SDG 14

LIFE BELOW WATER

INTRODUCTION

Sustainable Development Goal 14 calls for the conservation and sustainable use of oceans, seas and marine resources — protecting marine biodiversity, reducing pollution of aquatic ecosystems, and advancing science-based approaches to the sustainable use of aquatic resources. As an inland research university without a coastal campus, SRM University–AP's contribution to SDG 14 is anchored primarily in research, scholarship and academic engagement that address marine and aquatic sustainability challenges rather than in on-site coastal infrastructure.

Over the 2025–26 reporting period, this contribution is reflected in a growing body of peer-reviewed scholarship on marine pollution, microplastics, aquatic biodiversity and water-resource remediation; in experiential-learning events that expose students to real-world environmental impact assessment, industrial pollution control and marine bioprospecting; and in individual student and faculty research addressing coastal ecosystem processes. This section presents SRM University–AP's verified SDG 14 activity for the period, organised around quantitative research performance, events and initiatives, and an elaborated account of research and publications — the primary pillar of the university's SDG 14 story this year.

QUANTITATIVE HIGHLIGHTS

The figures below are drawn directly from SRM University–AP's SDG 14–tagged Scopus/SciVal research profile (2025–2026) and the verified SDG 14 events register. Each metric reflects the aggregate research footprint of faculty and student scholarship relevant to marine and aquatic sustainability.

41 *Scholarly Output tagged SDG 14 (SciVal, 2025–26)*	**0.83** *Field-Weighted Citation Impact*	**19** *Publications with International Collaboration*	**118** *Citations Received*
1,270 *Views Count*	**42** *Publications Compiled in Institutional Register*	**4** *Verified SDG 14 Events (2025–26)*	**46.3%** *Publications with International Co-authorship*

Recurring research themes (by relevance, based on the 41-publication SciVal cohort): Microplastics, Plastic Waste & Degradation, Aquaculture Systems, Biochar-based Water Treatment, Marine Pollution, Microbial Degradation of Pollutants, Chemical Kinetics in Remediation, Carbon Footprint & Blue Carbon.

EVENTS AND INITIATIVES

SRM University–AP's SDG 14–linked engagement during 2025–26 centred on experiential, industry-facing learning: structured exposure to statutory environmental-impact and public-hearing processes, hands-on visits to pollution-control and water-treatment infrastructure, and a departmental seminar on marine bioprospecting. Four events were verified as uniquely tagged to SDG 14 for the period, with no double-counting against other SDGs.

● Real-Time Exposure and Experiential Learning Visit — EIA Public Hearing, Nellore

On 5 December 2025, the Department of Environmental Science and Engineering organised a field visit for students to observe a live Environmental Impact Assessment (EIA) public hearing conducted near the Ramayapatnam Port area in SPSR Nellore District. The session gave students direct exposure to the statutory public-hearing process — a core mechanism through which coastal and industrial projects are screened for environmental and social impact before clearance. Students engaged with baseline assessment, impact prediction, mitigation planning and stakeholder consultation procedures central to India's environmental clearance framework. With 62 total participants (25 postgraduate students), the visit strengthened students' understanding of participatory environmental governance as it applies to large-scale coastal and industrial developments.





● Industrial Exposure and Experiential Learning Visit — APGENCO Thermal Power Station

On 10 December 2025, the same department led a visit to the Dr Narla Tatarao Thermal Power Station (NTTPS), Ibrahimpatnam, focused on energy conservation, pollution generation pathways and industrial water-treatment processes. Sixty-two students and researchers examined air, water and solid-waste pollution-control technologies, ash-utilisation practices and the environmental-compliance frameworks governing large-scale industrial water discharge — directly relevant to SDG 14's concern with land-based sources of aquatic pollution. The visit built students' practical understanding of how industrial water-treatment and emission-control systems function to limit pollutant loads reaching downstream water bodies.





