

THE REGIONAL DIMENSION OF GREEN TRANSFORMATION: PROBLEMS AND DEVELOPMENT PROSPECTS

Babek Asadov^{1*}, Eldar Asadov², Farida Agayeva³

¹Department of Theory and History of State and Law of Saint-Petersburg University of State Fire Service of Emercom of Russia, St. Petersburg, Russian Federation

²Faculty of International Relations, St. Petersburg State University, St. Petersburg, Russian Federation

Abstract. In the modern world, the process of green transformation in the regional dimension determines the formation of national long-term development strategies with low greenhouse gas emissions in order to reduce the risks of climate change for the population and the economy. The article discusses some of the features of this process on the example of the institutionalization and prospects for the development of the green course of Azerbaijan, which, with significant oil and gas resources and diversified transportation routes, is aimed at further development of alternative energy sources.

The transition to a "green" development vector, the priorities of which include achieving carbon neutrality in the coming decades, creates favorable prerequisites for ensuring Azerbaijan's advantage in this area not only in the regional aspect, but also increases its demanded role on the international arena. In order to minimize the consequences of expected risks in the process of green transformation, it is necessary to apply the most acceptable standards. The prospects for creating a solid foundation for the national green development model, which has the potential to become one of the important tools of its economic diplomacy, will largely depend on the degree of influence of social, geopolitical factors, as well as on the successful mobilization of green and climate financing of green projects, minimizing the consequences of expected risks and adapting to inevitable climate change.

Keywords: Azerbaijan, green transformation, green projects, alternative energy sources, green agenda.

*Corresponding Author: Babek Asadov, Department of Theory and History of State and Law, Saint-Petersburg University of State Fire Service of Emercom of Russia, Saint-Petersburg, Russian Federation, e-mail: asadovspb@mail.ru

Received: 12 November 2023; Accepted: 23 December 2023; Published: 26 January 2024.

1. Introduction

The ongoing fierce competition for leadership in the formation of a new technological order is increasingly placing new demands on the implementation of a low-carbon development course at the regional level. This trend, emerging to the forefront in the activities of leading regional actors, puts them before the need for effective implementation and concretization of environmental imperatives.

The global nature of greening as a process of achieving sustainable development continues to acquire special importance for regions in the context of combating climate change and other issues of implementing the green agenda. It is obvious that today there is an increase in the influence of regional actors in the field of environmental policy (Asadov, 2021). At the same time, in the era of globalization, the diversity of forms and levels of development of regional, interregional and transregional relations is important. Some common features of new regional forms are defined as "global regions" (Lagutina,

³Sumgait State University, Sumgait, Azerbaijan

2019) and as practice shows, some of these actors, becoming more involved in the process of green transformation, initiate new beneficial influences on the environment. For example, such a regional model of integration is green alliances (Lissovolik, 2021), which can arise on the basis of new agreements between converging countries. They will play an important role in the spread of environmental agreements. And the green agenda will serve as an important transforming force for economic policy, contributing to the emergence of new opportunities for industrial policy to support growth, as well as new national and regional models of economic modernization.

Some regional actors, who are participants in most international agreements and conventions, are purposefully paving their way to a green economy and consumption model. Accelerated rates of use of green technologies and implementation of large environmental projects as new development opportunities allow individual countries to take consistent steps aimed at forming national and regional models of green transformation. For these states, new green strategies that should be interconnected with their main priorities in the field of national security and sustainable socio-economic development are of current importance. At the same time, an important aspect of this policy is the issues of ensuring not only the solution of climate change problems, but also the orientation towards other UN Sustainable Development Goals.

Therefore, today the relevance of the use of green technologies is caused by the fact that against the background of the aggravation of environmental problems, the growing economic tension, the "green" vector of development will allow solving not only environmental, but also economic and social problems. Thanks to these technologies, the negative impact on the environment is reduced, the amount of waste and their recycling is reduced. Investments in these technologies at the level of both individual countries and regions can contribute to the development of environmentally sustainable solutions and contribute to their cleaner and healthier future.

In this regard, the active search for an effective model for solving environmental problems through the use of green technologies at the level of individual regions is becoming increasingly obvious as an objective necessity. In this regard, the authors' attention is focused on these very topical issues of green transformation in a regional dimension and the identification of some of its aspects on the example of the Republic of Azerbaijan. At the same time, published reports show that decarbonization on a global scale can directly affect Azerbaijan.

