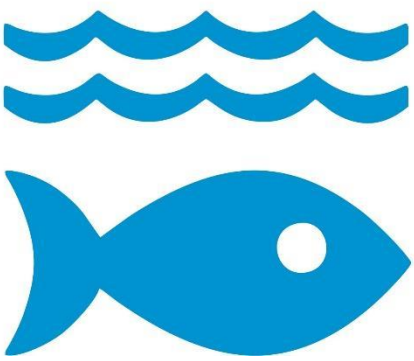
Baku State University

2025 REPORT ON

14 LIFE BELOW WATER



2025

http://sdg.bsu.edu.az/

Introduction

This report outlines Baku State University's (BSU) comprehensive commitment to Sustainable Development Goal 14 (SDG 14)- "Life Below Water." The university has taken significant steps to support and educate local and national communities about the conservation and sustainable utilization of aquatic ecosystems and resources. In the realm of education BSU offers a range of educational programs, including courses on freshwater ecosystems, aquatic plants, and freshwater aquaculture. These courses empower students and the community to understand water management, conservation, and aquaculture practices. Additionally, the university conducts outreach activities to raise awareness about overfishing, illegal fishing, and harmful fishing practices.

BSU is actively engaged in practical actions aimed at promoting the conservation and sustainable use of aquatic ecosystems. This includes organizing events to study and assess the ecological state of lakes and adjacent areas, with a focus on responsible water management. The university offers courses and research methods to maintain and extend biodiversity, with a special emphasis on ecosystems under threat. Furthermore, BSU collaborates with industries to research technologies and practices that minimize damage to aquatic ecosystems.

The report also highlights BSU's efforts in water-sensitive waste disposal, where a water cleaning robot project addresses water quality and pollution concerns. The university has also established water quality standards and guidelines for water discharges to protect ecosystems and human health.

For previous year's report please see:

https://sdg.bsu.edu.az/report-on-sdg-14-life-below-water

http://sdg.bsu.edu.az/

Logo of the "Sustainable Harmony of Nature" club

In line with SDG 14, BSU has a policy to reduce plastic waste on campus, limiting plastic bottle use and promoting recycling. The institution has enacted policies to prevent and reduce marine pollution from land-based activities. To maintain local ecosystems, BSU has implemented initiatives such as the "Sustainable Harmony of Nature" club, focused on raising awareness and protecting aquatic and terrestrial ecosystems. The university conducts biomonitoring to assess the health of aquatic ecosystems. Moreover, BSU supports programs and incentives to encourage good aquatic stewardship practices and collaborates with the local community and relevant organizations.

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14 LIFE BELOW WATER

BSU has demonstrated a strong commitment to promoting the conservation and sustainable use of aquatic ecosystems and resources, addressing the key aspects of SDG 14 through education, action, waste disposal, and ecosystem maintenance

Comparison to previous report SDG14

Baku State University (BSU) actively contributes to the achievement of SDG 14: Life Below Water, one of the United Nations Sustainable Development Goals, through a comprehensive range of educational, research, and community-oriented activities. The university demonstrates a strong institutional commitment to the conservation and sustainable use of aquatic ecosystems and resources, aiming to enhance both scientific knowledge and public awareness regarding the protection of water environments.

Within the framework of education, BSU offers various academic courses and programs related to freshwater ecosystems, aquatic plants, aquaculture, and water resource management. These programs provide students with both theoretical knowledge and practical skills in areas such as freshwater biodiversity, aquatic ecosystem monitoring, water quality management, and sustainable aquaculture practices. Through field studies, laboratory analyses, and production practices, students gain hands-on experience in studying aquatic organisms and assessing environmental conditions of water bodies.

Scientific research constitutes another significant component of BSU's contribution to SDG 14. University researchers conduct ecological studies on lakes and surrounding ecosystems, as well as biomonitoring of organic pollution in the Caspian Sea using biological indicators. These studies help evaluate the ecological status of aquatic environments and contribute to the development of sustainable water management strategies. In addition, collaborative international research projects have been initiated to investigate the genetic and morphological characteristics of Caspian sturgeon species, aiming to support biodiversity conservation and improve understanding of regional aquatic fauna.

BSU also cooperates with governmental institutions, industry partners, and international organizations to develop innovative solutions for water protection and sustainable resource management. Cooperation agreements with organizations such as “Azersu” Open Joint Stock Company and the Ministry of Ecology and Natural Resources have facilitated joint projects focused on the efficient use of water resources and the implementation of environmentally responsible technologies. Furthermore, scientific initiatives have explored the use of natural sorbents derived from food waste for removing heavy metals from wastewater, contributing to improved water treatment methods and pollution control.

In addition to research and education, the university actively promotes environmental awareness and community engagement. Outreach programs, public seminars, ecological campaigns, and field excursions are organized to inform students and local communities about sustainable fisheries, responsible water use, and the risks of overfishing and destructive fishing practices. The establishment of the “Sustainable Harmony of Nature” club further strengthens environmental consciousness among students and encourages active participation in ecosystem protection initiatives.

BSU has also implemented institutional policies aimed at reducing environmental impact on campus. Measures such as restricting the use of plastic bottles in university canteens and introducing recycling bins for plastic and paper waste demonstrate the university’s commitment to reducing pollution and promoting sustainable waste management practices. These efforts align with broader strategies to prevent land-based sources of marine pollution and protect aquatic ecosystems.

Moreover, students and academic staff participate in practical conservation activities, including biodiversity monitoring, ecological restoration initiatives, and environmental awareness campaigns. Educational visits to aquaculture facilities and field research in aquatic ecosystems provide opportunities for students to apply their academic knowledge in real-world contexts. Activities such as the release of sturgeon fingerlings into the Caspian Sea contribute directly to biodiversity restoration and the preservation of endangered aquatic species.

In conclusion, Baku State University adopts a multifaceted and interdisciplinary approach to supporting the objectives of SDG 14: Life Below Water. Through integrated efforts in education, scientific research, community engagement, environmental policy, and institutional partnerships, the university contributes to the conservation of aquatic ecosystems and the sustainable management of water resources at both national and regional levels.