● Industrial Exposure Visit — Jindal Urban Waste Management Ltd (JUWM)

On 12 September 2025, students visited Jindal Urban Waste Management Ltd in Kondaveedu village, Guntur district, to study integrated municipal solid-waste management and waste-to-energy systems. The visit covered leachate treatment, zero-discharge practices and circular-economy approaches to waste — processes directly linked to preventing land-based waste from reaching aquatic systems. With 132 participants, this was the largest of the four events. (No verified photograph was available for this event at the time of reporting.)

● Expert Talk: Exploring Marine-Based Bioactive Compounds for Biomedical Applications

On 21 August 2025, the Department of Biological Sciences hosted an expert talk by Prof. Dr C. Arulvasu, Professor and Head, Department of Zoology, University of Madras, on the discovery and characterisation of bioactive compounds derived from marine organisms. The session, attended by 75 participants including PhD scholars and faculty, examined the potential of marine-derived compounds in treating cancer, microbial infection and inflammatory disease, and discussed sustainability and scale-up challenges in marine bioprospecting. The talk directly supports SDG 14's emphasis on the sustainable use of marine biological resources and marine science capacity-building.


SRM
Department of Biological Sciences organizes
Expert Talk on
EXPLORING MARINE BASED BIOACTIVE COMPOUNDS FOR BIOMEDICAL APPLICATIONS
AUGUST 21, 2025
11:00 AM - 12:00 NOON
ALC-1, HOMI J BHABHA BLOCK
Speaker
Prof. Dr C Arulvasu
Professor and Head, Department of Zoology,
Controller of Examinations (I/c)
University of Madras


Amaravathi,Andhra Pradesh,India
Mangalagiri, Amaravathi, Andhra Pradesh 522502, India
Lat 16.464730, Long 80.508242
08/21/2025 11:22 GMT+05:30
Note : Captured by GPS Map Camera

RESEARCH & PUBLICATIONS

With no dedicated SDG 14 outreach programme to report this cycle, research and publications form the centrepiece of SRM University–AP's Life Below Water story. Across 2025–26, SRM University–AP researchers produced 41 SDG 14–tagged scholarly outputs (Scopus/SciVal), achieving a Field-Weighted Citation Impact of 0.83 and drawing 19 internationally co-authored publications — engagement from institutions across 46.3% of the cohort's international collaboration base. The following themes represent the strongest concentrations of verified SDG 14–relevant research output.

Publications

- Joshi et al. (2025) — biofilm-forming marine bacteria and their role in microplastic degradation in the 'microplastisphere'.
- Goswami et al. (2025) — microplastics as hidden drivers of antimicrobial resistance in aquatic systems.
- Kumar et al. (2025) — Raman spectroscopy method for size-resolved microplastic detection in real-world samples.
- Dey et al. (2025) — microplastic pollution as an economic threat to coastal-marine ecosystems and the blue economy.
- Mari Selvam et al. (2025) — modified biochar adsorbents for phosphorus removal from wastewater.
- Paul & Selvasembian (2025) — pyrolyzed biochar for removal of the antibiotic ciprofloxacin from water.
- Polepalli & Pulla Rao (2025) — protein-based hybrid nanomaterials for water remediation.
- Simon et al. (2026) — bacterial-consortium–based aerobic remediation of polluted water.
- Kuncha et al. (2025) — smart system for oxygen optimisation and shrimp-health monitoring in aquaculture.
- Patel et al. (2025) — salinity and phosphorus as regulators of methane emissions in tropical aquaculture ponds.
- Biswal et al. (2025) — 'DeepFishNet': deep-learning model for real-time fish disease classification.
- Ramesh et al. (2025) — forecasting dissolved oxygen and aeration efficiency in brackish-water aquaculture.
- Dar & Dar (2025) — ecosystem-service trade-offs from converting a Ramsar wetland into aquaculture ponds.
- Devananda et al. (2026) — spatiotemporal mapping of wetland transformation and algal-bloom patterns, Sambhar Lake.
- Gollapalli et al. (2025) — YOLOv8 deep learning for real-time coral-reef restoration monitoring.
- Bhushan et al. (2025) — underwater data transmission and object detection using TinyML for marine monitoring.

