REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

ECO-ECONOMIC BALANCE POLICY OF THE STATE IN AZERBAIJAN AND ITS ITS IMPLEMENTATION MECHANISMS

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INTRODUCTION

The relevance of the topic: As the environmental harm is not taken into consideration, an economic system that emphasizes increased production of commodities and services, which is seen as a gauge of societal well-being, encourages unrestricted production growth. Traditional paradigms have viewed environmental protection as a fashion and have not incorporated it into economic development calculations because they do not acknowledge limits to economic growth and accept the environment as a free resource. It is found that the foundational elements of an environmentally balanced economy cannot be provided by conventional development models, which have economic development as their primary objective.

The transition to a resource-saving economy has become critical as a result of old development models jeopardizing the potential of natural resources that support the world's flora and fauna. Since the second part of the 20^{th} century, when the rate of economic development peaked, an eco-economic balance policy has taken the role of the previous economic development policy in an effort to slow the accelerated depletion of natural resources. The relevance of growth constraints has increased due to the frightening scope of the ecological problem brought on by the rapid economic growth. Man benefits from the natural system's services since he lives inside it. However, because the society's production and consumption processes do not take into consideration the ecological system do potential, ecological system-related issues have emerged. Disturbances in the ecological system's balance start when human usage of ecological systems surpasses what nature can sustain, along with a lack of resources.

The expansion of the economy across the board over the past century has amplified the detrimental effects of human activities on the environment. Unintentional use of natural resources, chemical contamination of rivers and oceans, soil salinization, desertification, haphazard forest clearing, harm to the atmosphere caused by increased production, etc. The ecological equilibrium of the planet has been upset by several human actions. As in most other nations, Azerbaijan's eco

system is out of balance as a result of years of environmental problems building up. After attaining independence, environmental protection received considerable attention, and the foundation and course of the environmental policy were formed. The work in this area was, however, intensified, reforms were accelerated, the volume of public and private investments in this field was sharply increased, and thus significant steps were taken in the direction of achieving ecological balance during the presidency of the Republic of Azerbaijan's Ilham Aliyev. We can conclude that the dissertation's topic is pertinent in light of everything that has been discussed.

Despite shifting economic, social, and political circumstances, addressing environmental challenges should remain a top priority, and every effort should be made to maintain the ecological balance.

The level of development of the problem: Numerous scientific studies have been conducted and publications have been made on topics such as the state's environmental balance policy, effective strategies to use nature to spur economic growth, and environmental protection concerns. Environmental issues received significant attention in the scientific works of Azerbaijani scientists Z.A. Samadzade, G.Sh. Mammadov, N.M. Imanov, U.G. Aliyev, P.A. Hasanova, F.C. Hasanov, C.I. Mikayilov, Sh.Z. Mukhtarov, M.A. Ahmadov, G.N. Manafov, F. Rahmanov and K. Sadigov. The research of the issue benefited greatly from the contributions of foreign experts D. Meadows, P. Hawken, L. R. Brown, A. A. Golubova, V. V. Klimenko, E. Kula, L. Menikov, V. Kolesov, S. Pleshkov, V. Popov, and M. Zayganova.

Without undermining the value of the work completed, we may see that a sufficient level of synergistic analysis of the ecological system and the economic system has not been performed. The natural system has the ability to regenerate itself. When this limit is exceeded, the system loses equilibrium and reaches the point of bifurcation as a result of the economic system's interference. The ecological system's present difficulties will determine its future course. The earlier studies carried out in Azerbaijan did not consider the harm to the state brought on by the imbalance of non-linear systems and the estimation of the economic and social benefits of the measures taken to restore the balance.

The interaction, influence, and dependence of the ecological,

economic, and social systems in Azerbaijan as well as the identification of a broad range of necessary actions for their management are given particular focus in the dissertation work that is being presented.

Goals and objectives for the dissertation work. The main goal of the research project is to examine the environmental ecological balance in accordance with the state's policy on ecological balance, to identify its economic aspects, and to provide suggestions and recommendations of significant theoretical and practical importance by assessing the current situation.

It is necessary to complete the following objectives in order to reach the main objective:

- Determination of economic resources to be used by the government to control environmental issues;
- Ascertain how Azerbaijan's economic development affects environmental degradation;
- Analyze how eco-economic synergy affects eco-economic balance;
- Figuring out how the eco-economic balance is affected by emissions brought on by human activities and the ability of nature to clean itself;
- Leverage global experience to enhance the state's environmental policy.

The object of the study: The state's policy on eco-economic balance is the result of the system of interactions between ecology and the economy.

The subject of the study: Relationships established as a result of the implementation of the ecological balancing policy and economic interactions between various economic subjects.

Theoretical and methodological foundations of research: The research's theoretical and methodological foundations include the republic's and other nations' economists' works on maintaining ecological balance, orders and degree of the President of the Republic of Azerbaijan in this area, laws of the National Assembly of the Republic of Azerbaijan, and important legal normative acts of the Cabinet of Ministers of the Republic of Azerbaijan.