Azerbaijan, which is the main country of the alternative corridor for the transportation of energy resources from the Caspian and Central Asia to European markets, is striving for solidarity and partnership with partners in the field of green development through the implementation of various large environmental and green projects. Today, Azerbaijan is increasing its potential for exporting its electricity from renewable sources. And the transition to a clean environmental future in a broad sense, that is, the exit from the fossil fuel economy, is an important stage in the modernization and development strategy of Azerbaijan and the formation of it as a major demanded supplier in the Caspian-Black Sea-European Union green energy corridor.

By 2031-2037, Azerbaijan plans to generate approximately 19 GW of electricity for the production and export of green energy. And this ambitious goal is consistent with the country's commitment to become a center of green growth, giving priority to environmental sustainability as a national imperative of social and economic development.

The realities that have developed in recent decades, largely under the influence of dynamically changing trends of globalization and regionalization, are increasingly demonstrating the vulnerability and fragility of the regional environmental protection system in the face of the existing diversity of environmental problems. Problems of environmental pollution, having different dimensions and creating costs, often affect not only the territory of the state where this is observed, but also neighboring countries, in which there are potential sources of environmental hazard and natural and man-made disasters occur. And this cannot but affect Azerbaijan, which is greatly affected not only by the influence of climate change, but also by the trends that are observed in the countries surrounding it. Characterized by high sensitivity of its territory and water resources are exposed to anthropogenic impact from adjacent countries. The influence of anthropogenic factors, along with other phenomena, is due, in particular, to the growth of pollution and concentrations of biogenic substances in water resources (Abduev, 2011).

It is obvious that the problem of water scarcity remains an acute and topical issue, which is observed as a result of the consequences of climate change and other factors. According to the report of the Intergovernmental Panel on Climate Change (IPCC), the average annual temperature in the territory of Azerbaijan has increased by 0.4-1.3 degrees in the last 100 years. Azerbaijan will be among the nations with the most severe water shortages by 2040 and water supply will drop by 23 percent (Green Azerbaijan, 2023).

Indeed, all this requires an understanding of how the existing practice of green development in a regional dimension is able to maximize the minimization of the influence of existing factors of anthropogenic impact on the environment, as well as effectively respond to new external challenges. The process of greening is extremely necessary for Azerbaijan, as current growth models continue to deplete natural resource reserves and undermine the integrity of ecosystem services (Economy Division, 2020). This determines the need for its economy to transition to new standards of ensuring green development, based on knowledge and innovative environmental technologies.

2. Theoretical background

In rapidly changing conditions, the new environmental reality and especially the green aspect of the scientific discourse of the concept of regional development requires a new understanding. The expansion of its framework as an objective growing need is actively taking place, including through the advancement of the green course of individual countries and regions.

It is necessary to note that in the initial years of the institutionalization of environmental policy in Azerbaijan, the regional aspect of green transformation was not subjected to a comprehensive scientific analysis by specialists. Published materials on the green theme of Azerbaijan were presented in individual scientific articles (Asadova & Muxtarov, 2013), program documents and assessments of international structures, academic institutions (UNECE, 2011; NPI, 2011; UNECE, 2013; IISD, 2013) and especially media materials. The published materials considered the actual problems of the transition to a green economy, the main prerequisites and directions of the development of this process. For its successful development, the assessments of the readiness of renewable energy are undoubtedly important. In the IRENA report (2019), the main legal and regulatory measures, as well as financing opportunities for its development, were identified.

These and other noted scientific publications and documents on the green theme testify to the purposeful expansion of the framework of the national green discourse. In the developing discourse, specialists paid special attention to the issues of the need for green energy as one of the important priorities of the state. The issues of sustainable energy development in Azerbaijan through the transition to renewable energy sources are considered (Vidadili *et al.*, 2017; Aliev & Guliyev, 2022) in the context of reducing Azerbaijan's dependence on fossil fuels, which is the biggest obstacle to long-term economic growth.

In recent years, the changes that have taken place in this area have led to the emergence of new publications and scientific events dedicated to various aspects of the green course of Azerbaijan. Studies with the participation of specialists from Azerbaijan, including, are aimed at overcoming existing gaps by using rigorous theoretical methodologies. And they are necessary to improve our understanding in order to justify more effective solutions and strategies for the development of the green course. The further development of the country, which is based on the concept of sustainable development and its economic achievements of Azerbaijan should be built on the principles of inclusive and innovative management and this, in the opinion of some specialists, Ahmadov & Khalilov (2019), is the basis for the transition to a sustainable green economy.