Student Research Highlight



● Coupled dynamics of submarine groundwater discharge and coastal productivity: Insights from tidal to interannual variability

Namitha M. — M.Sc. Environmental Science & Engineering

Published in Physics and Chemistry of the Earth (Impact Factor 4.1, Q1), this student-led study examines how submarine groundwater discharge — nutrient-rich water flowing from land to sea beneath the surface — shapes coastal productivity along the Nizampatnam coast. Analysing nutrient fluxes, tidal dynamics and seasonal-to-interannual variability, the research

links invisible groundwater pathways to marine ecosystem productivity and highlights the importance of integrating groundwater management with coastal conservation planning to limit risks such as harmful algal blooms.

Full list of SDG 14–linked publications compiled for 2025–26:

Year	Title	Authors	Type	FWCI
2025	Microplastics under siege: Biofilm-forming marine bacteria from the microplastisphere and their role in plastic degradation	Joshi, G.; Goswami, P.; Jha, D.K.; Vinithkumar, N.V.; Dharani, G.	Article	2.86
2025	Sustainable approach of modified biochar based adsorbents towards enhanced phosphorus removal from wastewater	Mari Selvam, S.; Behera, B.; Chauhan, A.; Madaan, A.; Rajamanickam, R.; Akshaya, K.; Selvasembian, R.	Review	0.96
2025	Next-Generation Theragnostic Gold Nanoparticles: Sustainable Bioengineering Strategies for Enhanced Stability and Biocompatibility	Khan, S.; Dasari, V.V.; Paila, B.; Asok, S.; Nshimiyimana, W.; Bhatt, C.S.; Korupalli, C.; Mishra, A.; Suresh, A.K.	Review	0.87
2025	Potential of pyrolyzed and co-pyrolyzed biomass-derived biochar for the removal of ciprofloxacin	Paul, S.; Selvasembian, R.	Review	0.88
2025	Insights into the biodegradation and bioremediation of microplastics: mechanisms and analytical methods	Dogra, K.; Kumar, M.; Ornelas-Soto, N.; Mora, A.; Sarkar, D.; Selvasembian, R.; Deoli Bahukhandi, K.; Mahlknecht, J.	Review	0.64
2025	Microplastics: Hidden drivers of antimicrobial resistance in aquatic systems	Goswami, P.; Kanda, K.; Tamamura-Andoh, Y.; Watanabe, M.; Guruge, K.S.	Review	1.2
2025	Surface-enhanced Raman spectroscopy for size-resolved microplastic detection in real-world samples using thiophenol labeling	Kumar, J.; Jinachandran, A.; Renduchintala, M.; Soma, V.R.; Shanmugam, V.; Imamvali, S.; Tupakula, S.; Panneerselvam, R.	Article	2.16
2025	Potential Threat of Microplastic Pollution on Coastal-Marine Ecosystem– An Emerging Economic Setback and Question to Blue Economy?	Dey, U.; Chell, S.; Mondal, M.; Das, K.; Raj, D.; Pandey, G.; Meraj, G.; Kumar, P.; Almazroui, M.; Verma, S.	Review	0.73
2025	Microalgae-based nutritional supplements: Sustainable applications for high-nutritional-value food production	Rajamanickam, R.; Das, S.; T, C.; Sharma, S.; R O, R.; Prabhu, A.A.; Banerjee, S.; Azelee, N.I.W.; Krishnamoorthy, S.; Selvasembian, R.	Review	0.51
2025	A review on biopolymer nanocomposite-based membranes for oil/water separation and life cycle assessment	Syed, V.; Ray, S.S.; Selvasembian, R.	Review	0.38
2025	Protein Based Hybrid Materials of Metal Phosphate Nanoflowers and Gels for Water Remediation: Perspectives and Prospects	Polepalli, S.; Pulla Rao, C.	Review	0.37
2025	Salinity and phosphorus as key regulators of methane emissions in tropical aquaculture ponds	Patel, L.; Gowd, S.C.; Singh, R.; Thottathil, S.D.	Article	1.04
2025	Sustainable Utilization of Waste Motor Oil: A Hazardous Hydrocarbon Pollutant	Mishra, A.; Mishra, N.S.	Chapter	1.57
2025	Advanced Aquaculture Management: A Smart System for Optimizing Oxygen Levels, Shrimp Health Monitoring	Kuncha, P.; Manoranjini, J.; Sirisha, J.; Bandeela, S.; Penjarla, N.K.; Goud, S.S.	Chapter	3.66
2025	DeepFishNet: A Hybrid Deep Learning Model for Real-Time Fish Disease Classification	Biswal, S.R.; Kumar, A.V.S.P.; Punuri, S.B.; Behera, S.K.	Conference Paper	3.29
2025	Integrated Underwater Data Transmission and Object Detection System Using TinyML and Multi-Hop Networks	Bhushan, C.M.; Laskar, S.H.; Garikapati, J.S.; Sai Srihitha, P.; Hemanth Durga Kumar, S.; Gazi, F.; Hussain, M.M.	Conference Paper	2.98
2025	Tracing the Footprint of Microplastics: Transport Mechanism, Degradation, and Remediation in Marine Environment	Mukherjee, A.; Shivani Kumar, S.; Singh, R.; Sangeetha, D.; Ahn, Y.-H.; Ray, S.S.	Review	0.17
2025	Trade-offs in ecosystem services of a Ramsar wetland due to conversion into aquaculture ponds in the coastal region of Indian peninsula	Dar, S.A.; Dar, J.A.	Article	0.67

