AMITY UNIVERSITY MAHARASHTRA

Established vide Maharashtra Act No.13 of 2014, of Government of Maharashtra, and recognized under Section 2 (f) of UGC Act 1956.

Report on

SDG 14: Life Below Water



Year 2025

Section 1: Wastewater Treatment, Infrastructure, and Discharge Protocols

- Details the fully automated, on-campus **Sewage Treatment Plant (STP)** configured to execute multiple chemical and microbiological purification cycles.
- Outlines AUM's comprehensive campus circularity infrastructure, illustrating how treated wastewater from the STP laboratory is systematically monitored and entirely reused for landscape irrigation and construction, eliminating untreated effluent discharge into local sub-surface waterways.
- Highlights the advanced on-campus **Rooftop Rainwater Harvesting (RWH)** basins and percolation systems engineered to capture and recharge for the clean surface water annually, significantly mitigating off-site urban run-off and downstream aquatic sedimentation.

- **Section 2: 2025 Regional Marine & Coastal Field Interventions**
  - Cites verified, large-scale regional environmental operations, highlighting AUM's active mobilization during the nationwide **"Swachh Sagar, Surakshit Sagar" Campaign** conducted at Juhu Beach, Mumbai.
  - Includes empirical data from the campaign, where over 110 university student specialists cleared plastic waste across a coastal impact zone, safely removing and segregating thousands of pieces of toxic marine litter (79.5% composed of non-biodegradable plastics) to protect the surrounding Arabian Sea marine life.
  - Ongoing aquatic conservation drives led by the student-driven *AmiSustain Club* in partnership with civic organizations like *Project Mumbai* to intercept waste along local coastlines and river mouths.
- **Section 3: Environmental Biotechnology & Marine Preservation Research**
  - Compiles peer-reviewed scientific tracking spearheaded by the *Amity Institute of Biotechnology (AIB)* and the *Amity School of Applied Sciences (ASAS)*.

- Highlights pioneering microbiological research published in *Marine Biology Research* evaluating protective effects of indigenous bacteria to fight pathogens in aquatic ecosystems, alongside innovative toxicology publications in *Sustainability* examining mechanisms to combat chlorine-resistant bacteria for eco-friendly water treatment.
- Details corporate and multi-disciplinary research memorandums, including strategic MoUs with **Organic Recycling Systems Limited** to co-develop microalgal biotechnology solutions, wastewater treatment models, and blue carbon resilience frameworks.

Sewage Treatment Plant on AUM Campus.



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Documents	Authors

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Sustainable Development Goals (SDGs) are specific research areas that are helping to solve real-world problems. Elsevier data science teams have built extensive keyword queries, supplemented with machine learning, to map documents to SDGs with very high precision. Times Higher Education (THE) is using Elsevier SDG data mapping as part of its Impact Rankings. More about SDGs

SDG contributions

Export documents

Goal 1: No poverty	9 documents	Goal 10: Reduced inequalities	23 documents
Goal 2: Zero hunger	68 documents	Goal 11: Sustainable cities and communities	85 documents
Goal 3: Good health and well-being	261 documents	Goal 12: Responsible consumption and productio	118 documents
Goal 4: Quality education	34 documents	Goal 13: Climate action	78 documents
Goal 5: Gender equality	9 documents	Goal 14: Life below water	23 documents
Goal 6: Clean water and sanitation	133 documents	Goal 15: Life on land	77 documents
Goal 7: Affordable and clean energy	153 documents	Goal 16: Peace, justice and strong institutions	25 documents
Goal 8: Decent work and economic growth	84 documents	Goal 17: Partnership for the goals	72 documents
Goal 9: Industry, innovation and infrastructure	187 documents		

78 documents for ***Climate action***

Export

Integrated biochar–phytoremediation–Microbially induced calcite precipitation (MICP) framework for heavy metal contaminated soil remediation, carbon sequestration, and low-carbon ground stabilisation

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Science of the Total Environment, 2026

A Landscape-Based Assessment of Productivity, Constraints, and Sustainability Practices Among Apple Farmers in Kashmir

Bhat, A.

Applied Fruit Science, 2026

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Banerjee, S.

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Integrated biochar–phytoremediation–Microbially induced calcite precipitation (MICP) framework for heavy metal contaminated soil remediation, carbon sequestration, and low-carbon ground stabilisation

Science of the Total Environment • Article • 2026 • DOI: 10.1016/j.scitotenv.2026.182309

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Abstract

Heavy-metal contamination of agricultural and industrial soils poses major environmental threaten to humanity. Conventional remediation methods such as excavation, soil washing, and cement-based solidification are costly, high carbon footprint, and often fail to restore soil biological function. Although biochar amendment, phytoremediation, and microbially induced calcite precipitation (MICP) have shown promise individually, their standalone applications are limited by adsorption saturation, slow remediation rates, and microbial intolerance to high metal concentrations. This study proposes and field-validated Biochar–Phytoremediation–MICP (B–P–MICP) framework for in-situ stabilisation of heavy metals in contaminated soils. Rice husk biochar (10 t ha^{-1}) was first applied to immobilise labile metals and improve rhizosphere conditions, followed by cultivation of Brassica juncea for phytoextraction, and subsequent MICP treatment using Sporosarcina pasteurii to enhance immobilisation. A 12-week field trial on Pb-contaminated battery-recycling soil (1840 mg kg^{-1} Pb) achieved a 78% reduction in $CaCl_2$-extractable Pb and an 81% reduction in the exchangeable metal fraction, alongside improved soil organic-matter and microbial diversity. Comparative analysis showed that the integrated treatment outperformed all pairwise combinations and exceeded the Bliss independence expectation of 65.7% by 12.3 percentage points (95% CI +8.1 to +16.5, $p < 0.0001$), confirming that the three components act synergistically rather than independently. In addition, the framework demonstrated carbon sequestration potential and substantially lower remediation costs than conventional ex-situ methods. Overall, the proposed bio-based framework provides a rapid, cost-effective, durable, and ecologically sustainable strategy for remediation of heavy metal-contaminated soils. © 2026 Elsevier B.V.

Author keywords

Biochar; Carbon sequestration; Heavy metals; MICP; Phytoremediation

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A Landscape-Based Assessment of Productivity, Constraints, and Sustainability Practices Among Apple Farmers in Kashmir

Applied Fruit Science • Article • 2026 • DOI: 10.1007/s10341-026-01926-w

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Abstract

The horticultural economy of Kashmir is strongly dependent on apple production, but the variability in climate, occurrence of pests and market volatility and resource scarcity are all threats to its productivity. This study examines the socio-economic characteristics, production limitations, input–use behavior, and sustainability behavior of the apple farmers in three major districts, Budgam, Shopian, and Baramulla. The study employs structured surveys (n = 420), orchard health indices (based on remote sensing) such as the Normalized Difference Vegetation Index (NDVI), and multivariate regression to determine the crucial determinants of the variation in yield. Findings indicate that the level of education, the age of the orchard, as well as the use of high-density plantations and integrated pest management are strong predictors of yield ($p < 0.01$), while water shortage, pest outbreaks, and poor quality of chemical inputs are some of the negative predictors of productivity. The results indicate that climate resilience practices, better extension services, and robust supporting market systems are required in the apple industry of Kashmir to increase sustainability. © The author(s), exclusively licensed to Springer-Verlag GmbH Germany, a part of Springer Nature 2026.

Author keywords

Biodiversity; Canopy; Climate Resilience; Geospatial; High-Density Plantation