

The Results of Georgia's Environmental Policy and Ways for its Improvement

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Abstract. In the modern world, environmental challenges are multidimensional in nature and include climate change, irrational use of natural resources, and the reduction of biodiversity. These problems are closely linked to economic well-being, ecosystem resilience, the quality of resource protection, and political stability. Environmental issues have become one of the most relevant directions on the global agenda, that is why international organizations are attempting to mitigate existing challenges through various mechanisms and initiatives. Georgia is actively striving to introduce environmental approaches and regulations harmonized with international practice in order to align its policies with the standards of developed countries. In this direction, the state has implemented significant legislative and institutional reforms. The purpose of this study is to conduct a comprehensive analysis of environmental problems existing in Georgia and, based on the obtained results, to develop economic and political decisions that will contribute to the effective improvement of environmental protection processes. To achieve this goal, both Georgian and foreign scientific studies, as well as relevant international reports, have been analyzed. The novelty of this study resides in a comprehensive examination of Georgia's environmental policy, which integrates climate change, atmospheric air protection, and solid waste management within a single analytical framework and critically assesses the coherence between international environmental commitments and national policy frameworks. The findings indicate that, notwithstanding measurable progress in legislative and institutional reforms, the effectiveness of environmental policy implementation remains substantially limited by deficiencies in enforcement mechanisms and by inadequate financial and administrative capacities. © 2026 *Bull. Georg. Natl. Acad. Sci.*

Keywords: air pollution, biodiversity loss, climate change, environmental policy, solid waste management

Introduction

There are various types of environmental challenges in the world today, and some of them are particularly important. One of such challenges is food waste. Food waste is responsible for 4.4 gigatons of greenhouse gas emissions. 40% of food waste in developing countries occurs during the harvest or

processing stage, while 40% of waste in developed countries occurs during retail or consumption. In the United States, more than 50% of food is thrown away simply because it may not look aesthetically pleasing to the consumer. Ultimately, this process leads to the accumulation of billions of tons of

waste in the environment, which poses a serious problem for the ecosystem.

Demographic processes represent one of the key determining factors that exert a substantial influence on environmental quality and the functioning of ecosystems. Population growth, the intensification of migration flows, and the expansion of urbanization processes significantly shape both the scale of natural resource consumption and the level of ecosystem resilience. The impact of these demographic trends is particularly pronounced in developing countries, where limitations in economic and technological capacities often hinder the effective management of environmental challenges (Silagadze et al., 2023).

The global decline in biodiversity represents a significant issue in the world. Currently, over 500 species of terrestrial animals are on the verge of extinction and are projected to disappear within the next two decades. Scientific estimates suggest, that in the absence of intense human exploitation of natural resources, such rate of extinction would have taken thousands of years to occur. Another significant challenge is plastic waste, which takes 400 years to decompose. Approximately 11 million tons of plastic enter the oceans every year, harming wildlife and the animals living in them. Deforestation and air pollution remain pressing problems (Kvesitadze, G. et al., 2024). According to the World Health Organization (WHO), air pollution kills between 4.2 and 7 million people every year (WHO, n.d.).

Global warming is considered the most critical challenge of the XXI century, that is associated with the release of greenhouse gases into the atmosphere. The main absorbers of thermal radiation in the Earth's atmosphere are: water vapor (H₂O), carbon dioxide (CO₂), and ozone (O₃).

The Paris Agreement on Climate Change is important in terms of environmental protection. In 2015, representatives of 195 countries approved the first universal climate agreement in Paris – the Paris Agreement, which aims to prevent the worst conse-

quences of global warming. Today, 197 countries are party to this agreement, although significant polluters such as Iran, Turkey and Iraq have not joined it yet. According to the agreement, the increase in global temperatures on Earth will be limited to 3 degrees Celsius by 2050 and will not exceed 1.5 degrees Celsius. Developed countries, which account for the largest share of atmospheric pollution, have greater obligations under the agreement. As for developing countries, they should be encouraged to reduce greenhouse gases in the future.