The dissertation work included the application of economic statistics,

observation, analysis, and analysis-synthesis techniques.

Scientific novelty of the research:

1. Contemporary perspectives on the economic elements of ecological challenges and its theoretical underpinnings are advanced.
2. The organizational economic mechanisms of the state's environmental policy execution have been identified.
3. There has been an evaluation of the state of the environmental issues in Azerbaijan.
4. Based on the theory of catastrophes, the potential effects of pollution on the ecological system have been examined, and it has been proven necessary to establish the pollution limit in accordance with nature's capacity for assimilation.
5. In order to lessen the harm that industry does to the environment, it was suggested that environmental charges be added to the traditional Cobb-Douglas function.
6. It has been established that environmental degradation and economic growth are related in Azerbaijan.
7. The function of capital expenditures in resolving environmental issues was examined.
8. The methods and guidelines for state regulation to maintain ecological balance are given.
9. It was suggested to select any of the models for the future development of the economy after analyzing contemporary models of the state's environmental policy.

The information sources of the study include data that come from the Ministry of Economy of the Republic of Azerbaijan, the Ministry of Ecology and Natural Resources, the State Statistical Committee, the Centre for Analysis and Communication of Economic Reforms, the International Monetary Fund, the World Bank Group, the Organization for Economic Cooperation and Development, the United Nations Economic Commission for Europe (UNECE), United Nations Industry Development Organization (UNIDO), The Observatory of Economic Complexity, Global Trade Alert as well as environmental organizations of more than twenty different countries. Furthermore, they also come from economic and scientific research institutions as well as statistics publications, bulletins, annual reports, and online resources.

Practical significance of research: The findings of the dissertation research can be applied to the creation of the state's eco-economic balance policy and to the programs created to advance the socio-economic strategy of the state. The study's findings can be used to create lectures and textbooks as well as in the teaching of courses including "Ecological economics", "Sustainable economy", and "Environmental economy".

Approbation and application of research results: According to the requirements of the Higher Attestation Commission under the President of the Republic of Azerbaijan, the main components of the study effort, the findings, and the suggested recommendations were published in national and international scientific publications. Nine conference papers and nine scientific articles were among the 18 scientific works that were published in connection with the dissertation work.

Structure and scope of the dissertation: Dissertation work consists of Introduction, 3 chapters, Conclusion and Proposals, List of used literature. Its total volume is 243296 (including Introduction – 9514 characters, Chapter I – 68164 characters, Chapter II – 77324 characters, Chapter III – 74254 characters, Conclusion and suggestions – 14037 characters), excluding figures, tables and the list of references used.

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MAIN PROVISIONS OF THE DISSERTATION

1. **the relationship between the ecological system and the economic system was examined according to the timeline of the development of the economic theory**

Long before modern history, when the issues became a threat to civilization, economic theory on the topic of natural resources and environmental concerns had already started to take shape.

In their theories on the interaction between man and nature, classical economists like Smith, T. Malthus, and D. Ricardo take into account a society made up of autonomous individuals who each act to realize their own personal benefits and profits.

The "economic man" in A. Smith's novel has a mindset that prioritizes personal gain over all else. "Economic man" views nature from the perspective of his own advantages. C.S. Mill expressed the same idea when he remarked, "Nature's forces are utterly hostile to humans. Man should exert effort and ingenuity to seize even the tiniest object from it that can be advantageous to him" and unambiguously expressed his views on nature.

The inventions utilized in the agricultural and industrial sectors greatly enhanced productivity against the backdrop of the structural upheaval in the economy brought on by the industrial revolution in England. The speech of T. Malthus significantly diminished the optimistic environment towards the future that had been generated by the perceived increased production. With regard to the inadequacy of arable land and food production in the face of a constantly growing population, Malthus is regarded as one of the first philosophers to underline the limits of nature.

Another economist who holds negative opinions on the sustainability of long-term economic growth is D. Ricardo. He bases these opinions on

the dearth of natural resources. The scarcity of fertile land served as the foundation for Ricardo's well-known thesis linking economic growth to the distribution of production components. D. Ricardo, in contrast to T. Malthus, rejected the notion that the supply of land is constant.

Progress is viewed by K. Marx and F. Engels as a natural process of growth that has existed throughout the existence of humanity. Marx's theories on capitalism hold that growth with higher production as a result of capital accumulation and the use of labour-saving technology can only result from the exploitation of natural resources and labour. The advancement of science and technology through capitalist production lessens human reliance on the environment and increases its exploitation. When the production and surplus value that results from the conversion of nature's own value into consumption value is gathered in the form of capital, this is when the process of exploitation of nature takes place. Marx saw the exploitation of natural resources and environmental imbalance as issues resulting from the capitalist system's property relations. Marx argued that the world should be protected for future generations, which alludes to the contemporary idea of sustainable development.