Despite the expansion of the green thematic framework, due to new directions and projects, as noted above, in many studies, the problems of green energy (Hasanov, 2023; Hamidova *et al.*, 2022) remain the central theme of many publications. In most studies, special attention is still paid to the policy of future prospects of the green energy sector of Azerbaijan (Gasumov, 2023; Popstov, 2023), of which only 0.15% of global greenhouse gas production falls. A large part of CO₂ emissions is precisely the result of energy production activities.

Azerbaijan has committed to reducing greenhouse gas emissions by 35% by 2030 (compared to the base 1990 year) and by 40% by 2050. Following this logic, it is necessary to note that the current problems of fulfilling its commitments under the Paris Agreement are considered in some works and it is proposed that stronger measures are needed than planned for the transition to a less carbon-intensive economy. In this regard, there is a need for financing from developed countries, as promised under the Paris Agreement (Felver, 2020).

At the same time, the appearance of new research works on the problems of green transformation of individual countries of regions with rich energy resources was associated with the increasing frequency of crisis phenomena in the energy sector. In order to fulfill international commitments in the field of sustainable development, Azerbaijan and several countries of Central Asia (CA) have updated and improved their policies, strategies and plans for diversifying their economies. In the work (Acosta *et al.*, 2023), a comparative analysis is carried out of these countries, which have significant potential for the transition to a low-carbon and green economy. The authors of this collective research work noted the successes of Azerbaijan in the transition to green and inclusive growth through the application of the concept of green growth developed by the Global Green Growth Institute (GGGI).

Special attention is also paid to these problems in the report of the World Bank (The World Bank, 2022), which notes that strengthening measures to combat climate change and the greening of a number of sectors can stimulate the diversification of the Azerbaijani economy, for the growth of which the energy sector remains the main driver.

It is necessary to note that considerable attention has been paid to the very topical directions of the green course (to the issues of green financing) in the joint work of specialists Mamedov & Qurbanov (2022). This problem has not been studied in terms of its impact on economic growth and the socio-economic consequences of environmental investments have not been worked out. At the same time, the authors, considering the issues of preparation and implementation of the green growth strategy, note that with the availability of new knowledge and specialists in Azerbaijan, it is possible to carry out a large-scale modernization of productive forces and social relations.

Together with the listed aspects of the green course of Azerbaijan, an important area is the study of its geopolitical dimension. The absence of scientific works in the framework of the national discourse on this part, necessitates the study of the expected foreign policy efforts of individual countries, which may possibly provoke a geopolitical reaction to this process, affecting the interests of state actors who were part of large economic blocs.

However, it is necessary to note that in recent years there have been positive changes in the field of expanding the scope of research into the process of green transformation in Azerbaijan, which has a rich potential for renewable energy. This opens up new opportunities not only for the development of an active discourse, but also for the development of the most effective tool for assessing the formation of a national model for the transition to a green economy. The announcement of 2024 as the "Year of Solidarity for a Green World", including the holding of the 29th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP29), testifies to a new stage of the green course of Azerbaijan. And these events will become an important incentive for the development of the national school and the emergence of numerous studies.

3. Methodology

The study was conducted using comparative and other general scientific methods of cognition. Taking into account a number of features of the implementation of the green course of Azerbaijan, the content of which in recent years continues to be filled with new strategic program documents and projects, scientific papers, materials. This allowed the authors to form some scientifically grounded conclusions regarding the green transformation and the advantages of Azerbaijan both in the regional and in the demanded international aspect.

4. Features of the formation of the green course of Azerbaijan

The findings indicate that Azerbaijan, as a dynamically developing state, has significant potential for alternative and renewable energy sources and has deliberately formed its own green course strategy. It is the effective use of potential opportunities that allows Azerbaijan to meet some of the current needs and also purposefully creates sustainable foundations for green development. Weighty arguments in favor of this process suggest that green development can become its national idea, which, while preserving nature without harming the future generations, will create conditions and better opportunities for them to meet their own needs.

The process of institutionalization of the green course of Azerbaijan became a logical continuation of the development of its energy policy, the designated goals in the

field of environmental protection and obligations related to climate change. An important step in the process of institutionalization of the green course of Azerbaijan was not only measures aimed at creating specialized structures, management systems, but also the creation of a regulatory framework. In particular, the adoption of such documents as the Concept of Development "Azerbaijan-2020: A Look into the Future", the State Program for Poverty Reduction and Sustainable Development, the Concept of "Green Economy", the State Program for the Development of Industry for 2015-2020, the National Program for the Restoration and Increase of Forest Cover, the State Program for the Development of the Transport System, etc. created favorable conditions for the implementation of various projects in the field of green development.