The first important international agreement was the Kyoto Protocol, which was adopted in 1997 and entered into force in 2005. Under the protocol, developed countries were set binding emission reduction targets based on the assumption that they were responsible for the majority of greenhouse gases in the Earth's atmosphere and that they would be subject to penalties if they failed to do so.

In 2021, the 26th conference, known as COP 26, was held in Glasgow. The purpose of the conference was to assess the results achieved under the Paris Agreement and to encourage countries. Given that the parties have not yet agreed on the exact mechanisms by which emissions can be reduced to the planned level. The 2021 summit recommended that countries independently implement their own projects to reduce emissions outside the agreement.

Environmental challenges in Georgia. Georgia, as a party to the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement, is obliged to take into account the principles set out in these international agreements and to implement the obligations assumed at the national level.

These commitments and plans are reflected in the 2030 Climate Change Strategy and Action Plan of Georgia, which is a mechanism for coordinating efforts to achieve nationally set goals for climate change mitigation.

Changes in the components of the climate system are caused by the unhindered emission of

greenhouse gases. Local studies on climate change show that since the end of the last century, the increase in average temperatures and changes in precipitation patterns in Western Georgia have had a certain impact on the forest ecosystem. In Eastern Georgia, heat waves and hot days have increased the number of forest fires and the spread of pests.

The main challenges of climate change policy in Georgia are: reducing greenhouse gas emissions that cause climate change and increasing the country's adaptation potential, and developing a transparent reporting system.

The Climate Strategy and Action Plan for Georgia (2030) sets out the path to achieving the targets for reducing greenhouse gas (GHG) emissions to mitigate climate change. These targets are set out in the document "Georgia's Updated Nationally Determined Contribution" (NDC) to the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC). In 2017, Georgia joined the 191 countries that have signed the Paris Agreement, thereby declaring its commitment to limit the increase in global average temperature to well below -2°C , and in the best case to 1.5°C , above pre-industrial levels. The NDC aims to reduce national greenhouse gas emissions by 35% compared to 1990 levels, which means that by 2030, greenhouse gas emissions should not exceed 29.25 Mgt CO₂ (Ministry of Environment Protection and Agriculture of Georgia, 2021).

Environmental policy of Georgia. An attempt to introduce an environmental protection system in Georgia began in the late 1990s. Recognizing environmental problems and the recommendations of international organizations and friendly states, as well as the need to reflect environmental issues in measures to ensure health and social welfare, the Framework Law "on Environmental Protection" (1996) was adopted. This law assigns the Ministry of Environmental Protection and Agriculture of Georgia, which has pivotally significant leading role in this process (Gvelesiani & Gogorishvili, 2012).

Environmental policy also includes the regulation of toxic substances, pesticides, and many types of waste. This policy can be purposefully adopted to identify and monitor human activities, to establish preventive institutional mechanisms to prevent harmful impacts on the environment and natural resources, and to identify whether changes in the environment have harmful effects on humans.

The formation of environmental policy in Georgia also entails various international obligations. Georgia is trying to implement internationally recognized environmental approaches and regulations in order to move closer to the developed international community.

The EU-Georgia Neighborhood Policy Action Plan reflects the strategic objectives of cooperation between Georgia and the European Union. The Action Plan was approved in November 2006 and its implementation represents an important step forward Georgia in terms of European integration. An Association Agreement provides for a number of measures in the field of environmental protection, which contribute to the improvement of environmental governance and effective decision-making procedures (Bedianashvili & kokhreizde, 2024; New School for Economics, 2021).

One of the priority directions of Georgia's environmental policy is the protection of atmospheric air. According to the Fourth National Environmental Action Program of Georgia, air pollution is recorded in the largest cities of the country and near large industrial facilities. Particularly problematic pollutants are solid particles (PM₁₀, PM_{2.5}) and nitrogen dioxide (NO₂) (Ministry of Environmental Protection and Agriculture of Georgia, 2023, pp. 5-8).

