
1	+2%	500	50	20
2	+3.5%	1000	120	25
3	+4.5%	1500	150	30
4	+5.5%	2000	180	35
5	+6.5%	2500	200	40

Figure 14 illustrates the key risks and mitigation strategies.

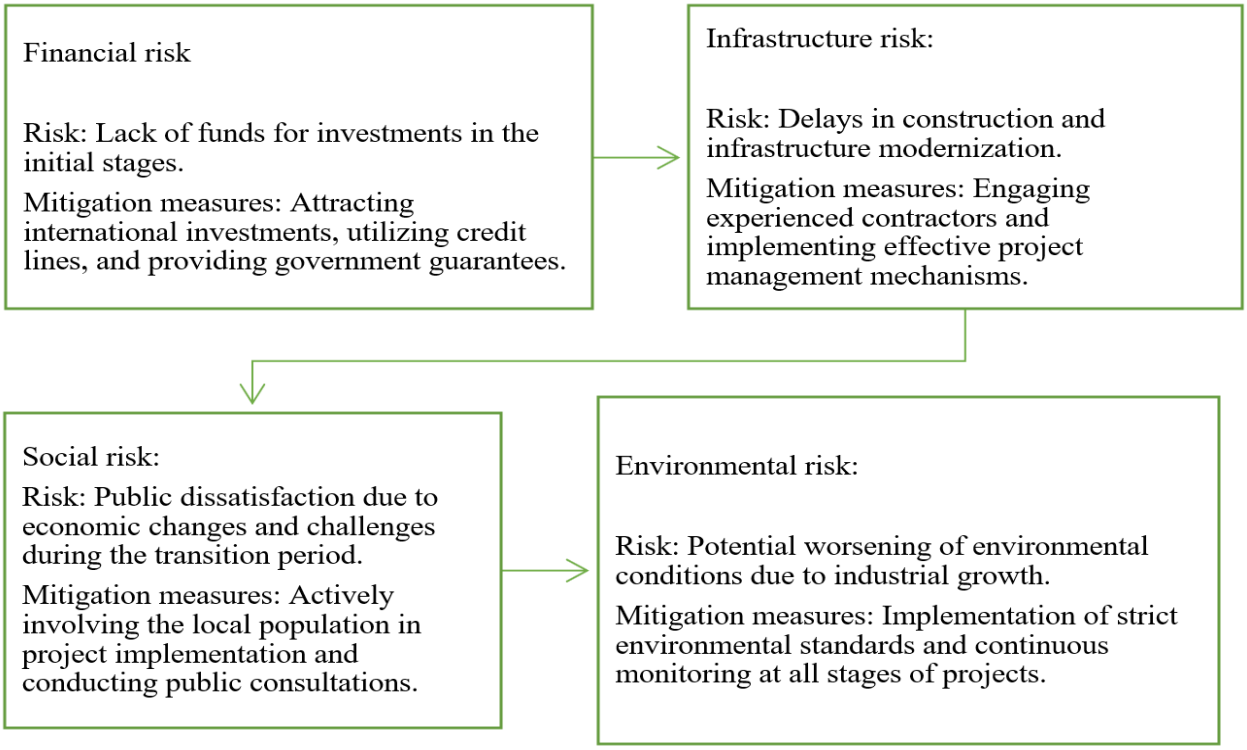


Figure 14.
Risks of implementing the diversification model.

Thus, cooperation with local authorities, maintaining transparency, and enhancing responsibility of all process participants are necessary for the successful execution of the stabilization fund and other programs. Reform resistance can be reduced and support can be increased by involving local leaders and taking local interests into account. Mangystau has historically concentrated on the extractive industries, but the need to lower risks related to the volatility of global oil and gas prices is driving a trend toward diversification. The suggested techniques are relevant and economically feasible because the region has the resources to build alternative industries including tourism, agro-industry, and renewable energy.

The implementation of research and educational initiatives that honor regional customs and unique features can enhance worker competencies and promote societal acceptance of novel economic frameworks. By emphasizing the training of experts in green energy and industrial innovations, local centers of competence will be established and serve as the cornerstone of sustainable growth. The suggested diversification strategies account for potential roadblocks including early financial difficulties and a lack of investing activity. The purpose of proposed lending and tax incentive programs is to reduce these risks and facilitate a more seamless execution under Mangystau's unique circumstances. It is worth mentioning that the area has prior experience implementing international methods to some extent, such as in the field of oil and gas technologies. Mangystau is starting a policy to grow its manufacturing sector with the goal of building an export-oriented, large-scale production enterprise. The program, which also stresses the need to grow internal production to boost the nation's economic independence and enhance manufacturing to suit domestic requirements, is not without contradictions, though. Disagreements exist within the Kazakh government on how to balance export orientation in industrial strategy with import substitution and self-sufficiency. According to research, import substitution policies impede the industrialization and diversification process. Kazakhstan's import substitution strategies have resulted in ineffective

industrial strategy over the last 20 years. Generally, import substitution entails limiting imports through the use of customs and non-customs obstacles, as well as offering other forms of government assistance, in order to safeguard indigenous manufacturers. The state's job in a mature market economy is to set up the framework for fair competition between imported and native goods. It becomes unrealistic to artificially sustain a national producer's company through government involvement if that producer is unable to compete with high-quality, reasonably priced imports. These policies frequently have a negative financial impact on taxpayers through subsidies and increased prices for consumers as a result of import restrictions. The goal of an export-oriented industrial policy is to establish an environment in which the amount of medium- and high-tech goods and services exported outweighs the number of comparable products imported. By focusing on high-tech exports outside of the resource industry, this strategy enhances international competitiveness and fosters economic resilience.