University Activities on Aquatic Ecosystems and Community Engagement

1. Educational Programmes on Freshwater Ecosystems:

Our university offers educational programs and outreach initiatives focused on freshwater ecosystems. These include sustainable water irrigation practices, water management, and conservation strategies aimed at both local and national communities. Workshops, seminars, and practical training sessions are organized to build awareness and capacity in water stewardship. “Freshwater Futures” initiative – a 6-month community program where students and faculty train local farmers on efficient irrigation methods, rainwater harvesting, and water quality monitoring. Conducted in collaboration with local municipalities in the Ganja region, reaching over 300 participants annually.

2. Sustainable Fisheries, Aquaculture, and Tourism:

We provide educational programs for local communities on the sustainable management of fisheries, aquaculture, and tourism. These programs cover responsible resource use, eco-tourism practices, and the integration of conservation principles into local economic activities. “Sustainable Fish and Tourism Workshop” – a series of workshops for coastal communities in the Caspian Sea region. Topics include responsible aquaculture practices, ecosystem-friendly tourism, and reducing fish stock depletion. Over 150 local fishers and tourism operators participate each year.

3. Awareness on Overfishing and Destructive Fishing Practices:

The university conducts outreach activities to raise awareness about overfishing, illegal, unreported, and unregulated fishing (IUU fishing), and destructive fishing practices. Community campaigns, educational materials, and local workshops are employed to promote sustainable practices among fishers and stakeholders. “Know Your Fish” campaign – a public awareness campaign combining school programs, local media, and hands-on river visits to teach communities about illegal and destructive fishing methods. The program led to a 20% increase in reporting illegal fishing activities in pilot districts.

4. Promotion of Conservation and Sustainable Utilization of Aquatic Resources:

We organize and support events aimed at promoting the conservation and sustainable utilization of oceans, seas, lakes, rivers, and other aquatic resources. Activities include national awareness campaigns, eco-competitions, scientific exhibitions, and public lectures. Annual “Azerbaijan Water Week” – a multi-day

event with lectures, exhibitions, and interactive activities highlighting the importance of river, lake, and marine conservation. Engages university students, NGOs, and local authorities.

5. Research and Industry Engagement in Marine Protection:

Our university actively engages in research and collaboration with industry partners to develop technologies and practices that minimize or prevent damage to aquatic ecosystems. This includes innovation in waste management, pollution control, and sustainable aquaculture techniques. Collaborative project with a local aquaculture company to develop eco-friendly fish farming systems that reduce nutrient runoff into rivers. Research outcomes led to new guidelines adopted by regional fish farms.

6. Biodiversity Conservation and Ecosystem Maintenance:

We implement programs to maintain and extend ecosystems and biodiversity, focusing particularly on species and habitats under threat. Our activities include ecological restoration projects, biodiversity monitoring, and habitat rehabilitation efforts. “River Revive” project – restoration of sections of the Kura River, including planting native aquatic vegetation, monitoring fish populations, and removing invasive species. This program also provides hands-on student research opportunities.

7. Aquatic Stewardship Programs and Incentives:

The university develops and supports initiatives that encourage good aquatic stewardship practices among students, researchers, local communities, and industry partners. Incentive programs, recognition awards, and practical guides help reinforce sustainable practices. “Clean Waters Challenge” – an incentive-based program encouraging local schools and community groups to adopt and monitor nearby water bodies. Winners receive university-supported micro-grants to implement conservation projects.

8. Collaboration with Local Communities:

We actively collaborate with local communities through partnerships, joint research projects, and community-based conservation initiatives to maintain shared aquatic ecosystems. These partnerships help integrate traditional knowledge with modern conservation strategies. Partnership with the Lankaran Fisheries Cooperative – joint monitoring of fish stocks, educational workshops for local fishers, and joint reporting on ecosystem health indicators. Strengthened community engagement and conservation awareness.

9. Watershed Management Strategies:

Our institution has implemented watershed management strategies tailored to local aquatic biodiversity. These strategies consider species-specific requirements, hydrological patterns, and ecosystem health indicators to ensure sustainable water management practices. “Kura Watershed Biodiversity Plan” – university-led strategy

mapping the diversity of aquatic species across the Kura River basin. Includes zoning for water use, pollution monitoring, and restoration of threatened habitats, integrated with local government water policies.

Current situation

As of 2025, Baku State University (BSU) continues to strengthen its contribution to **SDG 14: Life Below Water**, focusing on the protection, sustainable use, and scientific study of aquatic ecosystems, particularly those related to the Caspian Sea region. The university integrates research, education, and community engagement activities to address marine and freshwater environmental challenges. BSU possesses strong academic and research capacity in environmental sciences, biology, chemistry, and geology, which enables the institution to conduct interdisciplinary studies on aquatic ecosystems. Current research activities focus on key issues such as marine pollution, heavy metal contamination, plastic waste, biodiversity conservation, and the ecological consequences of climate-related changes in the Caspian Sea. These studies involve advanced methodologies including geophysical analysis, chemical monitoring, biological assessment, and remote sensing technologies. The findings contribute to scientific understanding of marine ecosystems and support national strategies for sustainable water resource management.

In the field of education, BSU offers a variety of academic courses and programmes related to aquatic ecosystems, freshwater biology, and aquaculture. These programmes equip students with theoretical knowledge and practical skills necessary for sustainable management of water resources and aquatic biodiversity. Through curriculum integration, the university aims to develop future specialists capable of addressing environmental challenges affecting marine and freshwater ecosystems.

The university also implements practical initiatives to protect aquatic ecosystems and promote environmental awareness. These include ecological monitoring of lakes and coastal areas, research on endangered aquatic species such as Caspian sturgeon, and collaboration with national and international partners to improve environmental management practices. BSU additionally promotes responsible waste management and works to reduce pollution originating from land-based sources that may affect marine environments.

Moreover, BSU encourages student participation in sustainability activities through environmental clubs, awareness campaigns, and research projects related to aquatic conservation. Community outreach programmes and collaborations with governmental institutions and NGOs further strengthen the university's role in promoting responsible use of aquatic resources and protecting biodiversity in Azerbaijan.

EDUCATIONAL PROGRAMMES

BSU offers educational programs on sustainable management of aquatic resources. Acting in educational programmes for sustainably manage and protection of aquatic and coastal ecosystems to escape significant conflicting impacts, their restoration with the intention of achievement healthy and productive environment.