The expansion of Azerbaijan's participation in multilateral agreements and programs on environmental protection, as well as the establishment of strong partnerships with interested international organizations on energy partnership, was also important in the development of this course. The expansion of cooperation in this area was the result of the European Commission's Green Paper "European Strategy for Sustainable, Competitive and Secure Energy" (Memorandum, 2006).

At the same time, the analyzed materials allow us to study the content of some aspects of the implementation of the green course in Azerbaijan. Some aspects of its participation in international projects, including those aimed at achieving the UN Sustainable Development Goals (SDGs) by 2030 and the UN International Program for "Green" Transformation, are considered through the prism of current economic conditions. The latter, according to experts (Mamedov *et al.*, 2019), with strong turbulence in the global economy, requires a change in approaches to human motivation. Some experts have noted these conditions as unfavorable for producers or consumers of alternative energy (Aliev & Ismailova, 2015).

A typical situation that has been observed in other regions, where pilot projects in this area are being actively implemented today, necessitates the creation of strong institutional foundations for the implementation of green transformation and adaptation to new conditions for many economic entities.

In order to mobilize the transition to green development, it is necessary to create a national platform for interaction between stakeholders who are focused on environmentally oriented entrepreneurship. According to Mamedov (2023), in the coming years, successful relations between society, business, and the state will be strengthened for the long-term sustainable and rapid development of Azerbaijan. In this context, the active use of the ESG banking business model, which is becoming increasingly popular, is proposed. In response to the changing demands of society, customers and regulators, the business models of banks in Azerbaijan, as well as in the world as a whole, will increasingly focus on the principles of environmental, social and governance responsibility.

Despite the preservation of the dominant elements of the current economic model, which is largely focused on the practice of widespread use of traditional energy resources, the presence of favorable conditions and a system of effective solutions in this direction can become an important factor contributing to the successful implementation of the green course. And the increase in the share of alternative energy in the economy in the future can help to minimize the demand for traditional energy resources, which are still the main cause of environmental pollution.

Azerbaijan, as an energy-independent state, has purposefully shaped its national green development agenda through active actions in the field of economic modernization

and diversification of energy sources. By making every effort to participate in the global processes of the "great energy transition of 2030", Azerbaijan continues to expand its participation in the international green agenda as an active "supporter of green energy and green growth" (UNGA, 2023).

Recent statements by officials, in particular, "Azerbaijan is going to develop a green economy, making it one of the priority areas despite the fact that the oil and gas sector still plays an important role in the country's development", as well as the determination to bring the volume of energy generated from alternative and renewable sources to 30 percent by 2030, indicates that new opportunities for creating strong channels of international partnership are opening up within the framework of the green transformation process.

The national green development agenda of Azerbaijan is based on the country's low greenhouse gas emissions and natural resources, which provide a significant potential for minimizing the costs of implementing green technologies. An important vector in this agenda is the creation of a solid foundation for "green" energy, which is becoming a promising export resource.

In recent years, there have been assessments in the media and official literature that note that "with an eye to the future, the country has begun to achieve tremendous success in the field of renewable energy" (Krishna, 2020). These assessments characterize the significant changes that are taking place in this area. In particular, projects for solar and wind energy have been implemented and their share in the total electricity production has already reached 17 percent. As economic expert Emin Garibli notes, there is a great potential for the development of renewable energy sources and several new power plants are being built that will operate on the principle of producing "green" energy (Trend, 2022).

To accelerate the transition to green energy, ensure "green growth", and become a major supplier of "green energy", it is also important to expand cooperation with international companies with cutting-edge experience in this field (Caliber, 2023). The developing partnership for the implementation of projects is a contribution to Azerbaijan's green development policy. This, as a highly priority direction, in recent years, gaining particular momentum, acts as one of the promising tools of its economic diplomacy.

In the development of economic diplomacy, the potential plans for the supply of green energy are seen as promising. As the events of recent years show, in particular, the observed global energy crisis, the consequences of the military conflict in Ukraine and the destruction of traditional channels between Russia and Western countries, contributing to the reformatting of the geography of energy supplies established for decades, create new realities for the transportation of energy resources. The Agreement on Strategic Partnership in the Field of Development and Transmission of Green Energy" (Azerbaijan, Georgia, Romania and Hungary) signed in 2022 and other documents (such as the Joint Declaration with Kazakhstan and Uzbekistan) strengthening its role in the region in the field of development and transmission of green energy, opens up new opportunities in the future to transmit electricity produced in Central Asia through its territories to European countries.