A local manufacturer should file for bankruptcy rather than relying on government-provided "greenhouse conditions" that perpetuate inefficiency if it is not export-focused or cannot compete with lower-cost imports. In conclusion, Mangystau's economic diversification objectives can be more effectively supported and the region's competitiveness in the global market increased by moving away from import substitution and toward an industrial policy that is driven by exports. Focusing on the development of exports of high-tech products contributes to ensuring sustainable economic growth and reducing dependence on the oil and gas sector. The analysis of previous studies makes it possible to identify effective strategies and mechanisms that contribute to achieving this goal.

1. Lebdioui [28] notes that Chile has successfully implemented an economic diversification strategy, reducing dependence on copper exports and stimulating the development of high-tech industries and the agricultural sector. Similar to the proposed strategy for the Mangystau region, the experience of Chile demonstrates the importance of government support aimed at developing export-oriented production and attracting investments in promising sectors of the economy.
2. Mishrif [45] analyzes in detail the active development of non-resource sectors of the economy, including tourism and renewable energy sources, in the United Arab Emirates and Saudi Arabia. Unlike the Mangystau region, these countries have made large-scale investments in technological development and improving the business climate. The experience of these countries can be adapted to the conditions of Mangystau, especially in the context of infrastructure modernization and stimulating the growth of entrepreneurial activity.
3. Kok Seng and Siripipatthanakul's report from 2024 stressed the value of developing industrial parks and drawing in foreign capital for economic diversification. Mangystau can benefit from this experience by creating special economic zones that encourage innovation and provide tax breaks.

The analysis shows that in order to successfully diversify the Mangystau region, it is necessary to adapt strategies taking into account local characteristics, paying attention to improving the business environment, supporting innovation and developing human capital. It is important to continue research to assess the long-term effects of the proposed measures and explore additional aspects such as digital technologies and eco-tourism.

It is necessary to seriously reconsider the approach to direct government support for business. Currently, such assistance distorts market incentives to improve competitiveness, in particular by increasing productivity. Protection from external competition and direct government assistance in the form of subsidies and benefits contribute to the formation of business dependence on the state. Instead of maintaining such anti-market support, the Government should direct resources to the development of physical and market infrastructure, human capital, as well as scientific research, innovation and R&D.

Next, we will perform a statistical analysis of the dependence of the Mangystau region on the oil and gas sector in comparison with other sectors Figure 15.

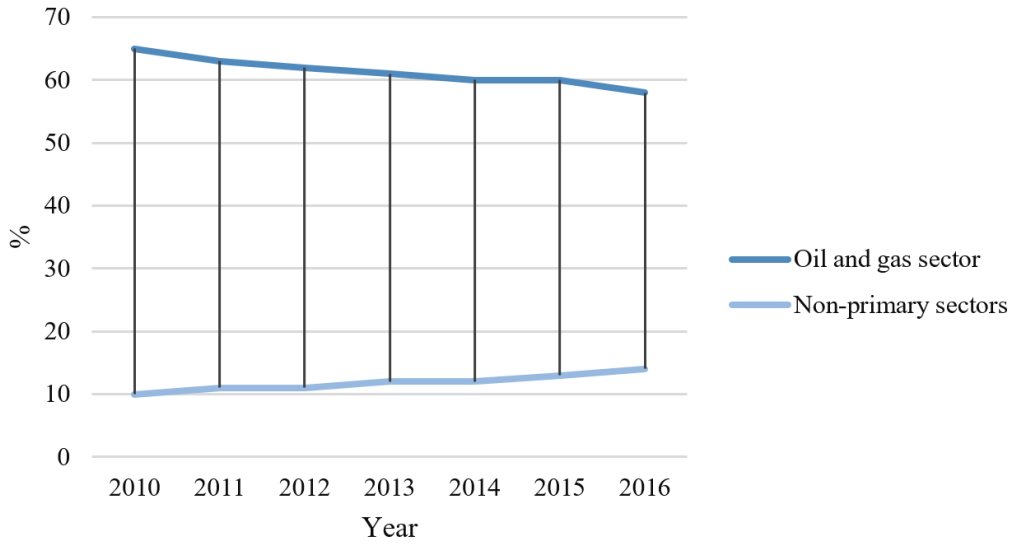


Figure 15.
Analysis of the dependence of the Mangystau region on the oil and gas sector in comparison with other sectors.

The graph shows how the economy of Mangystau is becoming less dependent on the oil and gas industry. The share of this sector decreased from 65% to 50% from 2010 to 2023, while other sectors such as industry, agriculture and tourism increased from 10% to 19%. This indicates that the region is successfully diversifying its economy.

Next, let's look at the GDP structure of the Mangystau region Figure 16.