The foundation of neoclassical economic theory is the idea that people behave in accordance with efficiency standards. Given their limited resources, people and businesses use them in a way that maximizes their utility or profit.

With industrialization, the value of natural resources and energy has dramatically increased. S. Jevons cautioned that the coal reserves, which are seen as the primary source of energy for industrial production, are depleting and emphasized the issue of long-term economic growth once more. S. Jevons was the first to identify the energy issue as a barrier to economic expansion.

Neoclassical economic analysis is a contribution to classical economic philosophy since it focused on efficiency rather than the volume of economic activity. The core ideas of eco-economic balance, such as efficiency and optimality, were introduced to economic theory by L. Walras, who also created the "equilibrium theory".

A.S. Pigou, another economist, made the claim that, due to environmental issues, private interests are not always compatible with those of the public. Pigou demonstrated that people can alter how resources are

distributed in the economy by making irrational choices rather than deliberate ones. As a result, not every choice that increases an individual's gain also increases the welfare of society as a whole.

The Great World Depression of 1929 proved the viability of the classical economic theory, which holds that the economy will be in a state of equilibrium at the level of full employment and that the full and active use of resources will be guaranteed under the influence of market forces. As a result, the search for a new economic theory began.

With C. M. Keynes, who questioned the notion of classical economics and sought solutions to the economic issues of his time, the phenomenon of economic growth made a comeback in the economic and political sphere. Starting with Keynes' investment model, Keyne' theory views economic expansion as an unbounded process propelled by technological advancement. R. Harrod is the creator of a theory of growth that acknowledges that theoretically endless growth is feasible and who also adopted Keynes' way of thinking. In their analysis, Samuelson and J. Robinson assert that physically and biologically limitless development is possible. Samuelson, who followed R. Harrod and is regarded as one of the neoclassical proponents of current growth theories, and J. Robinson are said to be from the Cambridge school.

J. Galbrays claimed that the limitations of economic growth are set by the reserves of non-renewable natural resources, and that long-term economic expansion is an unrealistic concept. According to J. Galbays, expanding the ecological bounds of economic growth is possible by using natural resources sparingly and by best utilizing already-existing resources; but, continual expansion is unfeasible.

In his early 1970s book "Small is Beautiful", E.F. Schumacher argues that rather than addressing technology and production-related difficulties, we should adopt an economic philosophy that prioritizes meeting the needs of the average person.

In his 1968 book "Demographic Explosion", Paul Ehrlich highlighted the detrimental effects of population increase on the environment and stressed the urgency of stabilizing or even lowering the global population as soon as feasible..

The negative views of traditional economists like T. Malthus and D. Ricardo on the topic of long-term development started to resurface around

this time, when P. Ehrlich and G. Hardin connected the cause of environmental issues to rapid population expansion. The New Malthusians, also known as D. Meadows, M. Messarovich, and E. Pestel, came to the conclusion that if the rate of population and production growth continues at its current rate, the world will experience a global catastrophe by the middle of the 21st century.

The existence of man on the planet will be in danger, according to the findings of D. Medeoz's "Limits to Growth" report, if the rate at which the world's population is growing, industrialization, and economic growth are also growing at the same rate, and if new food sources that will feed the society are not discovered.

Since then, the nations of the globe have come to terms with the fact that only through collective action can the ecological balance of the earth be restored, and they have decided to pursue a common agenda.

The UN Conference on Human Development and the Environment, held in Stockholm in 1972, marked the beginning of the debate over how to balance environmental issues with ambitions for economic growth. The "Our Common Future" report was written by the International Commission on Environment and Development in 1987. The Burtland report stressed the necessity for the global economy to grow in order to satisfy the demands of the population, but it also stressed how crucial it is for economic expansion to stay within the world's natural bounds. The 1992 World Summit, also known as the UN Conference on Environment and Development, was held in Rio de Janeiro and featured the following on its agenda: The first international discussion of sustainable development goals took place. With the involvement of 181 UN members, the "Millennium Summit" was held in 2000, and the year 2015 was chosen as the deadline for achieving the declaration's objectives. The seventh of the eight items—poverty, education, health, and gender equality—is included as a sustainable development target.

A list of objectives was put forth to facilitate the transition to Sustainable Development at the UN General Assembly's Jubilee session in September 2015, which was acknowledged as the century's top priority. With the participation of 193 countries, a special document called "Sustainable Development Goals" and covering 17 goals is adopted. Currently, sustainable development goals serve as a roadmap for governments to

adopt balanced policies to address issues including socioeconomic inequality, environmental imbalance, and climate change.

2. **Using the methods of the theory of catastrophes, a synergistic analysis of the ecological and economic system was provided.**

All facets of modern production have an impact on daily living. Man damages the ecosystem by removing natural resources from the habitat. The eco-economic system is made up of these intricate linkages. In order to take into consideration the non-linearity of the relationships between the systems, it is required to think about the intricate relationships between the two systems in a qualitatively different way. The methods of catastrophe theory can be applied in this situation.