The need to accelerate the expansion of the use of renewable energy sources has led to a special focus on these issues in the framework of the adopted legal and programmatic documents for the development of the Green Course of Azerbaijan: "Azerbaijan 2030: National Priorities for Socio-Economic Development" (2021) and "Strategy of Socio-Economic Development of the Republic of Azerbaijan for 2022-2026"

(2022). The allocation of a clean environment and a "green growth" country among the five priority areas for the next decade speaks of the beginning of a new green development course for Azerbaijan, requiring new practical, scientific and technological measures.

In order to effectively organize and coordinate decisions in this area, the Strategy provides for the development of the green energy sector to a completely new level. The implementation of a rather ambitious plan will allow by 2026 to create an energy hub Azerbaijan (Nakhchivan Autonomous Republic) - Turkey - Europe, as well as to accelerate the creation of very promising energy projects, thanks to which it will be possible to directly export electricity to Turkey.

In addition to the strategies mentioned above, aimed at the development of the green course, other projects and institutional mechanisms can be added. In particular, we are talking about the development of pilot projects on the use of geothermal energy and biomass energy, the study of the use of the potential of marine wind energy. There is also interest in studying the potential in the field of production and use of green hydrogen, for which there is an economic basis for its production and export. The need to study the issues of the use of energy storage systems and carbon capture, use and storage technologies and the submission of relevant proposals is noted.

The practice of using "green" technologies shows that the introduction and subsequent application of them to new conditions in various sectors of the national economy increases the efficiency of their activities. In this regard, the use of a sectoral approach, which is also used in the above-mentioned Strategy, opens up the best opportunities for promoting the green development course. In this context, the development of a state program for low-carbon development and a national plan for electro mobility in 2022-2024 can be noted. Within the framework of the implementation of this program, the functioning of environmentally friendly and safe vehicles (passenger cars, buses, etc.) will be stimulated.

It is necessary to note that the expansion of the national "green agenda", one of its priorities is defined as "A country with a clean environment and green growth", was largely driven by the growing needs of internal development, as well as external factors. Undoubtedly, an important step in this area was the decree of the President of Azerbaijan on measures related to the creation of the "Green Energy Zone" and the construction and reconstruction of energy-efficient, environmentally oriented settlements in the liberated territories of the Republic of Azerbaijan. The rich natural and climatic potential and the prospects for its use, in particular solar energy, water resources and other resources of this region of Azerbaijan, opens up new opportunities for investment in the field of green development, respectively, the restoration and development of the region as a whole.

Today, ensuring the preparedness of the national economy for the new realities with low-carbon energy as a priority task implies the creation of its own green technology industry and the effective use of potential opportunities. At the same time, it is also important to take into account the various risks that affect the process of green transformation. And for those countries that are actively implementing plans in the field of green development, it is important to answer the following questions: will they be able to achieve their goals in the next decade? Accordingly, for the successful implementation of the goals, it is necessary to have stable development without internal political upheavals and external political pressure from outside.

As practice shows, the "green" agenda is still not a priority for citizens, businesses, and officials (Sukhoverkhov, 2022). This problem, including having current importance for the implementation of the national green development strategy of Azerbaijan, requires

special attention. In this regard, the need to form a modern environmental mindset and accordingly, the effective use of green technologies, necessitates the development and updating of educational programs at the national level (including at the international level), as well as training and upgrading the qualifications of specialists in the field of green development.

Taking into account that the above-mentioned areas of development of the green course of Azerbaijan are being filled with new content, a wide range of events clearly demonstrate a smooth transition to a new development model. However, certain aspects of its implementation, which should address the issues of deforestation, ensuring clean and safe drinking water in certain parts of the country, do not always receive the proper research attention of specialists today.

As researchers from the ADA University (Azerbaijan) note, water scarcity is becoming a growing threat to its sustainable future due to the negative consequences of climate change, as well as a number of other factors, including the fact that about 70 percent of the water used in Azerbaijan comes from other countries (Aliyeva *et al.*, 2023).