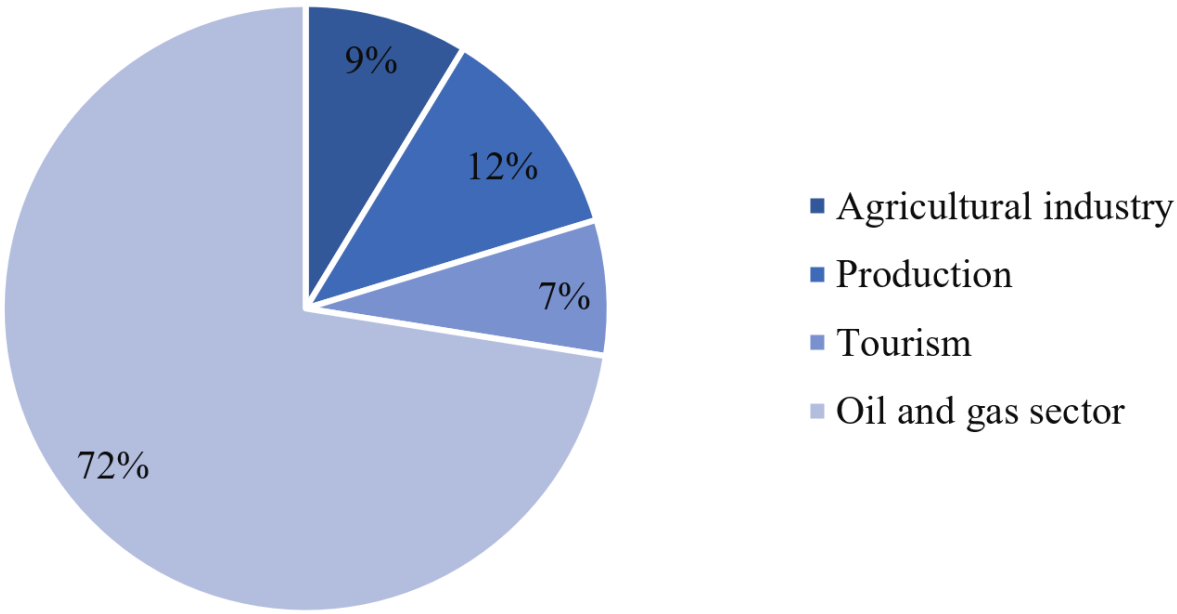


Figure 16.
The structure of the Mangystau region's GDP for 2023.

The chart shows the structure of the Mangystau region's GDP for 2023. The oil and gas sector still occupies a significant part (50%), but the share of manufacturing, agriculture and tourism is also growing, amounting to a combined 20%. These changes indicate a gradual decrease in dependence on the hydrocarbon sector and an increase in the contribution of non-resource industries to the region's economy.

Exports of goods always exceed imports, and during this period increased from 7,000 to 15,000 conventional units. Imports are also increasing, but not so fast. Exports of services also gradually increased from 2,000 to 3,500 units, while imports of services increased from 1,500 to 3,000 units, remaining below exports. This indicates positive changes in the foreign trade of the region, where exports of goods and services exceed imports.

Figure 17 shows the growth of non-resource sectors in Mangystau over the past 10 years.

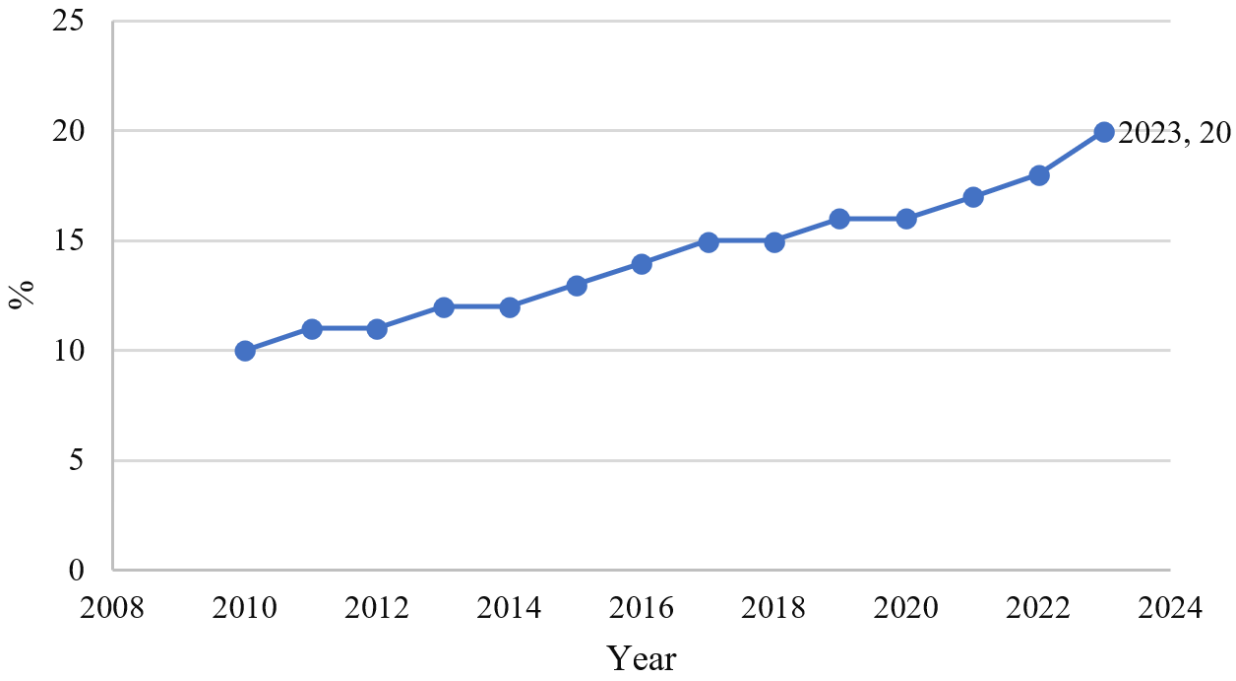


Figure 17.
Growth of non-resource sectors in Mangystau.

Let's consider the forecast of growth of non-resource sectors in Mangystau (Figure 18).