The newest and most promising tool for scientific study has been utilized to analyze the catastrophe theory approaches because the interaction between the two systems is non-linear. It is feasible to examine the dialectical relationships between the enterprise and the ecological system from the standpoint of this philosophy. Efficiency has been chosen as the primary production indicator as an evaluation criterion.

The ratio of effects to costs is referred to as efficiency. When we refer to an ecological system's effect, we mean its financial benefit, and when we refer to its cost, we imply the depletion of its natural resources (not just the natural resources used in production). Environmental disaster-related system losses in this situation should be regarded as production losses with costs attached.

Maximizing the impact or reducing costs are two methods to boost efficiency. The economy must use technological advancements, innovations, and scientific advances to cut down on the usage of non-renewable natural resources in the production of goods and services in order to lower costs. As a result, the ecological system will become more efficient as the proportion of scientifically-based products in a nation's production structure rises and, in turn, as the proportion of items that require a lot of resources and energy falls.

The ecological system has the power of self-cleansing, in situations where anthropogenic influence is moderate; nature is able to clean itself. In nature's self-cleaning (assimilation and absorption), greenery, air currents, the sea, and others are contributing factors. When determining the optimal level of emissions that the economy can throw into nature, it is necessary

to take into account the self-cleaning power of nature. It is known that depending on the climate, the self-cleaning power of nature differs by region.

Finding a way to predict how the ecological system will grow and, consequently, how effective it will be in the future while taking the synergistic impact into account, is one of our key responsibilities. Statistical prediction is not a suitable method to take this into consideration a non-linear ecological system. From the standpoint of the theory of catastrophes, starting from the premise that the non-linear system aspires to stability, it is feasible to characterize the key phases of the growth process of the ecological system at any level: regional, national, continental, etc. It should be highlighted that the building of the catastrophe theory on the basis of experimental evidence, in the absence of a compelling explanation of the observed processes, is its key characteristic.

3. The eco-economic balance policy of the Azerbaijan state has been analyzed.

The fundamental element of the Republic of Azerbaijan's long-term development strategy is the execution of massive projects aimed at resolving environmental issues in the nation. State policy is also targeted at balancing eco-economic growth.

In this regard, the creation of economic models that ensure the welfare of present and future generations, the preservation of ecosystems that provide a comfortable standard of living for people, and the use of cutting-edge technologies in nature-human relations for the improvement of the environment is one of the duties in order to implement a balanced environmental policy along with high economic development.

Expanding relationships with international organizations in the field of environmental protection, this expansion of relations with the IEP with experience, and involving all interested parties in the process of making decisions related to the ecological system are the main components of sustainable development. They also prevent economic activity that can cause irreversible ecological degradation.

The signature of pertinent decrees and orders to more effectively address current environmental issues, as well as the increased focus on the implementation of state programs relating to the environment in Azerbaijan in recent years, demonstrate that this area is a priority in the nation.

Applying innovations to environmental protection and environmental safety is a deliberate shift that enables the incorporation of fresh and potent components in economic activity. This kind of action helps modern forms, new methodologies, technology, and instruments to develop more effectively.

4**. In order to reduce the damage caused by production to the environment, it has been recommended to add an environmental factor to the classical Cobb-Douglas production function**.

Cobb-Douglas model with classical form is expressed with $Q = A \times L^{\alpha} \times K^{b}$ formula (*Cobb-Douglas production function*). Here $Q -$ is production capacity, $K -$ the amount of capital, $L -$ labor costs, $A -$ and technological coefficient. In the Cobb-Douglas model, the authors specifically note that, the capacity of production depends on capital (K), labor costs (L) and as a result of their different combinations, different production volumes can be achieved.

To lessen the harm that production does to the environment, we suggest adding environmental charges to the production function. The Cobb-Douglas function in its traditional form can be transformed into a production function that can offer an effective ecological balance by include environmental expenses. We can add ecological costs expressed as - Y^{-d} to the formula of $Q = A \times L^{a} \times K^{b}$ and receive production function $Q = A \times L^{a} \times K^{b} \times Y^{-d}$ which supports eco-economic balance. Although the service we provide can result in a short-term decline in earnings, it has been proven that it will have a favourable long-term impact.

5. **The impact of the current economic expansion in Azerbaijan on environmental degradation was assessed by contrasting the growth rate of GDP with the growth rate of waste from production and consumption.**

The ideas of ecological balance and economic expansion are at odds with one another. Economic expansion, with the exception of a few industrialized nations, results in ecological imbalance and environmental deterioration. Constant economic growth is required in emerging or underdeveloped nations in order to fulfil objectives like job creation, a rise in people's standards of living, and an improvement in overall wellbeing.

It is vital to examine the dynamics of GDP and production and

consumption waste in order to assess the harm that the nation's economic development has done to the ecological balance.