In the fight against the water crisis and especially in the process of water treatment and wastewater treatment, there is an urgent need to study the effective use of advanced innovative engineering solutions, taking into account the creation of a regional interaction system. An important approach can be the creation of a system of practice for clear tracking of the efficient and rational use of water resources in the agricultural sector, where it is essential to reduce environmental degradation in Azerbaijan. The solution of this very relevant problem should be an urgent task of the green development strategy of Azerbaijan, taking into account the new environmental realities that have developed in the South Caucasus and adjacent territories.

The increase in the construction of reservoirs and artificial reservoirs, respectively, to provide the necessary water supply for various needs, requires the development of such projects that should be implemented taking into account their environmental and social aspects. These aspects of alternative solutions to existing problems should be based, including on the observance of strict rules for the careful treatment of water resources, natural corners.

Despite the active introduction of various technologies for desalination of seawater (Akhundov, 2022) in developed countries of the world and the search for the most optimal options for the creation of a seawater desalination complex on the Caspian Sea (a memorandum was signed by the OJSC "Azerbaijani Investment Company" and the Israeli "I.D.E. WaterAssetsLtd"), the use of ancient technologies for obtaining fresh water in Azerbaijan, which were used a thousand years ago, does not lose its relevance. And it can be assumed that the logical continuation of these initiatives in the field of green development will address the most acute environmental problems in Azerbaijan, which in some areas do not yet meet modern standards.

These and other problems of green transformation not considered in this work raise the issue of expanding the scope of the national green discourse. To understand the existing realities in the field of green transformation, it is important to take into account the specifics of the implementation of the green course of neighboring countries, as well as large actors such as Russia, the United States and the EU. For example, the green transformation that will take place in the coming decades is aimed at the future abandonment of natural gas in favor of renewable energy sources (Asadov & Asadov, 2022). And despite this, this policy is stalling, there is a need to study its consequences, including for Azerbaijan in the event of the implementation of this course by the EU.

In this regard, a broad view of the issues of the green transformation process is necessary not only in the context of identifying the prospects for adaptation to the inevitable climate change, new conditions of the economic and political environment, but also the expected results and consequences of this complex process aimed at achieving the desired social and economic goals. In this context, the consideration of the problems of the green course and the stress-resistance of energy relations between Russia and the EU by the Russian specialist (Romanova, 2021) deserves attention. It is no coincidence that the traditional ties between these major actors, which have been destroyed in recent years and especially the impact of the EU's green course on the prospects for its energy relations with Russia, remains one of the key topics of the green discourse.

In the light of the development of the new discourse, it is necessary to note that despite a certain dynamism in the absence of fundamental scientific works on the problems and prospects of green development in Azerbaijan, this may create certain difficulties in the formation of a full-fledged national school of green research and accordingly, the training of professionals of the new generation.

5. Conclusion

Thus, as the analysis of the scale of anthropogenic pressure on the environment in many regions shows, its influence will increase. The future state of the regional ecosystem will depend on whether states, individually using innovative green technologies, can make their significant contribution to minimizing the growth of the influence of these factors and become centers of sustainable development.

At the same time, against the backdrop of increasing international competition and the trend of depletion of sources of export-raw materials type of development, the prospects for Azerbaijan's exit to the standards of welfare of developed countries necessitate a radical increase in the efficiency of the use of all types of resources.

The above-mentioned features of the process of green transformation and the transition to new standards allow us to note that today Azerbaijan, with significant oil and gas resources and diversified transportation routes, is aimed at further developing alternative energy sources and implementing innovative technologies in the field of green development. And the transition to a "green" development vector requires not only painless adaptation to new conditions, but the formation of a new paradigm of management of the complex process of green transformation.

Due to a number of reasons, the emerging environmental management system in the process of green transformation will have clear signs of fragmentation. The institutional difficulties that may arise in solving both economic and social development tasks can lead, for example, to problems of coordination, financing and management of processes involving stakeholders. In this regard, the existing system of management of this process must be actively changed, taking into account the growing needs and the emergence of new socio-economic realities of society's development.

In addition, the steps taken to maintain a balance between economic development and environmental stability create favorable prerequisites for ensuring Azerbaijan's advantage in this area. In recent years, such practice has been observed in the increase of its role not only in the regional aspect, but also in the demanded potential on the international arena. In the context of the current geopolitical and geoeconomic realities in the South Caucasus region, new prerequisites have emerged in the interests of using the

effect of the contact of the largest economic blocks, including for the green development of Azerbaijan.

And following this logic, it is necessary to note that in the context of energy security continuing to be one of the most important problems on the international agenda, the importance of Azerbaijan's role as a dynamically developing actor in the field of green energy will undoubtedly increase. Accordingly, this can contribute to the emergence of new opportunities in this area and green energy will become one of the important tools of its economic diplomacy.