Ambitious economic development plans of countries are often accompanied by degradation of environmental components, which is manifested in the inefficient use of natural resources, environmental pollution and the resulting negative impact on human health and ecosystems, and frequent natural disasters, which in the long term hinder the

economic development of the country. Good environmental governance is crucial for the sustainable development of the country and environmental protection (Ministry of Environmental protection and Agriculture of Georgia, 2022, pp. 9-11).

Sustainable development. Equal prioritization of social, economic and environmental directions is one of the main prerequisites for sustainable development. To overcome the global challenges facing the world, all member states of the United Nations have agreed on 17 Sustainable Development Goals and 169 targets, which must be achieved at the country level by 2030. Georgia, as a full member of the international community, fully shares the spirit of the Sustainable Development Goals and has realized all 17 goals and 93 targets, of which 6 goals (clean water and sanitation, sustainable cities and settlements, sustainable consumption and production, climate action, ocean and marine resources, and Earth's ecosystems) specifically relate to environmental protection.

For the sustainable development of the country, it is necessary to properly reflect environmental aspects in the development policy of economic sectors and to implement the principles declared in various national strategic documents. Although a positive trend has been observed in this regard in recent times, additional efforts are needed both with the state structures defining and implementing policies in various economic sectors, as well as with donor and partner organizations in terms of financial resources (Erkomaishvili & Minashvili, 2021).

Georgia is a party to 39 multilateral agreements in the fields of biodiversity, air protection, climate change, water resources, waste and chemical management, nuclear and radiation safety, and others.

Climate change is one of the most important challenges to sustainable development, with long-term consequences. The National Bank of Georgia is actively working on climate-related risk analysis as an important part of the National Bank's sustainable financing framework (National bank of Georgia, n.d.).

Local and regional authorities have an important role to play in the fight against the climate crisis, both in cities and in rural areas, as they are better able to respond to local issues, take actionable steps and adopt concrete measures to protect the environment. Like national authorities, they have a responsibility to fulfil environmental obligations in accordance with environmental and human rights law (Congress of Local and Regional Authorities, 2022, p. 4).

Solid waste management. Waste management regulation is a challenge for Georgia of both national and regional and local importance. In recent years, a number of important steps have been taken in this direction by the agencies responsible for waste management. "Several large-scale infrastructure projects have been implemented, as a result of which solid household waste landfills in compliance with European standards were put into operation in the country in Tbilisi and Rustavi." The strategic goal of the Georgian Solid Waste Management Company LLC is to develop a network of regional sanitary landfills and an appropriate number of transfer stations connected to them throughout the country.

The construction of modern regional sanitary landfills is planned in the Kvemo Kartli, Imereti, Racha-Lechkhumi and Kvemo Svaneti regions. Negotiations are underway with international financial institutions to finance infrastructure projects for new regional sanitary landfills in the Samegrelo-Zemo Svaneti, Mtskheta-Mtianeti, Kakheti and Shida Kartli regions.

Waste in Georgia is a particular environmental problem. It remains a source of ecosystem pollution and harmful effects on human health to this day. The current practice of waste disposal in regions and non-urban areas involves its disposal in unofficial landfills – on roads, in the nearest ravine, on the banks of rivers, with disregard for all sanitary and environmental norms. The majority of operating landfills do not comply with modern European standards and fail to meet the requi-

rements set by international directives (Sekhnia-shvili et. al, 2025).

The main factor hindering the development of the solid household waste management system is the lack of funding. The insufficient level of awareness of the population and the absence of a unified legislative framework regulating waste management in the country, as well as the lack of human resources with appropriate technical qualifications, also remain a problem. Although certain steps are being taken in Georgia to solve the problem of waste collection and disposal, the problem of environmental pollution is still very relevant. In order to develop a comprehensive waste management system in Georgia, it is necessary to raise the awareness of the population and develop appropriate rules of conduct regarding waste (Kevkhishvili et. al, 2025).

Waste management focused on human health and environmental protection is one of the most important state priorities and tasks. The state has a principled role in ensuring the proper development of the waste management system. The state has a special interest in this direction and provides political and financial support. The Georgian Solid Waste Management Company LLC was established with funding from the state budget, which is an effective tool for improving the household landfill management system across the country.