The GDP growth rate and the growth rate of waste produced by production and consumption over the 10 years under study are influenced differently in different years. Although the growth rate of waste showed a negative value in 2010, it was roughly equal to the growth rate of GDP in 2011. The GDP is expanding steadily in 2010-2011.

The growth rate of garbage is rising despite a substantial decline in the GDP growth rate in 2011. While the GDP growth rate accelerated in 2013, the rate of waste growth significantly slowed down. The same pattern may be seen in both 2014 and 2017. Production and consumption waste growth rates between 2016 and 2019 were significantly higher than GDP growth rates. Even though the GDP growth rate was strong in 2018, the rate of garbage growth was reduced.

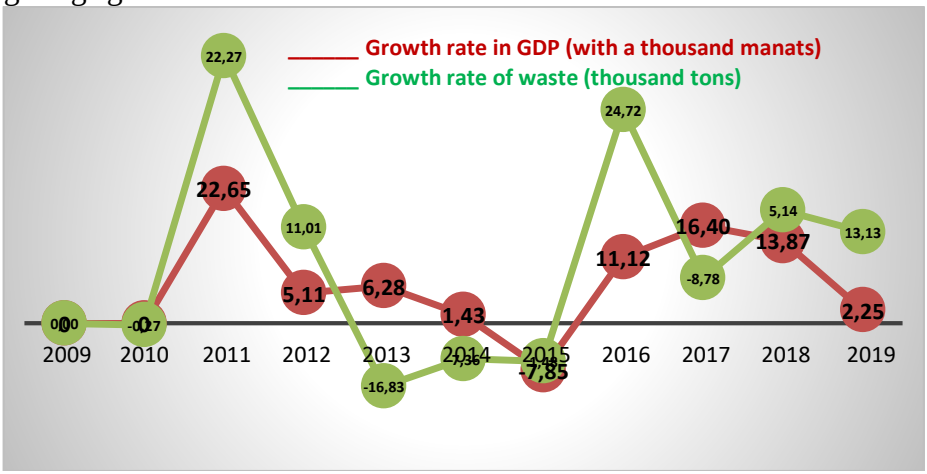

Figure 1: The growth rate of GDP and the growth rate of waste from production and consumption

(developed by the author based on the data of the State Statistical Committee of the Republic of Azerbaijan)

The correlation coefficient calculations revealed that there is no linear relationship between waste and GDP. In this sense, the following is how we constructed a logarithmic dependence.

$$LOG (TUL) = C(1)*LOG(GDP) + C(2) +$$
$$+ [MA(1)=C(3),BACKCAST=2000]$$

The following is the result of the logarithmic dependence function I

constructed between waste and GDP using data from the AR State Statistical Committee for the years 2000–2019.

$$LOG (TUL) = 0.1433571969* LOG (GDP) + 6.337866672 + + [MA(1)=0.9830946661,BACKCAST=2000]$$

EViews-9 Table 1 of the dissertation presents the findings of the logarithmic dependence function I constructed between waste and GDP using data from the AR State Statistical Committee for the years 2000–2019.

The standard errors of the coefficients are substantially smaller than their values determined through evaluation, as can be shown if we study the t-statistics in accordance with the model's output. In other words, the likelihood that the coefficients in the main set are not equal to their true value is equal to 0.

The growth in GDP volume accounts for 76% of the change in trash volume between 2000 and 2019 according to the coefficient of determination (R-squared), which is 0.76. Other unaccounted-for causes are to blame for the remaining 24%. The number of observations is sufficient to create the model, as evidenced by the coefficient of determination's value being near to that of the adjusted coefficient of determination (Adjusted R-squared).

Because the time series of economic data has a sliding mean, a violation of stationary was found during the initial analysis. By adopting MA (1) as the first formulation moving average, a problem has been overcome.

The overall quality of the regression coefficient, or the model's overall suitability, is assessed using the F statistic. The probability (Prob (F-statistic)) in the table is equal to zero if the F statistic value produced does not exceed the Fisher distribution's critical value at the indicated significance level. As a result, the model is somewhat useful for forecasting.

It is preferable to have a Darbin-Watson statistic near 2, which shows that the residuals are not auto correlated.

The obtained model's coefficients demonstrate that between 2000 and 2019, the impact of the Gross Domestic Product's production on waste generation was significant. In other words, a unit rise in GDP resulted in a 0.14-unit shift in the amount of garbage.

6. The dynamics of GDP and eco-intensity in the Azerbaijani economy during the past 24 years were examined using Victor's "Green Growth" model, which demonstrates the interdependence of economic growth and carbon dioxide, which causes a greenhouse effect.

P. Victor's "green" growth model can be used to assess the direction of economic development. The approach enables evaluation of dynamic changes in the economy's level of greening using unique environmental pollution indicators. P. Victor illustrated the dependency of GDP and the indicators of the degree of pollution with gases that produce a thermal effect - economic growth is "green" (Green growth), "brown" (Brown growth), and "black" (Black growth) in order to determine the ecological purity of economic development.