References

- Abduev, M.A. (2011). Changing the regime of nutrients and their removal by rivers of the Azerbaijan Republic. *Geographical Bulletin*, 3(18), 14-22. (In Russian).
- Acosta, L., Hampel-Milagrosa, A., Sabado, R.S.Jr., Eugenio, E., Ribeus, M.M., Sales, J. & Innocent Nzimenyera (2023). Azerbaijan's Transition to Green and Inclusive Growth A Comparative Assessment with the Central Asian Countries. GGGI Technical Report, No.30. Global Green Growth Institute, Seoul, Republic of Korea.
- Ahmadov, E., Khalilov, T. (2019). Economic and Social Development (Book of Abstracts). 37th International Scientific Conference on Economic and Social Development Socio Economic Problems of Sustainable Development. Baku, 164.
- Akhundov, Kh. (2022, 12 October). *Desalinators, wind turbines in Caspian Sea to help Azerbaijan to overcome its water crisis*. https://caliber.az/en/post/114754/
- Aliev, R.A, Guliev, I.A. (2022). Energy Transition as a Factor in the Development of Sustainable Energy in the Countries of the Caspian Region. Monograph. Moscow: Publishing house Aspect Press, 272.
- Aliev, R.A., Ismailova, G.F. (2015). Green economy in the Republic of Azerbaijan. Prerequisites and directions of the development. https://naukovedenie.ru/PDF/107EVN615.pdf
- Aliyeva, O., Hasanova, Sh., Huseynova, M., Mahmudov, M. & Mammadli, F. (2023). *Unraveling Azerbaijan's Water Crisis*. Institute for Development and Diplomacy of ADA University https://www.researchgate.net/publication/369947997_Unraveling_Azerbaijan's_Water_Crisis
- Asadov, B., Asadov, E. (2022, October). New environmental policy of the European Union: some aspects of transition to green energy. In *IOP Conference Series: Earth and Environmental Science*, 1096(1), 012034. IOP Publishing. https://iopscience.iop.org/article/10.1088/1755-1315/1096/1/012034
- Asadov, B.R. (2021). UN Environment program: some aspects of activity in the area of environmental protection. *Pravo. Safety. Emergency situations*, 1, 41-48.
- Asadova, A.V., Muxtarov, A.Sh. (2013). Resources of geothermal energy in the Republic of Azerbaijan. *Monitoring: Science and Technology*, 2. http://csmos.ru/index.php?page=mnt-issue-2013-2 (In Russian).
- Economy Division (2020). *A Partnership for Green Development in Azerbaijan*. https://wedocs.unep.org/bitstream/handle/20.500.11822/37050/APGDA.pdf?sequence=1 https://wedocs.unep.org/bitstream/handle/20.500.11822/37050/APGDA.pdf?sequence=1 https://wedocs.unep.org/bitstream/handle/20.500.11822/37050/APGDA.pdf?sequence=1 https://wedocs.unep.org/bitstream/handle/20.500.11822/37050/APGDA.pdf?sequence=1
- Ed News. (2023, 29 December). *Green Azerbaijan: An Expert Opinion*. Dr. Mehmood Ul Hassan Khan, Executive Director of the Center for South & International Studies (CSAIS) Islamabad. https://ednews.net/en/news/analytical-wing/639099-green-azerbaijan
- Felver, T.B. (2020). How can Azerbaijan meet its Paris Agreement commitments: assessing the effectiveness of climate change-related energy policy options using LEAP modeling? *Heliyon*, 6(8), E04697 DOI:10.1016/j.heliyon.2020.e04697
- Gasumov, E.R. (2023). Perspectives for the development of green energy in Azerbaijan. *Bulatov readings*, 2, 17-22.