General course: ATMF-B03 Aquatic plants of fresh water basins

Goals and objectives

General types of ponds used in aquaculture/ Freshwater aquaculture resources-ponds, tanks, lakes, reservoirs etc. The phytoplankton of fresh waters/ Lentic water organisms, lotic water algal blooms, Predatory and weed fishes of fresh waters, use of biofertilizers, supplementary feeding. Fresh water quality management. Selection, transportation, and acclimatization of fresh water fishs.

General courses: İF-B15 Aquatic plants aquaculture, İF-B17 Fish aquaculture, İF-B19 Methods of monitoring and research in aquaculture

Goals and objectives

-Basics and history of aquaculture

-Modern classification of aquatic plants

-The structure and working principles of the devices used in the study of aquatic plants

-Principles of microscopic and macroscopic algal biology

- Requirements for media used for aquaculture of aquatic plants

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University offers educational outreach activities for local or national communities to raise awareness. Students of the Biology Faculty under the leadership of Chingiz Mammadov Associate Professor of the Department of Zoology and Physiology, were exposed to "Xilli Fish" Limited Liability Companie operating in Khilli settlement of Neftchala district and "Azerbaijan Fish Farm" located in Banke settlement through outreach programs as a part of their curriculum.

As a part of organization of extension programs on sustainable use of water sources, careful management and responsible use of aquatic reservoirs, the integration of water management with other aspects of sustainability, faculty members of the Department of Bioecology of the Faculty of Ecology and Soil Science of BSU have studied the ecological state of the soil cover, mesofauna, flora and avifauna of the Lokbatan, Binagadi and Kurdakhan lakes of Absheron and adjacent areas. As seafood is not usually used in campus and cafeterias in the university area, we do not have legislation on the harvesting of these foods from sustainable ecosystems.

University as a body works directly (research and/or engagement with industries) to maintain and extend existing ecosystems and their biodiversity, especially ecosystems under threat. According to the programme, İF-B19 Methods of monitoring and research in aquaculture the main objectives are as the following: Study the origin of waters used in aquaculture, the basic research methods used for monitoring in aquaculture, the rules of taking and storing various test samples, the methods of physical and chemical analysis of water, conducting hydrobiological research, the constant monitoring of water in aquaculture and to be able to analyze the monitoring results and monitoring of diseases in fish and other aquatic animals grown in aquaculture conditions, their causes and treatment methods.

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BSU tries to minimize the waste of plastic and paper within the university. It is forbidden to use any plastic bottle in canteens that are in different buildings. Recycle bins for both plastic and paper waste were placed in the buildings.

The academic staff of the faculty conducts biomonitoring of organic pollution in the Caspian Sea based on the use of free-living ciliates as test-objects.

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Baku State University (BSU), Izmir Institute of High Technology and "Lu-Mun Holding" have started a joint scientific research project with the aim of investigating the morphological differences of Caspian sturgeons (Acipenseridae) at the genome level. The main goal of the project is to study the morphological changes in sturgeon species at the molecular level and to determine whether this belongs to a new species.

BSU collaborates with "Azersu" Open Joint Stock Company and Ministry of Ecology and Natural Resources. "Azersu" Open Joint Stock Company and Baku State University signed a Memorandum on "Cooperation in the field of science, education and study". As part of this collaboration the project "Methods of efficient use of water" was realized.

Activities carried out at BSU in 2025 in the direction of SDG 14

BSU BIOLOGY FACULTY STUDENTS AT AZVARVARA LLC FOR PRODUCTION PRACTICE

Students of the Department of Biology at Baku State University (BSU), specializing in "Aquatic Bioresources," are undertaking production practice at **“**AzVarvara” LLC, located in the Yevlakh region. As one of the largest sturgeon farming centers in Azerbaijan, “AzVarvara” LLC operates on a 280-hectare area, cultivating over 1,400 tons of regional fish, including Azerbaijan's endemic sturgeon species, Cheban fish, Siberian sturgeon, and various hybrids. The facility’s annual production capacity reaches 35 tons of black caviar and 350 tons of sturgeon meat.During their practice, students closely observed all stages of the fish farming process. They received detailed guidance on hormonal injections, larval and fry cultivation, feeding, and overall farm infrastructure. Throughout the program, students applied their theoretical knowledge in practical conditions, acquiring essential hands-on skills in aquaculture.

For more information please click here

Study of the natural vegetation of the Caspian Coast underway at BSU

A seminar titled “Natural Vegetation of the Caspian Coast: Its Classification, Mapping, and Phytosociological Characteristics” was held at Baku State University (BSU). Dr. Humira Huseynova presented on the biodiversity, ecological and geobotanical features, and classification of vegetation along the Caspian coast. The coast’s vegetation is influenced by climate, relief, soil, and human activity, and is divided into six main zones: forest, shrubland, semi-desert, desert, coastal sandy desert, and wetlands. Research identified 25 formation classes, 125 formation groups, and 179 associations. GIS-based maps at 1:200,000 scale were created to represent the distribution and ecological characteristics of these zones. The seminar concluded with a discussion and Q&A session.

For more information please click here

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BSU Ranks in the Top 600 in the Times Higher Education Impact Rankings 2025

Baku State University (BSU) has been ranked among the top 600 universities worldwide in the 2025 Times Higher Education (THE) Impact Rankings, improving from last year's 1001–1500 range. Out of 2,318 institutions evaluated, BSU progressed from 9 to 15 Sustainable Development Goals (SDGs). Its overall performance score rose by 35%, from 53.2 to 71.8. The university is in the global top 100 for SDG 1 (No Poverty), SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 10 (Reduced Inequalities), while ranking 101–200 for SDG 15 and SDG 16, and 201–300 for SDG 2, SDG 6, SDG 8, and SDG 14. This achievement demonstrates BSU's commitment to sustainable development, social responsibility, environmental protection, and inclusive education, enhancing its global reputation and competitiveness.

For more information please click here

BSU student wins the “Azad Mirzajanzade Development Program” of RİİB

A fourth-year student of Baku State University, Saida Rahimli from the Faculty of Ecology and Soil Science, became a winner of the “Azad Mirzajanzade Development Program” organized by the Regional Development Public Union. Her project, “CMC-Vessel,” was selected among more than 100 applicants, with 10 projects receiving financial support in the final stage.The project aims to clean oil pollutants and plastic waste from the Caspian Sea using chemical methods and artificial intelligence. The prototype will be developed at BSU’s Student Scientific and Technical Creativity Center by a team of students. The program, launched in September 2023, supports innovative projects in social, environmental, and educational fields.