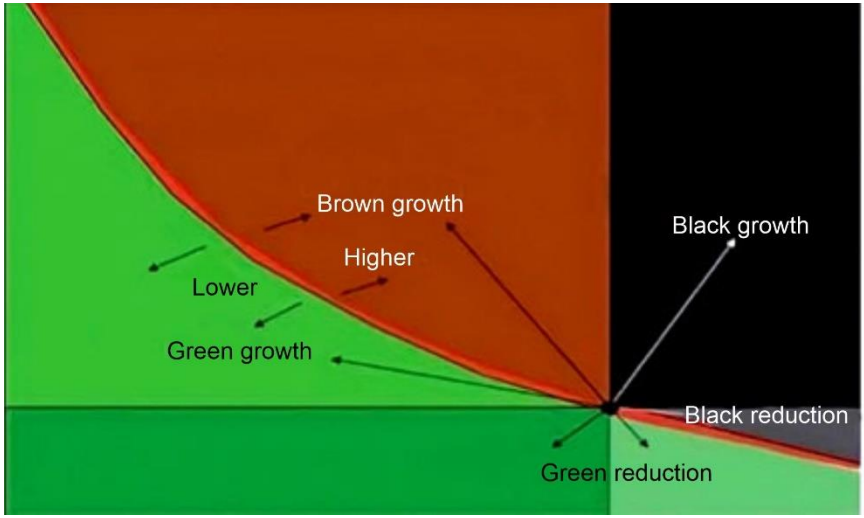

Figure 2: P. Victor's Green Growth Model (Victor, 2010)

A curve that satisfies the examined criterion is added to the graph in order to establish the direction of economic development (it is indicated by a dotted line). The environmental load at the start of the cycle corresponds to any combination of ER and EI along this curve. The ratios ER and EI are determined by the points below this line, where the intensity of environmental pollution is lower than it was at the start of the period. On the other hand, at places above the curve, the adverse effect is

more pronounced. [41, p. 85].

According to P. Victor's concept, the way in which indicators deviate from their original values determines the type of ecological and economic dynamics or the hue of economic growth. The choice of the period's start largely determines how the zones are divided. The model's ability to be applied to both temporal and spatial analysis is without a doubt a benefit. According to P. Victor's concept, the colour of economic growth and the divergence of indicators from their original values indicate the character of eco-economic dynamics.

In order to build the model, the intensity of emission of greenhouse gases in the country was first found. $Ei=Pi/GDP$ where, P_i emission intensity (environmental burden), GDP is gross domestic product.

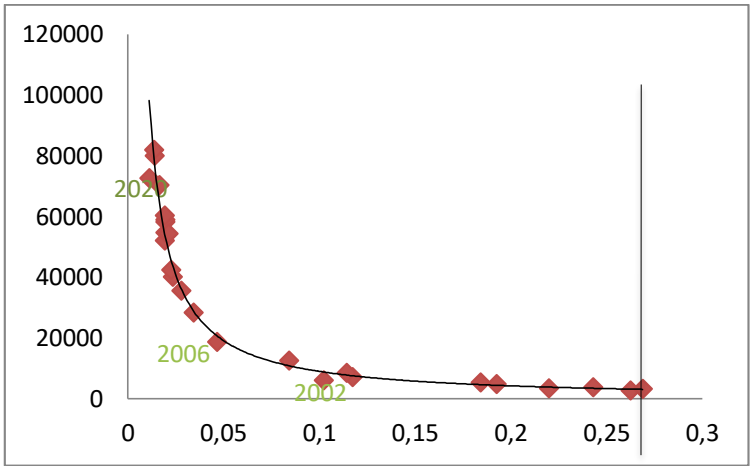

Figure 3. Victor's "Green Growth" paradigm, Figure 3, Greenhouse effect production

GDP and gas emission intensity connection (developed by the author based on the data of the State Statistical Committee of the Republic of Azerbaijan)

The study looked over the period from 1996 through 2020. The intensity of greenhouse gas emissions into the environment in 1996 was used as the baseline year. According to data released by the State Statistical Office during this time, we may state that the country saw green growth in 2002, 2006, and 2020 and brown growth in 2000, 2005, 2011, and 2012.

7. The place and role of capital investment in solving environmental problems in Azerbaijan has been analyzed.

The majority of capital investments made in the country to address environmental issues do so at the expense of local resources. The amount of foreign investment is almost insufficient.

We have examined the indicators from the previous 10 years in order to establish the percentage of eco-investments in total investments. Despite a steady rise in investment volume over the past ten years nationwide, environmental investment volume has varied according to the state of the economy.