- Hamidova, L., Huseynov, A. & Samedova, E. (2022). Challenges in Implementing Renewable Energy Sources in Azerbaijan. *International Journal of Energy Economics and Policy*, 12(6), 441-446. https://doi.org/10.32479/ijeep.13636
- Hasanov, R.I. (2023). Green procurement and green transportation: The case of the aluminum industry. *Green Economics*, 1(2), 126-136.
- IISD. (2013). *Green Economy Scoping Study*. https://www.iisd.org/publications/report/green-economy-scoping-study-azerbaijan
- IRENA. (2019). Renewables Readiness Assessment. Republic of Azerbaijan. United Arab Emirates: International Renewable Energy Agency, 48.
- Krishna, N. (2020). *Oil-Rich Azerbaijan Takes Lead in Green Economy*. https://moderndiplomacy.eu/2020/02/15/oil-rich-azerbaijan-takes-lead-in-green-economy/
- Lagutina, M. (2020). The Global Region: a Concept for understanding Regional Processes in Global Era. *Journal of Cross-Regional Dialogues La Revue De Dialogues Inter-Régionaux*, Special Issue, 13-38.
- Lissovolik, Y. (2021, September 27). Green Transformation as an Economic Policy Tool. https://russiancouncil.ru/en/analytics-and-comments/comments/green-transformation-as-an-economic-policy-tool/
- Mamedov, Z.F., Huseinli, F.A. (2023). Ecologization of the financial system: new challenges and opportunities. https://esg.etu.ru/assets/files/sbornik-esg-faktory-23_compressed.pdf
- Mamedov, Z.F., Mineva, O.K. & Glinchevskiy, E.I. (2019). Innovative approach to human capital management under conditions of strong turbulence of fourth industrial revolution. 37th International Scientific Conference on Economic and Social Development Socio Economic Problems of Sustainable Development. Baku, Azerbaijan.
- Mamedov, Z.F., Qurbanov, S. (2022, 24-25 February). Green trends in the development of the global financial system. *78th International Scientific Conference on Economic and Social Development Aveiro*, 175-182.
- Memorandum. (2006, 7 November). President Barroso and the President of Azerbaijan sign a Memorandum of Understanding on energy partnership. IP/06/1516 Brussels, https://ec.europa.eu/commission/presscorner/detail/en/IP_06_1516
- NPI. (2011). Shared Environmental Information System, Azerbaijan Country Report https://wedocs.unep.org/bitstream/handle/20.500.11822/9415/-Azerbaijan Country Report EEA-2011Azerbaijan EEA country report 2011.pdf.pdf?sequence=3
- Poptsov, D. (2023). Perspectives Development of Green Energy in Azerbaijan. https://russiancouncil.ru/analytics-and-comments/analytics/perspektivy-razvitiya-zelenoy-energetiki-v-azerbaydzhane/ (In Russian).
- President of the Republic of Azerbaijan (2021). Order of the President of the Republic of Azerbaijan on approval of Azerbaijan 2030: National Priorities for Socio-Economic Development. https://president.az/en/articles/view/50474
- President of the Republic of Azerbaijan. (2022). Decree of the No. 3378 of July 22, 2022 Strategy of Socio-Economic Development of the Republic of Azerbaijan for 2022-2026 https://president.az/ru/articles/view/56723
- Romanova, T. (2021). The Green Deal and the Resilience of EU-Russian Energy Relations. International Organizations Research Journal, 16(3), 108–123 (In English). https://iorj.hse.ru/2021-16-3/517771417.html
- Sukhoverkhov, K.K. (2022) Perspectives of the "green" transition of Russia. https://russiancouncil.ru/activity/publications/perspektivy-zelenogo-perekhoda-rossii-v-usloviyakh-sanktsionnogo-davleniya-stran-zapada/
- The World Bank (2022). Azerbaijan: Towards Green Growth, Issues Note. https://openknowledge.worldbank.org/server/api/core/bitstreams/03aa0b10-3146-5831-be15-a67d94f9a3b9/content
- Trend. (2022, 25 July). Azerbaijan's plans for green energy way to realizing gigantic potential. https://en.trend.az/business/energy/3624933.html

- UNECE (2011). Environmental Performance Reviews Azerbaijan, Second Review, N31 United Nations, New York and Geneva.
 - https://unece.org/DAM/env/epr/epr_studies/azerbaijan%20II.pdf
- UNECE (November, 2013). Promoting Green Innovation. Policy assessment and recommendations. Azerbaijan https://unece.org/fileadmin/DAM/ceci/publications/Assessment Azerbaijan.pdf
- UNGA (2023). Chief says important to witness Azerbaijan's green transformation, https://report.az/en/foreign-politics/un-ga-president-says-amazing-to-witness-azerbaijan-s-green-transformation/
- Vidadili, N., Suleymanov, E., Bulut, C. & Mahmudlu, C. (2017). Transition to renewable energy and sustainable energy development in Azerbaijan. *Renewable and Sustainable Energy Reviews*, 80, 1153-1161.
- Caliber. (2023, 8 December). Azerbaijan, China discuss renewable energy sources. https://caliber.az/en/post/209245/