For more information please click here

BSU Volunteers participate in “Protect the Caspian 2025” International Coastal Cleanup

Members of the BSU Volunteers participated in the traditional “Protect the Caspian” International Coastal Cleanup organized by the Public Association of Azerbaijan Graduates Educated in the USA. The event is part of the global International Coastal Cleanup initiative held in more than 100 countries for over 30 years. Azerbaijan has actively joined the “Protect the Caspian” ecological campaign for more than 15 years, and the scale of participation continues to grow each year.

For more information please click here

BSU Student Trade Union Committee launches a series of orientation sessions for first-year students

The Student Trade Union Committee of Baku State University launched orientation sessions for first-year students at Baku State University. The first meetings were held for students of the Faculty of International Relations and Economics and the Faculty of History. During the sessions, Chairman Zöhrab Javadzade introduced the committee's projects and activities supporting student life, sports, and healthy lifestyles. University representatives also informed students about opportunities offered by different structural units and encouraged them to actively participate in campus life.

For more information please click here

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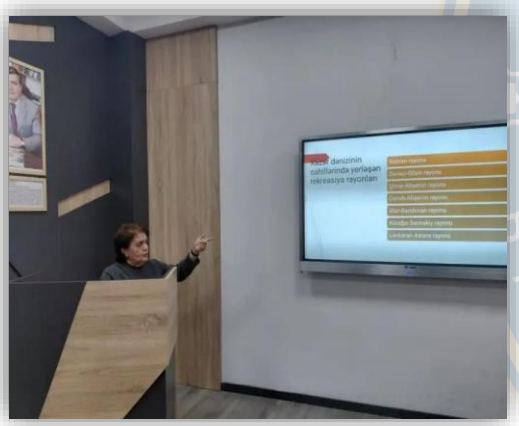
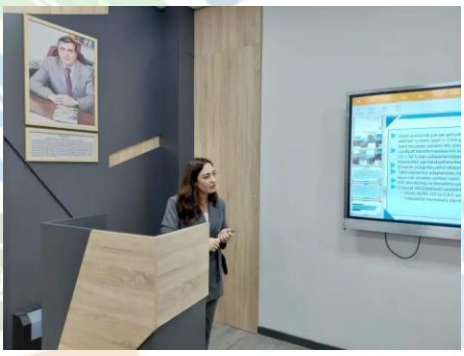
Impact of hydrometeorological factors on the recreational zones of the Caspian Sea studied at BSU



A scientific seminar on assessing hydrometeorological parameters in the recreational zones of the Caspian Sea was held at the Faculty of Geography of Baku State University. Associate Professor Saleh Nagiyev emphasized the importance of studying hydrometeorological factors for the sustainable use of coastal recreational areas. In her presentation, Aytan Guliyeva discussed key indicators such as air temperature, wind, humidity, precipitation, and wave height, and analyzed their seasonal changes and effects on recreational activities. Participants noted the scientific relevance and innovative methodological approach of the research.

For more information please click here

Scientific seminar on the transformation of Caspian Coastal landscapes



A scientific seminar on the transformation of Caspian coastal landscapes was held at the Faculty of Geography of Baku State University. Doctoral candidate Gunay Abbasova presented research on the impact of anthropogenic factors on landscape transformation in the Lankaran physical-geographical region. The study analyzed natural conditions, climate, relief, hydrography, and soil-vegetation cover, identifying population density and economic activity as key drivers of landscape change. A zoning map was developed to show areas with different levels of transformation and to assess ecological risks, ecosystem resilience, and recreational potential.

For more information please click here

Scientific seminar on the assessment of hydrometeorological parameters in the recreational zones of the Caspian Sea held at the faculty of Geography

A scientific seminar on the assessment of hydrometeorological parameters in the recreational zones of the Caspian Sea was held at the Faculty of Geography of Baku State University. Associate Professor Saleh Nagiyev highlighted the importance of studying hydrometeorological factors for the sustainable use of coastal recreational areas. In her presentation, Aytan Guliyeva analyzed key indicators such as air temperature, wind regime, humidity, precipitation, and wave height, and assessed their impact on recreational conditions in the coastal zones. Participants emphasized the relevance of the research and noted its innovative methodological approach.

For more information please click here

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Research by Azerbaijani scientists on nanoparticles presented at an international conference in Pakistan

From 18–20 August 2025, the 1st International Conference on Nanoscience and Nanotechnology was held at the University of Karachi in Karachi. At the conference, Chingiz Mammadov from Baku State University presented a joint study on the effects of metal nanoparticles on fish reproductive processes in collaboration with researchers from the Institute of Biotechnology of ANAS. The research examines how anthropogenic metal nanoparticles influence egg productivity, ontogenesis, and transgenerational transmission in fish using histological, biochemical, and biophysical methods. The presentation received a certificate and is conducted within the Azerbaijan Science Foundation's 2024 Main Grant Competition.

1st INTERNATIONAL CONGRESS ON NANOSCIENCE AND NANOTECHNOLOGY

Organized by

International Center for Chemical and Biological Sciences

HEJ Research Institute of Chemistry

and

Dr. Panjwani Center for Molecular Medicine and Drug Research

It is certified that

CHINGIZ MAMEDOV

has participated in the "1st INTERNATIONAL CONGRESS ON NANOSCIENCE AND NANOTECHNOLOGY", held at the ICCBS, University of Karachi, Pakistan, during August 18-20, 2025.

His/ Her active participation has contributed to the overall success of the event.

Prof. Dr. Atta-ur-Rahman, FRS
N.I., H.I., S.I., T.I.
Patron-in-Chief ICCBS

Prof. Dr. M. Raza Shah T.I.
Director, Chairperson ICCN-1

Prof. Dr. M. Iqbal Choudhary
Mustafa (PBUH) Prize Laureate, H.I., S.I., T.I.
Honorary Advisor ICCBS, Coordinator General COMSTECH

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Participation in the final of the “Earth Observation” competition

Researchers Tahir Yunuslu and Ramil Hasanov from the Faculty of Ecology and Soil Science of Baku State University reached the final stage of the “Earth Observation” competition organized by Azercosmos. Yunuslu’s project focuses on creating a GIS system for the Mud Volcanoes Group State Nature Reserve, while Hasanov studied the impact of the declining water level of the Caspian Sea on biodiversity in Gizilaghaj National Park. The competition aims to promote the use of satellite imagery and GIS technologies, with 50 projects selected for the final stage out of 293 applications.