The implementation of a waste management system in Georgia in accordance with European standards is a principled goal. Finding foreign partners for the implementation of modern standards is of particular importance in terms of sharing international experience. In turn, through the active efforts of the Solid Waste Management Company LLC, cooperation is being carried out in this direction with donor organizations, international financial institutions and governments of European countries.

Among the weakness, we can consider that the current waste management practice in Georgia does not take into account the definition of waste types,

appropriate sorting and subsequent recycling. There is no unified legislative framework regulating waste management. The level of awareness of the population in the country regarding the issue of waste management is low (Ministry of Infrastructure of Georgia).

Significant reforms and measures have been implemented in the field of air protection in recent years. Georgian air protection legislation has been harmonized with EU legislation. The automated network for monitoring ambient air has been expanded. Quarterly indicative measurements of ambient air pollution are being conducted in 25 large cities. An air quality portal – air.gov.ge – has been created, where air quality data is available. An emissions forecasting report has been developed. Fines for excessive emissions from industrial facilities, the absence or non-use of an air pollution control system, and violation of the terms of an environmental decision have been significantly increased (Magedani, 2022).

The process of implementing European principles for regulating emissions from the industrial sector is underway, which involves implementing the best available techniques in each industry sector and setting appropriate emission limits (Ministry of Environmental Protection and Agriculture of Georgia, 2023, pp. 19-22). Both nationwide and in Rustavi, the main anthropogenic source of atmospheric air pollution with solid particles (PM₁₀, PM_{2.5}) is industrial stationary facilities. The highest emission rate of solid substances in the central zone falls on Rustavi (12,970 tons). Compared to other cities, high emission rates of solid particles are recorded in Gardabani (3,079 tons) and Kaspi (1,464 tons). So that, the largest share of solid particles emitted in the central zone, 70.7%, falls on Rustavi, followed by Gardabani Municipality with 16.8% and Kaspi Municipality with 8% (Dvalishvili, 2021; Gigauri et al., 2023).

Employees of the Environmental Supervision Department of the Ministry of Environmental Protection and Agriculture of Georgia identified 475

facts of non-compliance with the established norms of vehicle emissions from June 1 to June 30, 2025. Of these, 215 violations were recorded in Tbilisi, 99 – in Kutaisi, 91 – in Batumi, 70 – in Rustavi. Visible emissions of vehicles are being monitored in 4 major cities of the country. At the same time, the department also regularly monitors the quality of fuel at gas stations in order to minimize the emission of harmful substances into the ambient air (Department of Environmental Supervision of Georgia, n.d.).

Although legislative amendments have been implemented in Georgia to establish the obligation of continuous instrumental monitoring of emissions from large industrial facilities and to tighten sanctions for non-compliance with air protection legislation, the challenge remains the failure of regulated entities to comply with legislative requirements.

According to the 2024 report of the Ministry of Environmental Protection and Agriculture of Georgia, in order to determine compliance with the norms established by the legislation on the quality of motor gasoline and diesel, samples of gasoline and diesel fuel were taken selectively in Tbilisi and the regions of Georgia. As a result of laboratory research, violations of the established norms were detected in 8 cases out of 18 objects. In 2024, 5,563 cases of non-compliance with the established norms for motor vehicle emissions were recorded.

Conclusions

Recently, the process of harmonization of air protection legislation with the legal acts of the European Union has been actively underway. Legislative requirements for the assessment and management of ambient air quality and fuel quality

have become closer to European norms. However, the effective implementation of the adopted legislation is not less important being a challenge. For the correct assessment of ambient air quality, it is necessary to provide a sufficient number of monitoring stations.

Regarding the preservation of biodiversity, it is necessary to improve and enforce environmental laws and regulations; raise the sense of environmental responsibility among the population through educational seminars and meetings; and international cooperation to both mutual sharing knowledge and raise funds needed to preserve biodiversity.

The level of public awareness is directly related to the consumption of natural resources and environmental pollution. Training qualified personnel and popularizing shortage professions will contribute to the successful implementation of the country's commitments.