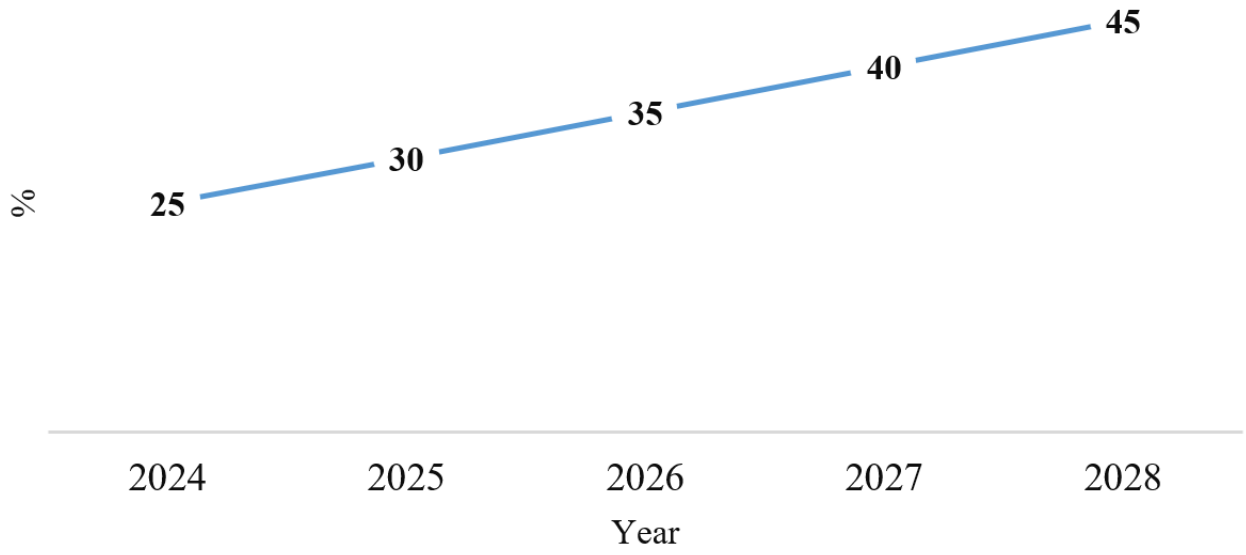


Figure 18.
Forecast of growth of non-primary sectors in Mangystau.

The forecast shows that in the next five years (from 2024 to 2028), the share of non-resource sectors in the Mangystau economy will continue to grow. The share of manufacturing industry is expected to grow from 9% to 13%, agriculture from 7% to 11%, and tourism from 6% to 10%. These industries will become more important, gradually reducing the region's dependence on oil and gas.

Let's consider potential problems and limitations in the implementation of strategies.

1. Economic constraint has a significant impact on regional development processes. Limited budgetary resources can significantly hinder the implementation of large-scale infrastructure projects and slow down the introduction of innovative technologies. In addition, attracting private investment involves a number of challenges, including insufficient transparency of the economic environment and a high level of investment risks, which reduces the attractiveness of the region for potential investors.
2. The prevailing dependence on income from oil and gas production significantly reduces financial opportunities for projects in non-resource sectors of the economy.
3. Social and personnel issues

- A limited number of personnel with experience in high-tech and innovative industries.
- Lack of educational programs focused on training specialists in the field of sustainable development and resource management.

4. Resistance to change

- Low willingness of the local population and businesses to adapt to new approaches, such as the use of innovation and diversification.

5. Institutional and administrative barriers

- Complex administrative procedures can slow down the process of strategy implementation, and corruption can scare off potential investors.
- Inconsistencies between different departments and management levels can lead to delays in the implementation of projects.
- The need to update legislation to support initiatives in the field of economic diversification and sustainable development.

6. Technological and environmental challenges

- The high cost of introducing advanced technologies, such as innovative methods of oil and gas extraction or "green" technologies.
- The need to take into account environmental constraints, especially in the context of the already significant impact on the nature of the region.

7. Geographical features

- Remoteness from large markets and logistics hubs makes it difficult to transport products and attract investments.
- A hot and dry climate requires additional costs for infrastructure projects and their maintenance.

Figure 19 shows measures to overcome the limitations.

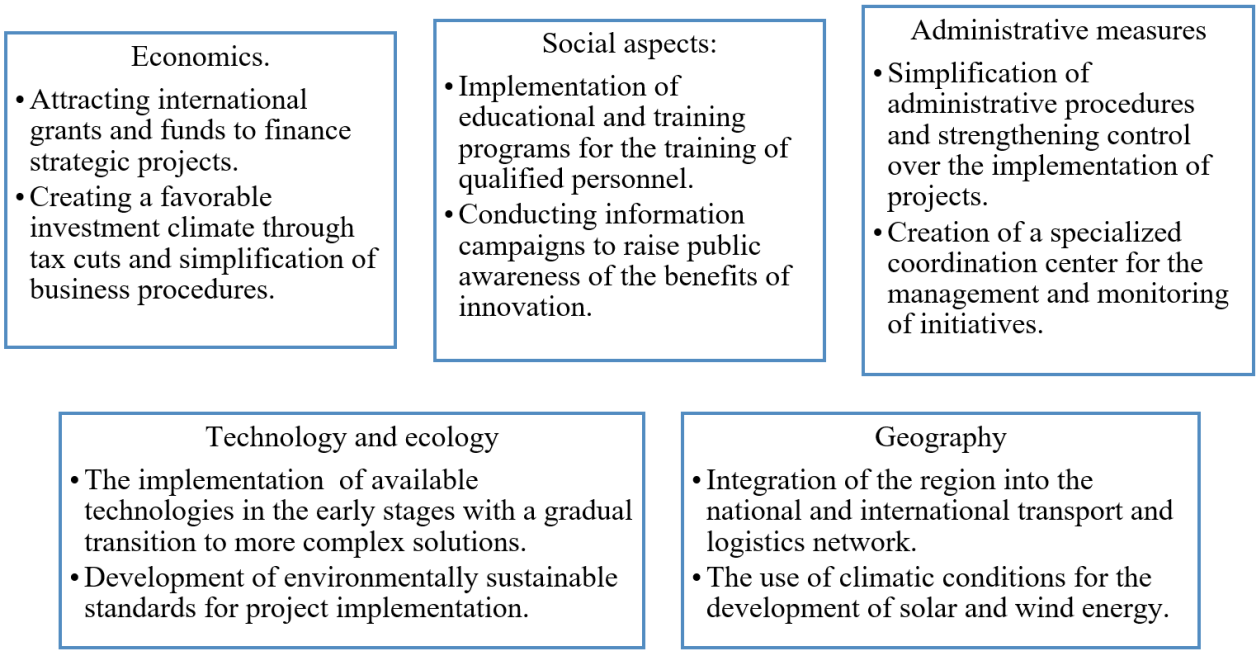


Figure 19.
Measures to overcome the limitations.