For more information please click here

Scientific seminar held: Assessment of the Assimilation Potential of Coastal Landscapes of the Caspian Sea under Technogenic Impacts

Doctoral student Laman Guliyeva from the Faculty of Ecology and Soil Science of Baku State University presented research on the assimilation potential of coastal landscapes of the Caspian Sea under technogenic impacts. The study analyzed soil resistance to pollution by examining microbiological activity, biodegradation of hydrocarbons, mineralization, and self-purification capacity. Results showed that meadow-forest soils have the highest assimilation capacity, while gray-meadow and gray-brown soils are more sensitive to pollution. The research highlighted the importance of using modern biotechnologies to enhance soil self-purification and support sustainable management of coastal ecosystems.

For more information please click here

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CONCLUSION

Baku State University demonstrates a comprehensive and multidimensional commitment to the achievement of Sustainable Development Goal 14: Life Below Water. Through the integration of education, scientific research, institutional policy, and community engagement, the university contributes actively to the protection, sustainable management, and restoration of aquatic ecosystems.

The university's academic programs and specialized courses provide students with both theoretical knowledge and practical competencies related to freshwater ecosystems, aquaculture, water quality management, and biodiversity conservation. These educational initiatives cultivate environmental responsibility and prepare future specialists capable of addressing complex challenges related to marine and freshwater environments.

Scientific research conducted by BSU plays a critical role in understanding and mitigating environmental pressures affecting aquatic ecosystems, particularly in the Caspian Sea region. Studies on marine pollution, heavy metal contamination, microplastics, hydrometeorological dynamics, and biodiversity conservation contribute valuable scientific knowledge that supports evidence-based environmental management and sustainable resource use.

In addition to academic and research activities, the university promotes environmental awareness through outreach programs, student initiatives, and partnerships with governmental institutions and industry stakeholders. Collaborative projects with organizations such as Azersu OJSC and the Ministry of Ecology and Natural Resources demonstrate BSU's commitment to translating scientific expertise into practical solutions for sustainable water management and ecosystem protection.

Institutional sustainability practices further reinforce this commitment. Initiatives such as reducing plastic waste on campus, implementing recycling systems, and supporting ecological monitoring activities contribute to minimizing environmental impact and fostering a culture of sustainability within the university community.

Overall, Baku State University adopts an integrated and interdisciplinary approach to advancing the objectives of SDG 14. By combining education, research, innovation, and community collaboration, the university strengthens its role as an important contributor to aquatic ecosystem conservation and the sustainable management of water resources at both national and regional levels.

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SDG Focused Memberships

aashe member
The Association for the Advancement of Sustainability in Higher Education

WAITRO

CANIE
climate action network

ISCN
International Sustainable Campus Network

GUNI
GLOBAL UNIVERSITY NETWORK FOR INNOVATION

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14 LIFE BELOW WATER

SDG FOCUSED RANKING RESULTS

Rated for Excellence

Baku State University

Through rigorous and independent data collection and analysis of performance metrics as set out in the QS Stars™ methodology Baku State University has been awarded 5 Stars.

★★★★★ TEACHING

★★★★★ FACILITIES

★★★★★ EMPLOYABILITY

★★★★★ GOOD GOVERNANCE

★★★★★ ENVIRONMENTAL IMPACT

★★★★★ ACADEMIC DEVELOPMENT

★★★★ GLOBAL ENGAGEMENT

★★★★ CHEMISTRY

★★★★★ DIVERSITY, EQUITY & INCLUSION

QS Stars

The QS Stars™ rating system evaluates universities across a wide spectrum of important performance indicators as set against pre-established international standards. By assessing a broader scope of criteria than any world ranking exercise, QS Stars™ illuminates the unique strengths and diversity of the rated institution with both precision and clarity.

Leigh Kamolins, Head of Evaluation

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UI GreenMetric
UNIVERSITAS INDONESIA
UI GreenMetric World University Rankings 2025
CERTIFICATE
This certificate is awarded to
Baku State University
as The 493rd World's Most Sustainable University
in 2025 UI GreenMetric World University Rankings
5 December 2025
Dr. Vishnu Juwono, S.E., MIA
Chairperson of UI GreenMetric

QS WORLD UNIVERSITY RANKINGS

SUSTAINABILITY RANKINGS 2025

Baku State University

941-950

in overall performance

December 2024

Date

Ben Sowter
Senior Vice-President
QS Quacquarelli Symonds

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4. RANKING IN AZERBAIJAN

Country Ranking	SI Ranking	EC Ranking	WS Ranking
1	2	11	3
	WR Ranking	**TR Ranking**	**ED Ranking**
	5	1	2

2. RESULTS SUMMARY

World Ranking	SI Ranking	EC Ranking	WS Ranking
493	660	1102	654
	WR Ranking	**TR Ranking**	**ED Ranking**
	607	98	239