Year	Title	Authors	Type	FWCI
2025	Systematic evaluation of industrial greenbelts for quantifying carbon sequestration potential of afforestation activities	Raval, N.P.; D, A.; Ramesh, A.N.; Pandey, H.; Ghosal, P.K.; Rawal, M.; Trivedi, M.H.	Article	0.21
2026	Spatiotemporal mapping and monitoring of wetland transformations and algal bloom patterns in Sambhar Lake, India	Devananda, K.; Naik, R.; Reddy, C.S.	Article	1.33
2026	Adsorptive Recovery of Rare Earth Elements: Current Progress, Challenges and Emerging Perspectives	Chandrasekaran, R.; Wan Azelee, N.I.; Chaukura, N.; Gwenzi, W.; Offiong, N.-A.O.; Ighalo, J.O.; Raizada, P.; Prabhu, A.A.; Paul, S.; Raval, N.P.; Selvasembian, R.	Review	0.46
2025	Microbial role in degradation and removal of microplastics from aquatic environment	Dayal, L.; Kumari, P.; Raj, D.; Maiti, S.K.	Chapter	1.63
2025	Enhancing Coral Reef Restoration: Integrating YOLOv8 and Deep Learning for Real-Time Monitoring and Intervention	Gollapalli, G.S.; Gadde, M.S.B.; Gadde, M.M.; Uppuluri, B.; Senapati, R.	Conference Paper	1.26
2026	When microplastics meet emerging pollutants: Key insights on mechanistic features for environmental remediations	Roy, S.S.; Bhuvanendran, N.; Pichiah, S.; Kuila, A.; Mishra, N.S.	Article	1.35
2025	Plastic Utilization in the Modern Era: The Twenty-First Century	Jones, H.; Pathak, P.	Chapter	1.71
2025	Upcycling of Fish Scales into a Au-Templated Mechanically Extractable Sturdy and Malleable Supported Catalyst for Cleansing Water	Bhatt, C.S.; Dasari, V.V.; Suresh, A.K.	Article	0.24
2026	Pyrolytic conversion of agro-residues into functionalized biochar towards eutrophication management	Paul, S.; Selvasembian, R.	Review	0.44
2025	Defining Problems and Identifying Opportunities in Agriculture and Natural Resources	Meena, T.; Singh, V.K.; Roy, S.	Chapter	1.27
2025	Investigation on plastic-aggregates in coastal and marine pollution: Distribution, possible formation process, and disintegration prospects	Chell, S.; Mondal, M.; Ghorui, U.K.; Dey, U.; Chakrabortty, S.; Das, K.; Puppala, H.	Review	0
2026	From protection to persistence: rethinking biodiversity conservation in India	Wani, Z.A.; Rawat, Y.S.	Article	0
2025	Microplastics and Aquatic Limnology: Conception of Biogeochemical Processes	Dash, S.; Kumar, M.; Mazumder, P.	Chapter	0
2026	Integrated aerobic remediation of polluted water using a novel bacterial consortium (MBC-4): Performance, optimization, and mechanistic insights	Simon, M.; Roy, D.; Dash, S.; Shirin, S.; Joshi, H.; Shubham, K.	Article	0
2026	Integration of Solar Gel Ponds for Sustainable Energy in Reverse Osmosis Desalination	Al Amri, M.T.; Honnurvali, M.S.; Anwar, K.; Umar, T.; Nizami, T.K.	Conference Paper	0
2025	Plastic Footprint: Global Issues, Impacts and Solutions	Pathak, P.; Ilyas, S.; Srivastava, R.R.	Book	0
2026	IoT Driven Smart Innovation for Microplastic Monitoring and Detection: A Multidimensional Review	Reza, A.F.; Singh, R.; Das, K.; Chen, S.-S.; Ahn, Y.H.; Kumar, R.; Kumar, R.; Ray, S.S.	Review	0
2025	Reprint of “Optimizing aeration efficiency and forecasting dissolved oxygen in brackish water aquaculture: Insights from paddle wheel aerator”	Ramesh, P.; Jasmin, A.; Tanveer, M.; U, R.R.; Ganeshan, P.; Rajendran, K.; Roy, S.M.; Kumar, D.; Chinnathambi, A.; Brindhadevi, K.	Article	0
2026	Demineralization of marine biomass for catalytic upgrading of high-quality bio-oil production: A review	Kemala, P.; Hua, L.S.; Selvasembian, R.; Potnuri, R.; Farobie, O.; Amrullah, A.; Ariyanta, H.A.; Fatriasari, W.	Review	0
2025	Detecting Marine Plastic Waste Using Aerial and Satellite Images: A Multimodal Fusion Approach	Sai, P.L.; Venkat, K.G.; Puppala, N.S.; Shankar, T.M.R.; Lanka, L.P.V.A.; Bharadwaja, T.	Conference Paper	0
2026	Are electric vehicles green? Sustainability assessment of light-duty vehicles in India	Vigneswaran, V.S.; Gowd, S.C.; Mirthipati, M.; Meenatchisundaram, K.; Rajendran, K.	Article	0