In the process of diversifying the economy of Mangystau, several main industries can be identified that are developing by reducing dependence on the oil and gas sector.

1. Production of high-value-added goods, for example, the petrochemical and machine-building industries, which helps to reduce the export of raw materials and increase the competitiveness of the region.
2. Agriculture is developing through the implementation of new technologies and methods of processing products, which improves food security and creates new jobs.
3. Tourism is growing due to natural resources such as the Caspian Sea coast. In the future, we can expect the development of ecological and cultural tourism, which will attract tourists and improve the image of the region.
4. Renewable energy sources such as wind and solar power plants are being developed, which reduces dependence on oil and gas and contributes to the environmentally friendly development of the region.
5. The IT sector and digital technologies open up new opportunities to create jobs and improve the efficiency of other industries.
6. Diversification creates favorable conditions for small and medium-sized businesses, especially in the service sector, tourism and processing. Government support, such as subsidies and tax breaks, plays an important role in this process.
7. Improving transport infrastructure, including the construction of roads and ports, helps to develop logistics and increase foreign trade, which supports the region's economy.

All these areas help reduce dependence on oil and gas, create new jobs and contribute to the economic growth of the region.

The forecast shows that the region's GDP will grow steadily, increasing from 25,000 to 37,500 conventional units, which indicates healthy economic development. The share of non-primary industries will also increase from 20% to 45%, thanks to successful diversification. Employment growth implies an increase in jobs from 50,000 to 66,000, which will improve the standard of living of the population. At the same time, the volume of investments will increase from 5,000 to 9,000 units, confirming the growing attractiveness of the region for investors. These data show positive prospects for the further development of non-resource industries and the attraction of capital.

Businesses become more dependent on the state when they are shielded from outside competition and get direct government assistance in the form of benefits and subsidies. The government should direct resources on building market and physical infrastructure, human capital, scientific research, and innovation rather than continuing to promote anti-market policies.

Evaluation of Research Restraints and Possible Hazards while Applying Suggested Approaches.

1. The distinct features of the Mangystau region might not have been adequately taken into account by the data utilized for study. Models that have been effectively applied in Australia and Norway could not work as well in Mangystau because of variations in the country's legal systems, degrees of economic growth, and appeal to investors. This raises the possibility that the strategies won't work as well as they did in the nations where they were prototyped.
2. The populace, local government, and companies that are used to the current system can oppose the implementation of new economic models. Strategies may take longer to implement and need more administrative resources if there are difficulties in altering the regulatory environment and the requirement for legal adaption. Securing the effective shift to a diversified economy will depend on overcoming these obstacles.

3. The implementation of large-scale infrastructure projects and programs to support small and medium-sized businesses may face significant difficulties due to a lack of timely investments and limited financing. The region's high dependence on external investment flows makes it vulnerable to changes in the global economy, which can not only complicate, but also significantly limit the implementation of economic diversification initiatives.
4. Global economic crises, transformations in energy markets and volatility in commodity prices may lead to a gradual transition to the use of renewable energy sources and stimulate industrial diversification processes. However, these factors can also reduce the sustainability of proposed changes, which can lead to a slowdown in economic growth. In conditions of instability of the global economy, effective management of these risks requires comprehensive preparation and high adaptability of economic policy.

Alternative economic development strategies focus on a more focused approach, as opposed to broad diversification. One of the key directions is to localize production and increase value added in already established industries, such as the oil and gas sector, which allows us to focus on strengthening the existing economic foundation instead of striving for overly large-scale diversification.

In addition, the introduction of a cluster approach focused on the formation of new enterprises in close integration with existing industries represents a safer and more organic strategy for stimulating economic growth. Investments in the development of social infrastructure, especially in health and education systems, also play an important role, as they contribute to strengthening human capital and forming a solid foundation for sustainable and long-term economic development. Increasing the participation of local entrepreneurs in public-private partnership (PPP) mechanisms and their active involvement in financing and implementing new initiatives can significantly reduce dependence on external investments. At the same time, this will contribute to the accelerated development of the regional economy, strengthen its sustainability and create favorable conditions for long-term economic growth.

The Norwegian model of natural resource management is an example of a long-term sustainable development strategy that can serve as a guideline for the Mangystau region. Due to the high dependence of the region's economy on oil and gas revenues, its financial stability remains vulnerable to fluctuations in hydrocarbon prices. Norway's experience in creating sovereign wealth funds demonstrates effective mechanisms for managing revenues from natural resources, allowing them to be used to ensure long-term economic growth.

It is proposed to adapt the Norwegian model by creating a regional fund funded by revenues from the extraction of natural resources. The funds coming into this fund can be used to implement projects aimed at diversifying the economy, supporting small and medium-sized businesses, as well as environmental initiatives. An important step will also be the use of Norwegian technologies to optimize production processes and reduce the negative impact on the environment. In addition, it is necessary to establish a competence center that will train local specialists and implement innovative solutions in key sectors of the economy.