3. WORLD RANKINGS HISTORY

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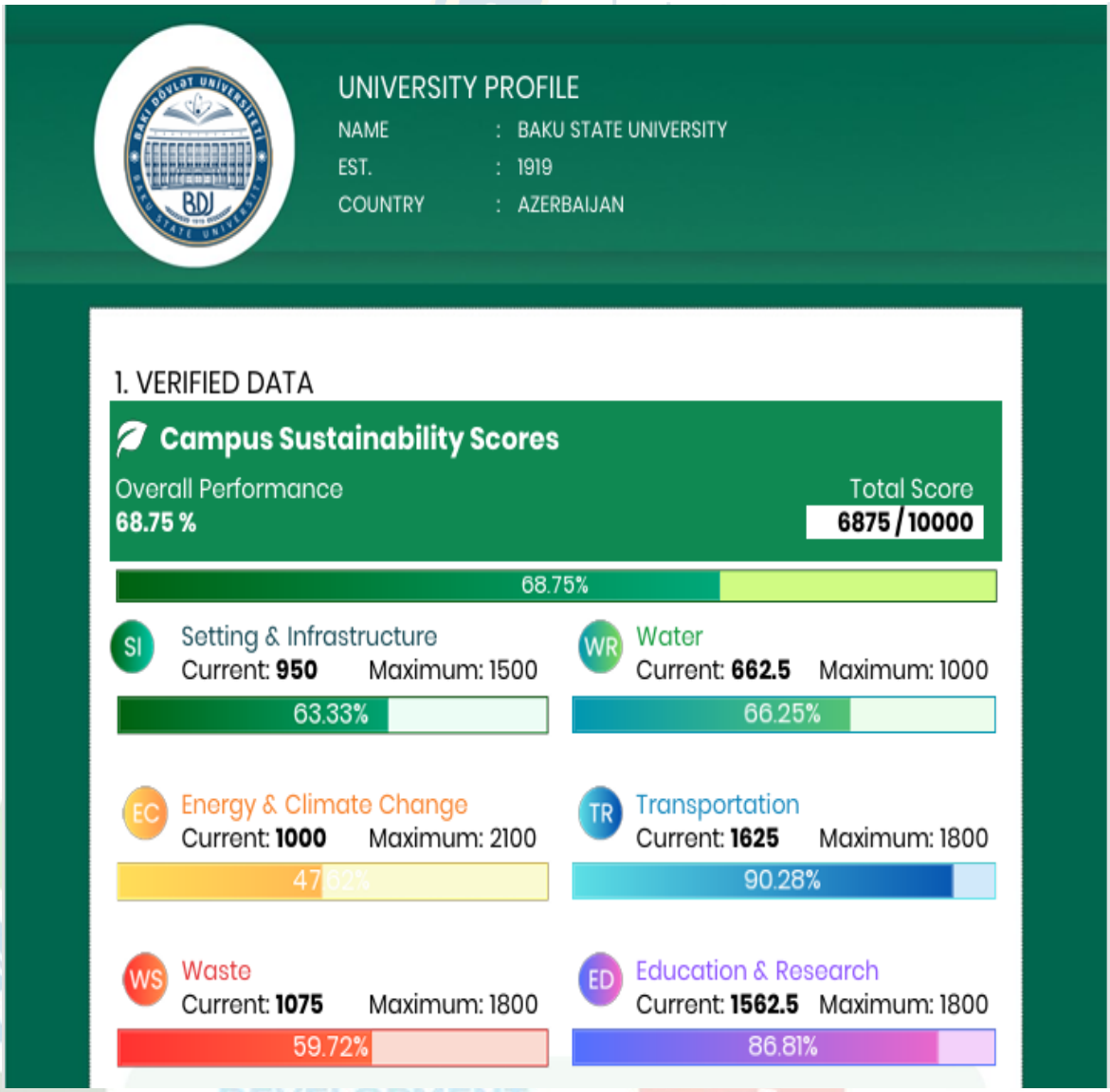

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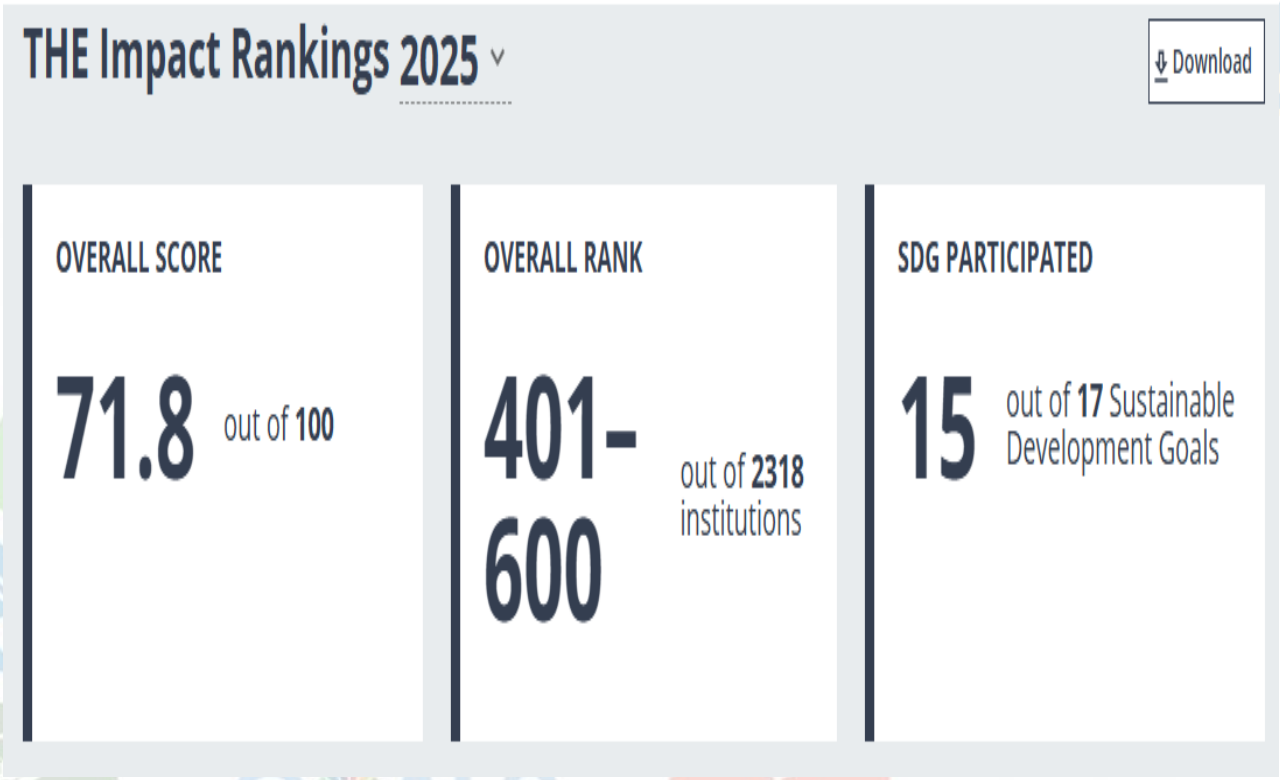
THE IMPACT RANKINGS