A consistent growth in environmental investments would be more admirable because it is crucial to address issues that have accumulated over time. The transition to a "green economy" is also one of the key demands of the Paris Climate Conference, which is being observed globally and ratified by Azerbaijan in 2021. According to the "green economy", 2% of all investments made in the nation should be secure eco-investments.

Analysis of the nation's economy from the perspective of the "Green economy" is possible by comparing the growth rates of investments made for environmental protection and fixed capital from 2009 to 2019. More than 2% of all capital investments were made in the environmental sector in 2012, which is consistent with the idea of "green growth". The year with the lowest level of environmental investments among the 10 years under study is 2015, the year of the nation's devaluation.

The results

One of the modern worlds's most complicated and challenging problems to tackle is how humans interact with the natural world. Environmental conservation and economic development are intertwined today more than ever before. Destroying and depleting the natural environment makes it impossible to establish a balanced eco-economic development.

Research is currently being performed across many different areas to identify the maximum loads that may be applied to the environment without harming it and to create sophisticated strategies for overcoming the natural resources' strict usage restrictions.

The economic approach to environmental issues suggests that while assessing the effectiveness of the production process, both the harm done

to nature and the expenditures expended by society to have it eliminated should be taken into consideration.

There are numerous approaches to dealing with environmental issues, but it is unlikely that any of them would be compatible with the interests of the major economic actors on a national and regional scale. In other words, society's ecological objectives do not align with the economic goals of economic subjects.

The goal of an economic system is to provide buyers and sellers with tangible goods (such as food, clothing, services, industrial products, money, etc.). However, the values of ideas like air, water, soil, and forests, which are more challenging to develop, are typically ignored. The market economic system measures production efficiency quantitatively and ignores the harm and waste it brings to the environment.

A lot of work has been done in our Republic over the past few decades in the direction of achieving eco-economic balance with the goal of achieving economic growth, social stability, and ecological balance by properly managing the income from hydrocarbon resources, and the good results of the work done have been achieved. Successes during this time included decreasing poverty, reducing regional development disparities, enhancing the business environment, boosting the nation's foreign exchange reserves, and decreasing foreign debt. The country's future prospects include achieving macroeconomic stability, increasing employment, increasing the share of the private sector in the economy, increasing the volume of production, increasing export potential, or, to put it another way, achieving high economic growth under ecologically sustainable conditions. Economic growth should not disturb the ecological equilibrium, but rather should further improve it.

It is objectively necessary to have a tight macroeconomic framework for the efficient use of income from natural resources in the current global conditions due to the volatility of oil and gas prices in order to strengthen financial stability. The idea of efficiency in spending these funds should be observed in the implementation of both monetary and fiscal policy, given that the majority of funds used for the country's reconstruction are taken from income from natural resources.

We have reached the following conclusions utilizing empirical analysis techniques and concurrently global experience with the objective of enhancing the environment in our republic, increasing the efficiency in the use of nature, and improving the processes that ensure ecological

balance.

- Historically, there has always been a conflict between ecology and the economy, and after the industrial revolution, this conflict deepened with the increase in damage caused by the economy to the environment.

- In order to ensure ecological balance in the economy of Azerbaijan, a national program and several internationally significant projects have been adopted. If we make it more concrete by taking into account local characteristics in the implementation of international projects, it is more appropriate to focus on local environmental problems for the sake of solving global environmental problems. It is impossible to imagine the problems faced by the Republic of Azerbaijan separately and independently from the environmental problems in the global world.

- In order to restore the ecological balance in Azerbaijan, green labour activity, green thinking, green lifestyle, which are the main components of ecological civilization, should be encouraged.

- There is no clear environmental policy in the country for the next 10 years. Determining a 10-year environmental policy strategy along with the State Environmental Program will further facilitate work in this area.

In order to address the issues that have accumulated over many years, an intense eco-economic balancing strategy should be implemented, according to an analysis of the existing condition of the implementation of the environmental policy in Azerbaijan. Despite the fact that the situation is satisfactory according to the analysis of economic growth and waste, it is obvious from the model we have created that a boost in GDP has resulted in an increase in trash. We must remember that the nation's production is at a minimum and that expanding the extractive sector is the only way to achieve economic growth.

The country is pursuing a policy toward the green economy, according to an analysis of investments made in the ecological sector, although it has been difficult to attain the major indicator of the green economy, the minimum 2% level of green investments in total investments, for many years.

The study of environmental pollution must take into account both the effects of economic activity and the fallout from natural disasters that happen as a result of economic activity, according to a synergistic analysis of the interaction between ecology and economy. Every tragedy has a bifurcation moment where, depending on how the system responds, the ecological system's future behaviour is altered.

- In order to reduce environmental harm caused by the manufacturing process, it is advised to include ecological characteristics to the Cobb-Douglas production function.

- It is important to include nature's capacity for assimilation when calculating the ecological system's carrying capacity. The primary consideration when establishing the upper limit for ecosystem contamination in our nation is human health. The assimilation limit (capacity of self-renewal) of nature must be taken into account in order to accurately establish the limit.