Australia's infrastructure development strategies are a significant example that can be adapted to the specific needs of the Mangystau region. The development of infrastructure, including transport and logistics networks, is a key factor contributing to economic growth and attracting investment. Currently, the transport infrastructure in the Mangystau region is at a low level, which constrains economic activity in the region. Australia's experience in developing industrial clusters, such as mining, demonstrates how efficient value chains can be established and the competitiveness of the region's economy can be improved.

For the successful implementation of international strategies, it is necessary to take into account the specifics of the Mangystau region. One of the key tasks will be to develop a strategy that combines infrastructure solutions from Australia and Norwegian approaches to resource management. For example, you can direct part of the income from oil and gas production to the development of logistics infrastructure that will support the growth of non-resource sectors of the economy. At the same time, educational initiatives should be introduced to train local specialists who will be able to work in the context of modern requirements for sustainable development and innovative management.

However, successful implementation of the strategy will require overcoming existing barriers. Improving the investment climate will be a necessary step. This includes simplifying administrative procedures, reducing corruption, and creating transparent rules for investors. An important element will also be the development of a professional training program that will provide local professionals with knowledge in the field of sustainable resource management and innovative technologies.

The implementation of the proposed strategy may lead to significant positive changes in the region's economy. The diversification of the economic structure will reduce dependence on raw materials, which will be achieved through the development of transport infrastructure and attracting investments in non-resource sectors. Effective management of natural resources will increase production performance in oil and gas production, as well as reduce environmental risks, while creating a financial cushion for sustainable economic growth in the long term. An important result will also be the development of human capital, which will manifest itself in the creation of new jobs and professional development of the local population. This, in turn, will contribute to the strengthening of entrepreneurial activity. Infrastructure improvement projects will also have a significant impact on improving the quality of life by providing the population with access to medical, educational and social services, which will contribute to the overall sustainable development of the region.

The strategies applied by Australia and Norway are outstanding examples of effective natural resource management and economic development that can be adapted to diversify the economy of the Mangystau region. These models provide an opportunity to take into account the specifics of the region, including its dependence on raw materials industries, and offer ways to ensure sustainable economic growth.

- The application of the Australian model of sustainable growth through the creation of infrastructure (roads, ports, logistics centers) can increase the connectivity of the region with domestic and international markets, which will open access to new sources of income.
- The example of Australian industrial clusters (for example, in the mining sector) can be adapted to stimulate local production and increase the efficiency of existing industries.
- Norway is successfully demonstrating how to maximize the benefits of the oil and gas sector while minimizing environmental risks. The use of sovereign wealth funds makes it possible to channel income from natural resources into investments that stimulate the development of non-resource sectors.
- Norway's experience in technology and innovation, especially in the oil and gas industry (for example, deep-sea mining technology), can be useful for improving the productivity and sustainability of production in Mangystau.
- Norway's creation of a competence center in the field of green technologies (including renewable energy) can become a landmark for Mangystau, given the region's potential in the field of solar and wind energy.

Key aspects of adaptation for the Mangystau region.

- Both countries are actively investing in education and training of specialists, which contributes to the growth of innovation potential. It is important for Mangystau to develop vocational education and support entrepreneurship, which will help create a skilled workforce for new sectors of the economy.
- Both Australia and Norway provide a stable regulatory framework, which builds investor confidence. The implementation of similar measures in Mangystau, including simplification of administrative procedures and increased transparency, will stimulate investment activity.
- Taking into account the high environmental vulnerability of the region, Norwegian experience in the field of environmental protection can serve as a basis for the development of effective methods for the sustainable development of natural resources.

Expected prospects for the Mangystau region.

- The adaptation of the Australian model of infrastructure development combined with the Norwegian approach to natural resource management contributes to the diversification of the region's income sources, which will reduce its dependence on the extractive sector.
- Rational and sustainable management of natural resources will contribute to long-term economic growth, while minimizing the negative impact on the environment.
- The development of non-resource sectors of the economy and the creation of new jobs will contribute to reducing unemployment and improving the quality of life of the population.

The economic diversification strategy implemented in Norway is one of the most effective models of natural resource management, which is relevant for countries with high dependence on the raw materials sector. This approach is based on balanced management of oil production revenues, stimulating innovation, and strategic investments in human capital development. This mechanism has allowed Norway to ensure economic sustainability, reduce dependence on hydrocarbons and form competitive non-resource industries.

The adaptation of individual elements of the Norwegian resource management model may become an important mechanism for the Mangystau region, whose economy remains predominantly focused on the oil and gas sector. The implementation of these approaches will help diversify the economy and ensure its long-term and sustainable growth.

One of the key elements of the Norwegian economic model is the State Pension Fund, which is formed from revenues from the oil and gas sector. This fund performs the function of a stabilization mechanism by investing in international assets, which minimizes the impact of fluctuations in oil prices and reduces the risks of economic instability. In the conditions of the Mangystau region, the creation of a similar fund can not only provide protection from possible economic shocks, but also become an important tool for financing initiatives in non-resource sectors, including tourism, the processing industry and renewable energy sources.

One of the fundamental elements of the Norwegian economic strategy is the emphasis on the development of innovation and high-tech industries. The diversification of Norway's economy was achieved through significant investments in shipbuilding, fishing, and renewable energy, which subsequently became key export sectors.

Solar and wind energy are promising areas of development for the Mangystau region, which is due to the favorable climatic conditions of the region. Moreover, the introduction of environmentally sustainable technologies will contribute not only to reducing carbon dioxide emissions, but also to strengthening the region's investment attractiveness in the international arena.

Social programs and educational initiatives are one of the key elements of the Norwegian economic model. The government is actively investing in vocational training and retraining systems for new industries, which has allowed Norway to form one of the most skilled workforce in the world.