The availability of qualified human resources is of particular importance for the implementation of modern standards in the field of solid waste management. Active involvement of the population is important for solving the problem of waste management. For this, it is necessary to raise public awareness in this area and implement awareness-raising campaigns in this direction.

To improve the ecological conditions in the city, the government needs to take the following measures: promote and encourage the use of hybrid taxis and electric vehicles, impose an environmental damage tax on high-capacity engines, restrict traffic on central streets, and prohibit the import of vehicles older than the “Euro 4” environmental standard into Georgia.

ეკონომიკა

საქართველოს გარემოსდაცვითი პოლიტიკის შედეგები და მისი გაუმჯობესების გზები

ნათია ჟღენტი

ივანე ჯავახიშვილის სახ. თბილისის სახელმწიფო უნივერსიტეტი, ეკონომიკისა და ბიზნესის ფაკულტეტი, საქართველო

(წარმოდგენილია აკადემიის წევრის ავთანდილ სილაგაძის მიერ)

თანამედროვე მსოფლიოში გარემოსდაცვითი გამოწვევები მრავალმხრივ ხასიათს ატარებს და მოიცავს კლიმატის ცვლილებას, ბუნებრივი რესურსების არარაციონალურ გამოყენებასა და ბიომრავალფეროვნების შემცირებას. აღნიშნული პრობლემები მჭიდრო კავშირშია ეკონომიკურ კეთილდღეობასთან, ეკოსისტემების მდგრადობასთან, რესურსების დაცვის ხარისხსა და პოლიტიკურ სტაბილურობასთან. გარემოსდაცვითი საკითხები გლობალური დღის წესრიგის ერთ-ერთ ყველაზე აქტუალურ მიმართულებად იქცა, რის გამოც საერთაშორისო ორგანიზაციები სხვადასხვა მექანიზმისა და ინიციატივის მეშვეობით ცდილობენ არსებული გამოწვევების შემსუბუქებას. საქართველო აქტიურად ცდილობს საერთაშორისო პრაქტიკასთან ჰარმონიზებული გარემოსდაცვითი მიდგომებისა და რეგულაციების დანერგვას, რათა დაახლოვოს საკუთარი პოლიტიკა განვითარებული ქვეყნების სტანდარტებთან. ამ მიმართულებით სახელმწიფოს მიერ განხორციელებული მნიშვნელოვანი საკანონმდებლო და ინსტიტუციური რეფორმები. ნაშრომის მიზანს წარმოადგენს საქართველოში არსებული გარემოსდაცვითი პრობლემების კომპლექსური ანალიზი და მიღებული შედეგების საფუძველზე ისეთი ეკონომიკურ-პოლიტიკური გადაწყვეტილებების შემუშავება, რომლებიც ხელს შეუწყობს გარემოს დაცვის პროცესის ეფექტიან გაუმჯობესებას. აღნიშნული მიზნის მისაღწევად გაანალიზებულია როგორც ქართული, ასევე უცხოური სამეცნიერო კვლევები და შესაბამისი საერთაშორისო ანგარიშები. წარმოდგენილი კვლევის სიახლე მდგომარეობს საქართველოს გარემოსდაცვითი პოლიტიკის კომპლექსურ ანალიზში, რომელიც კლიმატის ცვლილების, ატმოსფერული ჰაერის დაცვისა და მყარი ნარჩენების მართვის საკითხებს ერთიან ანალიტიკურ ჩარჩოში აერთიანებს და საერთაშორისო ვალდებულებებისა და ეროვნული პოლიტიკის შესაბამისობას აფასებს. კვლევის შედეგებმა აჩვენა, რომ მიუხედავად საკანონმდებლო და ინსტიტუციური რეფორმების პროგრესისა, გარემოსდაცვითი პოლიტიკის ეფექტიანობა მნიშვნელოვნად იზღუდება აღსრულების მექანიზმების სისუსტით, ფინანსური და ადმინისტრაციული რესურსების ნაკლებობით.

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