- It is essential to reduce the detrimental effects on the Caspian Sea's eco-system throughout the search, exploitation, and extraction of hydrocarbon reserves.

-In the dissertation, contemporary models of state environmental policy are examined. It is advised to select any of these models for the republic's economy to develop in the future.

In summarizing what has been mentioned, we can say that Azerbaijan is successfully implementing the state's strategy on eco-economic balance. The work being done should be stepped up, nevertheless, and the shift to the eco-economic balancing strategy should continue to be important. Utilizing contemporary economic development strategies is appropriate in order to achieve all of these.

Recommendations

It is important to enhance the design of environmental management organizations. Therefore, the Ministry of Ecology and Natural Resources should be split from the Department of Environmental Protection, which has the authority to safeguard and administer the environment. This department should be granted special rights, and there ought to be a body with the power to regulate MENR's coverage of economic issues as it currently stands. The roles of the organizations with specific authority in the area of environmental protection should be clarified and made more understandable. Currently, many environmental agencies have duties that go above and beyond their mandate to safeguard the environment. While a result, as these entities compete with one another internally, on the one hand, there are more environmental infractions and, on the other, less fines are imposed to make up for them.

1. Modifying the framework of environmental rules. The current

situation demonstrates that the businesses are "harmonizing" the waste and emissions indicators with the management system. We recommend abolishing these current laws in Azerbaijan, as in all post-Soviet nations, in light of the population's proclivity for corruption. It would appear more acceptable to replace the current "accepted standards" with standards that are clearly defined and take into account the environment's capacity for local assimilation.

2. In order to tighten control over environmental use and compliance with norms and regulations, it is crucial to establish an efficient environmental monitoring system. It is necessary to replace outdated monitoring equipment with new ones in order to determine the precise volume of the enterprise's air pollutant emissions, soil, and water bodies; however, special attention should be paid to the improvement of personnel in the field of environmental services and raising the level of professionalism.

3. It is crucial to boost the organizational structure's activity and give it more authority in order to assess the environmental effects of economic actions. The ecological competence (environmental expertise), which officially continues to function, should first have its functions restored.

4. The shift is important from the current balancing concept to the purposeful funding premise in the process of environmental conservation. To do this, it is required to restart the State Ecological Fund's and the enterprise's internal ecological funds' operations and to create a workable system for the financial compensation of the adverse environmental impacts. The potential for substantial reform in this sector is indicated by the mere fact that environmental pollution payments make up 0.02% of total payments and taxes. It will be feasible to raise the number of environmental programs funded by the republic's budget, which will enhance the country's environmental position, especially by raising the environmental tax rates. The improvement of the protected reserves' ecological state should receive the majority of the funding.

5. Enhancements to the payment system for damaging effects to the environment. The existing approach does not adjust pollution payments for inflation brought on by price fluctuations. The money collected swiftly deteriorates because the indexation factor of pollution payments is not updated to the real infiltration growth rate. According to statistics, the enterprise's payment for environmental pollution represents a very minor

portion of its overall revenue. The payments for the enterprise's environmental damage must be increased and set proportionally to its revenue. Additionally, the payment should be sufficient to undo any environmental harm the company has produced; in other words, it should be in the type of compensation.

6. It should be underlined that Azerbaijani businesses continue to operate under such unfavourable conditions that paying for pollution is more profitable than taking action to protect the environment. Thus, the lack of measures to stimulate the economy to address business-related environmental issues and the paltry fines imposed for pollution contribute to an increase in the amount of pollution.

7. Enhancing the framework for encouraging environmental protection activities. Lowering the enterprise's tax burden through the use of tax incentives or other financial incentives for businesses that employ contemporary technology, alternative energy sources, and recycling

8. Issues including ecological audit, ecological insurance, and ecological certification, which are mentioned in the law but rarely used in practice, should be used to preserve ecological balance. Additionally, to evaluate which industrial sectors the issues described are more effective in by drawing on the experience of other nations.

9. Putting in place new tools like trading trash quotas, stock exchanges, and banks for pollution. Although the sale of garbage fees has been legal in theory for approximately 30 years, it has really been in operation for more than 20. In the USA, quota trading was initiated for the first time since the 1990s in order to stop acid rain, and success was seen in the 2000s. The country's stock exchanges engaged in quota trading. The maximum permitted emissions are established for the entire region, and businesses there can purchase and sell quotas to control their production. Thus, as a result of the collective efforts of businesses, the market for the trading of waste quotas fosters circumstances for the preservation of the regional eco-balance and aids in the regulation of business profits. The ecological equilibrium of a place like the Absheron Peninsula can be restored using the same expertise.

10. Establishing an efficient system for environmental education and boosting scientific research on environmental issues. In other words, the examination of the efficiency of the actions performed and the creation of projections can both benefit from the engagement of scientific

research institutes in the process of tackling environmental problems.

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