The development of educational programs aimed at training specialists in the field of "green economy" and rational management of natural resources will become an important element in the formation of a sustainable economic base in the Mangystau region. At a time when the region is facing an outflow of young people and a shortage of qualified personnel, the modernization of the vocational education system is becoming strategically important for long-term socio-economic development.

The adaptation of the Norwegian strategy to the conditions of the Mangystau region is a promising area of economic transformation, but its successful implementation requires consideration of regional specifics. Limited financial resources, institutional barriers, and the need for large-scale reforms pose significant challenges. Nevertheless, the use of Norwegian

experience in the formation of stabilization funds, the development of renewable energy sources and investment in human capital can lay the foundation for sustainable economic growth in the region.

The economic diversification strategy implemented in Australia is a successful example of the transition from a raw material model to a more balanced system in which innovation, high-tech manufacturing and infrastructure development play a key role. This experience is of particular importance for the Mangystau region, as the region faces similar challenges related to its high dependence on the oil and gas sector and the need to expand its economic base.

One of the key elements of the Australian strategy is prioritizing infrastructure development as a fundamental pillar of economic growth. Significant investments in transportation, logistics, and energy networks have increased the accessibility of domestic and international markets. The adaptation of this approach in the Mangystau region may include the modernization of seaports such as Aktau and Kuryk, the construction of new highways and railways, as well as the creation of modern logistics centers. These measures will not only strengthen the region's transport connectivity, but also create favorable conditions for attracting investments in non-resource sectors of the economy.

The effective integration of renewable energy sources into the Australian energy system is another aspect that can be adapted in the Mangystau region. The development of wind power, solar power plants and other areas of "green" energy in Australia has become possible thanks to active government support and attracting private investment. Taking into account the climatic conditions of the Mangystau region, the implementation of similar projects can contribute not only to the diversification of the energy sector, but also to reducing the carbon footprint, which is consistent with the principles of sustainable development.

Australia's strategic focus on international markets has become one of the key factors in its economic success. In order to attract foreign investment, the Government has implemented programs aimed at creating special economic zones that provide tax incentives and simplified regulatory procedures for foreign companies.

However, the successful adaptation of the Australian approach to the conditions of the Mangystau region requires taking into account regional peculiarities. Limited financial resources, existing institutional barriers and the need for structural reforms represent significant challenges that need to be overcome.

Nevertheless, the use of the Australian model as a benchmark opens up the prospect for the region not only to reduce dependence on the commodity sector, but also to create a solid foundation for sustainable economic development. The main priorities of the new strategy may be infrastructure modernization, stimulating small and medium-sized businesses, as well as the introduction of environmentally friendly energy technologies, which will contribute to ensuring the long-term economic stability of the region.

Regardless of the Government's strategic priorities, it is necessary to ensure equal and fair conditions for all enterprises operating in the non-resource sector, including the service sector. Of particular importance is the rejection of selective support for certain industries, since the experience of industrial and innovative development in Kazakhstan shows that inconsistencies in targets often lead to inefficient use of public resources and significant financial losses.

5. Conclusions

The implementation of the proposed measures in practice will reduce the dependence of the Mangystau region on the export of raw materials and create conditions for sustainable economic development. One of the key areas is the formation of a regional stabilization fund designed to finance infrastructure projects and support creative initiatives. To provide qualified personnel in promising industries, it is necessary to develop targeted educational programs, as well as introduce tax incentives and subsidy mechanisms aimed at stimulating the growth of small and medium-sized businesses in the short term. In the future, scientific research should focus on assessing the impact of these initiatives on the standard of living of the population and social stability in the region.

The results of the study confirm that reducing the dependence of the Mangystau region on the hydrocarbon sector and stimulating the growth of non-resource businesses is possible through the adaptation of economic models implemented in Australia and Norway.

The key directions of this strategy are the creation of a stabilization fund to finance long-term initiatives, attract investments in infrastructure development and renewable energy sources, as well as support small and medium-sized businesses through public-private partnership mechanisms. Additionally, the region can use the Australian experience in creating a favorable business environment and introducing innovative solutions to diversify the economy. For the successful implementation of the proposed measures, the state needs to actively promote the development of creative initiatives and the modernization of existing infrastructure, which will ensure sustainable economic growth and increase the competitiveness of the region.

The formation of the regional stabilization fund will ensure long-term financial stability, support and implementation of projects focused on economic diversification. To reduce dependence on the oil and gas sector and ensure sustainable economic growth, it is necessary to expand the infrastructure base and actively introduce renewable energy sources.

Stimulating local innovation and entrepreneurship will contribute to the development of public-private partnerships and targeted support for small and medium-sized businesses, which will become a factor in the expansion of non-resource sectors of the economy. The implementation of educational and research initiatives will ensure the long-term competitiveness of the region through the formation of highly qualified human capital in such promising industries as the technology sector and renewable energy.

5.1. Expectations and Recommendations

The successful implementation of the economic diversification strategy in the Mangystau region will improve the standard of living of the population, strengthen the stability of the regional economy and reduce dependence on the hydrocarbon sector. In order to ensure financial stability, the possibility of creating a regional investment bank and a stabilization fund formed at the expense of oil revenues is being considered. These tools will help minimize financial risks and ensure support for priority economic projects.

Stimulating the development of ecotourism and the introduction of renewable energy sources will help improve the environmental situation, create additional jobs and reduce the region's dependence on the raw materials sector. At the same time, it provides for the formation of industrial and economic zones focused on the development of mechanical engineering, chemical industry and other non-primary industries, which will diversify the economic structure of the region.