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14 LIFE BELOW WATER

OVERALL RANK

401–600 out of **2318** institutions

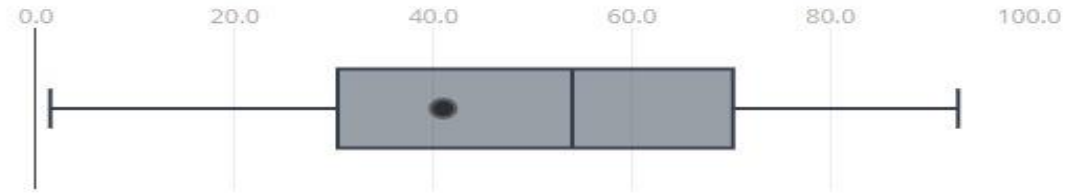
14 LIFE BELOW WATER

SCORE **50.9** RANK **201–300** out of 711 institutions

SCORE **41.0**

Research on life below water

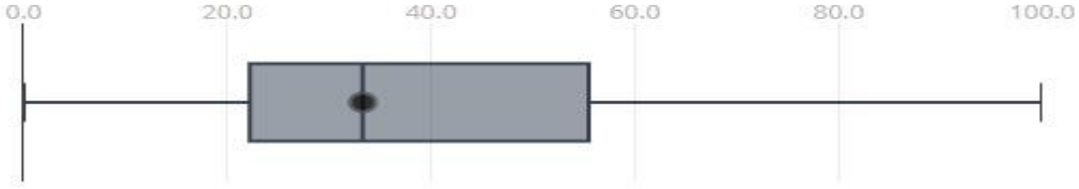
27% OF THIS SDG



SCORE **33.3**

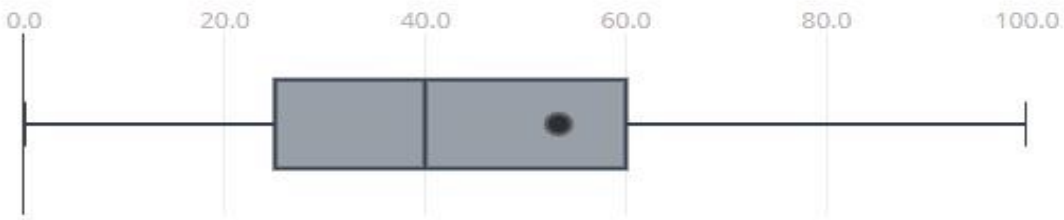
Supporting aquatic ecosystems through education

15.3% OF THIS SDG



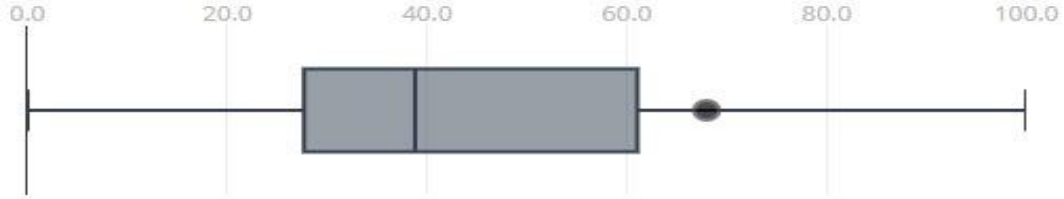
SCORE
53.3 **Maintaining a local ecosystem**

19% OF THIS SDG



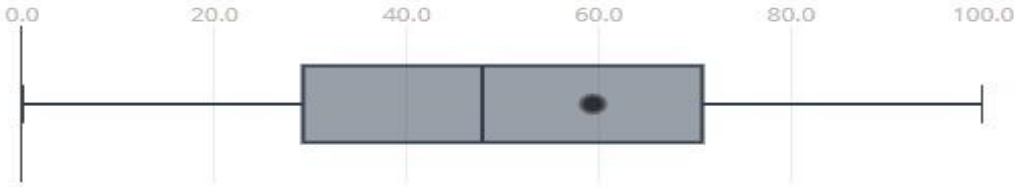
SCORE
68.0 **Water sensitive waste disposal**

19.3% OF THIS SDG



SCORE
59.4 **Supporting aquatic ecosystems through action**

19.4% OF THIS SDG



http://sdg.bsu.edu.az/

SDG FOCUSED RESEARCH

Introduction:

Baku State University conducts significant scientific research aligned with **SDG 14: Life Below Water**, focusing on the protection and sustainable use of aquatic ecosystems. A major area of research is the ecological study of the Caspian Sea, including issues such as marine pollution, heavy metal contamination, plastic waste, and the ecological consequences of climate-induced sea level changes.

Using advanced scientific approaches—such as geophysical investigations, chemical analyses, remote sensing technologies, and biological monitoring—BSU researchers generate important data for understanding marine and coastal ecosystem dynamics. These studies contribute to evidence-based strategies for the sustainable management and protection of the Caspian marine environment.

In addition, the university supports biodiversity conservation through research on fish species, migratory birds, and endangered mammals associated with aquatic habitats, while also strengthening international academic collaboration aimed at safeguarding shared water resources.

For all SDGs related articles please visit: Scopus - Baku State University

SDG contributions

Goal 1: No poverty	9 documents	Goal 10: Reduced inequalities	40 documents
Goal 2: Zero hunger	74 documents	Goal 11: Sustainable cities and communities	37 documents
Goal 3: Good health and well-being	241 documents	Goal 12: Responsible consumption and productior	44 documents
Goal 4: Quality education	21 documents	Goal 13: Climate action	55 documents
Goal 5: Gender equality	12 documents	Goal 14: Life below water	50 documents
Goal 6: Clean water and sanitation	83 documents	Goal 15: Life on land	31 documents
Goal 7: Affordable and clean energy	353 documents	Goal 16: Peace, justice and strong institutions	36 documents
Goal 8: Decent work and economic growth	68 documents	Goal 17: Partnership for the goals	47 documents
Goal 9: Industry, innovation and infrastructure	101 documents		

1. Authors: Yetirmishli, G.J., Kazimova, S.E., Samedzade, A.V.

Focus: Seismic and hydrocarbon potential of the Bulla-Deniz field in the Eurasian–Arabian plate collision zone.

Methods: Geophysical, seismological, tomography, GPS, and drilling data analysis.

Findings: Identified deep structural anomalies and active faults; revealed extension and strike-slip tectonic movements critical for hydrocarbon accumulation.

Recommendation: Continuous seismic monitoring and geological assessment are essential for hydrocarbon exploration and risk mitigation.

Full text

2. Authors: Maeyouf H., Khattab R.A., Temraz T., Mahmoud S., İmran A., Imanova G.

Focus: Heavy metal contamination along Libya's Susah and Tobruk coasts.