Year	Title	Authors	Type	FWCI
2026	Techno-economic analysis of integrated cassava biorefinery for fungal protein and microalgal fish feed	Ravichandran, V.; Mani, S.; Sundaram, K.M.; Aljohani, K.; Aljohani, B.S.; Rajendran, K.	Article	0
2026	Water grabbing and the Vizhinjam sea port: care, ownership, resistance and the way forward	Latif, A.	Article	0
2026	Lateral and vertical solute transport controlling groundwater pollution in the Sundarbans: Insights from nitrate concentration and stable isotopic signatures	Mondal, M.; Sen, S.; Mukherjee, A.; Das, K.	Article	0

CONCLUSION

Across 2025–26, SRM University–AP's contribution to SDG 14 has been driven overwhelmingly by research and scholarship — 41 tagged publications spanning microplastic pollution, water remediation, aquaculture technology and coastal-ecosystem monitoring, complemented by internationally co-authored work and a growing footprint in student-led marine science. Experiential events brought students face-to-face with the regulatory, industrial and scientific dimensions of aquatic-resource protection, from EIA public hearings to marine bioprospecting seminars.

Looking ahead, strengthening SDG 14 impact will depend on consolidating the university's marine and aquatic research theme, expanding student-led coastal science of the kind demonstrated by Namitha M.'s published work, and documenting institutional facilities, policies and industry partnerships specific to aquatic sustainability so that future reports can present a fuller picture alongside this research foundation. Through continued research, innovation and responsible aquatic-resource stewardship, SRM University–AP is building a credible and expanding contribution to Life Below Water.