The renovation and development of the transport and logistics infrastructure will help to increase the efficiency of trade operations, attract investment and simplify access to international markets. At the same time, strengthening scientific and educational potential by financing research centers and educational institutions focused on advanced technologies will provide the region with highly qualified personnel and will stimulate innovative development.

The effective implementation of economic development strategies based on the experience of Norway and Australia in the Mangystau region requires an integrated and systematic approach that includes the integration of international best practices, taking into account regional conditions. The key stage of this process is the development and approval of a regional diversification strategy based on a comprehensive analysis of socio-economic and environmental factors. As part of this strategy, it is necessary to take into account the Australian experience in the field of infrastructure development and Norwegian approaches to natural resource management, forming a unified concept of economic growth. For the effective implementation of this strategy and detailed planning of its stages, it is advisable to involve international experts whose competence will allow adapting the best international practices to the specifics of the region, which, in turn, will ensure its long-term economic stability and competitiveness.

Effective implementation of the strategy will require improvement of the regulatory framework aimed at creating favorable conditions for economic growth. An important aspect is the simplification of business registration procedures and the issuance of permits, which will contribute to the development of the business environment and attract investment. The integration of environmental standards based on international best practices will minimize the negative impact on the environment and ensure compliance with the principles of sustainable development. Additionally, legislative initiatives should be developed to encourage the use of renewable energy sources, which is consistent with global trends in the transition to an environmentally oriented economy.

Stimulating innovation will become one of the key components of the economic development strategy. To do this, it is necessary to promote the development of start-ups in non-resource sectors of the economy by creating business incubators and acceleration programs. Companies implementing advanced technologies should receive government support in the form of subsidies and tax preferences. In addition, it is important to create a platform for interaction between entrepreneurs, research centers and government institutions, which will help strengthen cooperation, develop innovation potential and increase the competitiveness of the region's economy.

To ensure the effectiveness of the strategy, it is necessary to implement a regular monitoring system based on key performance indicators (KPIs), which will allow an objective assessment of progress towards achieving the goals. Annual reports on the implementation of the strategy should contain data on the dynamics of job creation, the level of attracted investments and the improvement of the environmental situation. The analysis of the monitoring results will provide an opportunity for timely adjustment and improvement of the strategy, ensuring its adaptation to changing economic conditions and current challenges.

5.2. The Results of the Study

The results of the study indicate the importance of developing a comprehensive strategy for economic diversification, which includes measures to stimulate entrepreneurial activity, modernize infrastructure and effectively manage natural resources.

5.3. Development Prospects

The practical implementation of the proposed model will allow the region to reduce its dependence on a resource-based economy, increase its resilience to economic fluctuations and contribute to improving the quality of life of the population. If the strategies presented are successfully implemented, the Mangystau region will be able to form a solid foundation for long-term and sustainable development, strengthen its socio-economic position and become a model example for other regions focused on economic diversification.

Effective implementation of the Mangystau region's economic diversification strategy, based on the successful experience of Australia, requires an integrated approach, including infrastructure modernization, support for small and medium-sized businesses, human capital development, investment attraction and the formation of a favorable institutional environment. These measures should be integrated into a long-term program aimed at reducing the region's dependence on the hydrocarbon sector and creating new, sustainable areas of economic growth.

The primary task is to modernize the infrastructure, which is a key factor in attracting investment and developing new economic sectors. The Mangystau region needs to implement comprehensive development of transport and energy infrastructure, including improving the road network, increasing the capacity of the ports of Aktau and Kuryk, as well as the construction of solar and wind power plants as part of the transition to renewable energy sources. Australia's experience

demonstrates that infrastructure development not only reduces logistical costs, but also forms a solid foundation for long-term and sustainable economic growth.

A key element of the strategy's implementation is attracting investments, which requires the creation of favorable business conditions. In the Mangystau region, it is advisable to form special economic zones with simplified administrative procedures and the provision of tax benefits, which will increase the investment attractiveness of the region for foreign investors.

The Australian experience demonstrates that a comprehensive diversification strategy based on innovation, sustainable development principles and business support can be an important factor in economic transformation. Adapting these elements to the specific conditions of the Mangystau region will not only reduce the region's dependence on the hydrocarbon sector, but also form a solid foundation for long-term and stable economic growth.

5.4. Limitations and Suggestions for Future Research

As part of further research, it is advisable to analyze the long-term economic and social consequences of the proposed measures, as well as consider additional areas of diversification, including the development of digital technologies and ecotourism.

The limitations identified in this study create the basis for further scientific research aimed at eliminating existing gaps and in-depth analysis of the problem under consideration. In particular, a promising area of future research is a detailed study of the institutional differences between Kazakhstan, Norway and Australia, which will allow us to develop more accurate and adapted to the local context approaches to the implementation of successful international models of economic diversification. Such a methodological approach will contribute to the creation of practical tools that take into account the legal, economic and socio-cultural characteristics of the region, which will increase the effectiveness of the proposed strategies.

Secondly, research is required to collect and analyze more complete and up-to-date data on the socio-economic situation of the Mangystau region. This will allow us to form a detailed picture of the current state of the region's economy, as well as develop quantitative models that can be used to predict and assess the long-term consequences of implementing the proposed strategies.

Third, prospective research can focus on analyzing the impact of global economic instability on regional development, taking into account the volatility of oil prices and the transformational processes in the global energy sector. Special attention should be paid to studying the impact of these external factors on the integration of renewable energy sources, as well as on the development of other non-resource industries in the economic structure of the region.

Finally, one of the priorities for further research is a detailed analysis of the social perception of economic transformations on the part of the local population and representatives of the business community. An in-depth study of social factors, including the degree of society's readiness to transition to new employment models and attitudes towards government economic policy, can significantly improve the effectiveness of strategic planning and contribute to the successful implementation of economic diversification processes.

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