Methods: Sediment, seawater, and marine life sampling with metal analysis.
Findings: High cadmium pollution in Susah; significant lead accumulation in fish tissues.
Recommendation: Urgent implementation of pollution control measures to protect ecosystems and human health.
Full text

3. Authors: Gadirova, E.M., Kurbanova, R.V., Asadova, I., Habibova, A.G., Suleymanova, E.I.
Focus: Polycyclic aromatic hydrocarbons (PAHs) in wastewater and Caspian Sea samples.
Methods: Chemical analysis of refinery wastewater and seawater.
Findings: PAH concentrations often exceed safe levels, posing serious ecological threats.
Recommendation: Strengthen wastewater management and pollution monitoring in oil-related industries.
Full text

4. Authors: Taghiyev, A.N., Karimova, N.A., Badalova, S.V.
Focus: Breeding behavior of migratory-nesting bird species on the southwestern Caspian coast (2008–2023).
Methods: Long-term field observations of bird populations.
Findings: Habitat loss and water level decline increased competition, threatening species like Bubulcus ibis.
Recommendation: Urgent conservation and habitat restoration measures are needed.
Full text

5. Authors: Humbatova, S., Abbasova, G., Humbatov, M.F.O.
Focus: Coastal transformations of the Azerbaijani Caspian Sea coast.
Methods: Historical analysis of sea level changes, pollution, and socio-environmental impacts.
Findings: Rapid morphological changes since the 20th century threaten ecosystems and infrastructure.
Recommendation: Develop integrated coastal monitoring and management strategies.
Full text

6. Authors: Etirmishli, G.D., Arastun, I.K., Samedzade, A.V., Serikova, U.S.
Focus: Hydrocarbon potential of the Bulla-Deniz oil and gas field.

Methods: Geological and geophysical analysis, drilling data, and advanced extraction technologies.
Findings: Rich hydrocarbon layers with high production potential; enhanced efficiency through horizontal drilling and hydrofracking.
Recommendation: Apply advanced extraction methods for sustainable resource development.
Full text

7. Authors: Nasibova, A.N., Bakhishzada, A., Khalilov, R.I.
Focus: Environmental and health risks of microplastics.
Methods: Literature review on micro- and nanoplastic pathways and impacts.
Findings: Microplastics accumulate in tissues, disrupt biological systems, and contribute to chronic diseases.
Recommendation: Reduce plastic use, improve waste management, and limit human exposure.
Full text

8. Authors: Mammadli S., Khalilov R., Muslumova Z., Asadova I., Farajov M., Ismailova G.
Focus: Pollution in the Araz River and its environmental impacts.
Methods: Mass and radio spectrometry of water, soil, and plants.
Findings: High levels of Mo, Cu, Mn exceeding safety limits; contamination of soil and vegetation.
Recommendation: Pollution prevention measures are needed to safeguard agriculture, livestock, and human health.
Full text

9. Authors: Gadirova, E.M., Hajiyeva, S.R., Huseyinli, A.G., Rustamova, U.N.
Focus: PAHs and heavy metals in wastewater and Caspian Sea samples.
Methods: Chemical analysis of refinery discharges and seawater.
Findings: Significant pollutant levels present risks to marine ecosystems.
Recommendation: Enforce stricter wastewater discharge regulations.
Full text

10. Authors: Safarov, S., Kamran, K.V., Ismayilov, V.G., Safarov, E.S.
Focus: Upwelling events in the Caspian Sea.
Methods: MODIS-Aqua infrared satellite data (2003–2021).
Findings: Seasonal upwelling (May–September) peaks in July–August; strong

gradients up to 4°C per 100 km.
Recommendation: Further study upwelling impacts on fisheries and marine ecosystems.
Full text

11. Authors: Gadirova, E.M., Abdullayev, V.H., Abuzarova, V.A., Avramović, Z.Z.
Focus: Biological wastewater treatment methods.
Methods: Review of treatment principles and technologies.
Findings: Biological treatments reduce environmental impact effectively.
Recommendation: Expand use of biological methods for sustainable wastewater management.
Full text

12. Authors: Amiri, G.S., Mammadov, C.A.
Focus: Comparative growth and physiology of rainbow and amber trout.
Methods: Rearing under identical conditions at AZFOREL fish farm (2021–2022).
Findings: Rainbow trout outperformed amber trout in growth, protein, and calcium levels.
Recommendation: Rainbow trout may be more suitable for aquaculture in Azerbaijan.
Full text

13. Authors: Imranov, F.B., Rustamov, R.B.
Focus: Ecological stress and monitoring in the Caucasus–Caspian region.
Methods: Remote sensing and satellite imaging of coastal changes and pollution.
Findings: Oil spills and geodynamic stresses monitored effectively with space technologies.
Recommendation: Expand remote sensing applications for ecological monitoring.
Full text

14. Authors: Ahmadova, K.N.
Focus: Forecasting hydrocarbon composition of oil via dielectric spectroscopy.
Methods: Spectroscopic ellipsometry to measure dielectric function.
Findings: Developed accurate “dielectric fingerprint” to identify oil origin.
Recommendation: Apply method for oilfield identification and environmental monitoring.
Full text

15. Authors: Askerov, E., Mallon, D.P., Zazanashvili, N., Kochiashvili, V., Sarukhanova, S., Muradov, A.

Focus: Conservation of the Goitered Gazelle in the Caucasus.
Methods: Population monitoring and reintroduction programs (1930s–2020s).
Findings: Population rebounded in Shirvan Reserve; 312 individuals now in transboundary areas.
Recommendation: Continue habitat protection and cross-border conservation efforts.

Full text

16. Authors: Agayeva, N., Rzayev, F.H., Gasimov, E.K., Mamedov, C.A., Ahmadov, I.S., +4 authors

Focus: Nanoparticle bioaccumulation in rainbow trout.
Methods: Tracing Fe_3O_4 nanoparticles through aquatic food chains.
Findings: Nanoparticles accumulated in fish tissues, including mitochondria and lysosomes.
Recommendation: Regulate nanoparticle use in aquaculture and nanobiotechnology.

Full text

17. Authors: Baldermann, A., Abbasov, O.R., Bayramova, A.S., Abdullayev, E., Dietzel, M.

Focus: Chemical properties of mud volcano fluids in Azerbaijan.
Methods: Mineralogical and geochemical analysis of Bahar and Zenbil mud volcanoes.
Findings: Fluids enriched with solutes and trace elements from deep geological processes.
Recommendation: Study environmental impacts of mud volcano fluids on water and sediments.

Full text