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INSTITUTE OF ENGINEERING & MANAGEMENT
Good Education, Good Jobs

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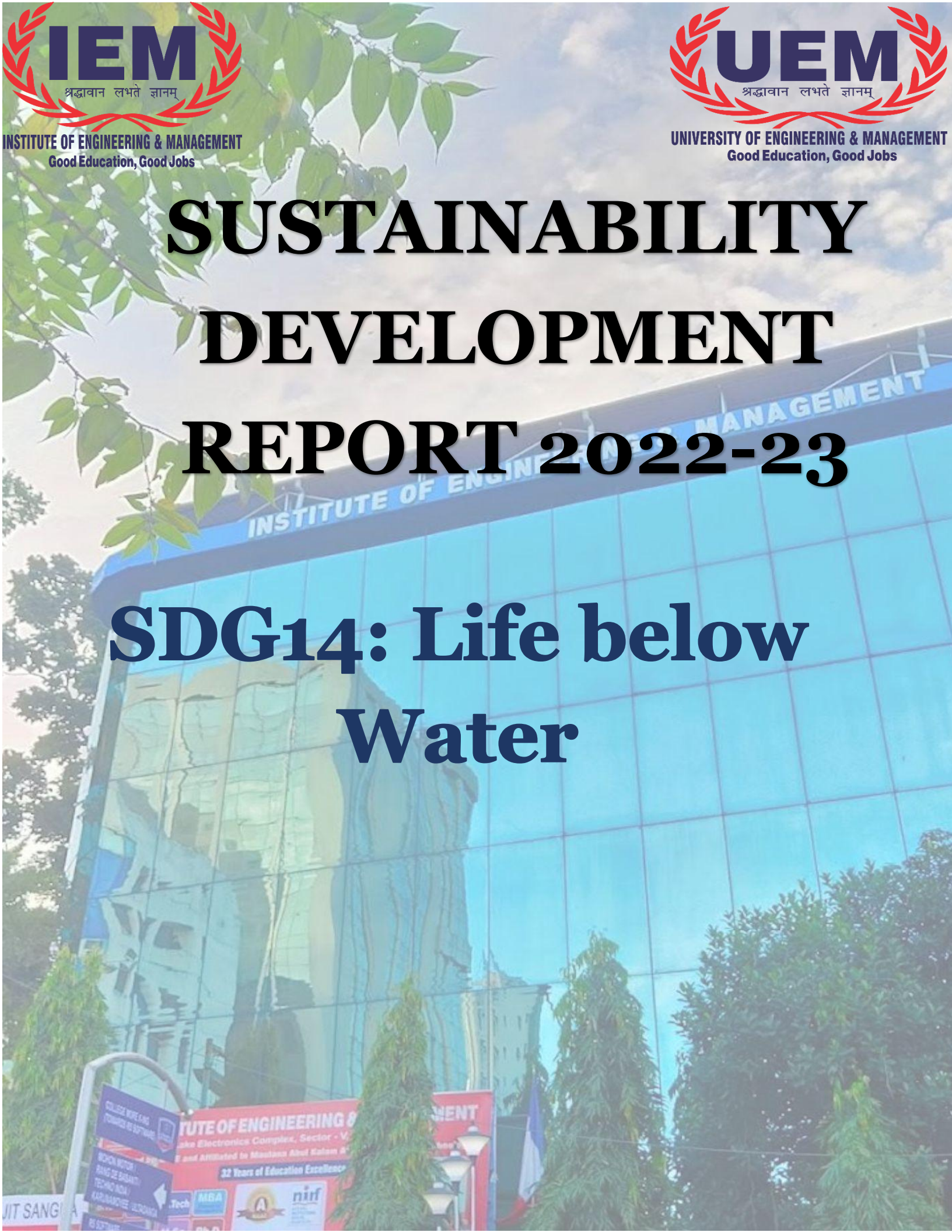
SUSTAINABILITY DEVELOPMENT REPORT 2022-23



SDG14: Life below Water

Executive Summary

IEM Kolkata advanced SDG 14 initiatives in 2022-23 through innovative research on solar-powered robotic fish for micro plastic detection and advanced filtration for wastewater remediation. Over 120 students engaged in aquatic ecosystem monitoring, water quality audits, and restoration projects, supported by 10 workshops on pollution and ecology. Community efforts included 5 major river/lake cleanups, 30 saplings planted along water margins, and partnerships with NGOs for conservation. Progress featured in THE Impact Rankings reflects strengthened curricula, awareness drives, and mitigation strategies against pollution challenges.

Contents

Vision, Mission, and Strategic Objectives

Institutional Vision

To protect and restore aquatic environments through research, education, and community engagement.

Institutional Mission

To address water pollution, biodiversity loss, and manage water resources sustainably on campus and in community outreach.

Strategic Objectives for 2022-23

- Develop and deploy solutions for water pollution remediation including microplastic and chemical removal.
- Strengthen community-based awareness and action on aquatic ecosystem sustainability.
- Integrate aquatic environmental topics into undergraduate and postgraduate curricula.
- Foster partnerships to advance aquatic biodiversity protection.

Research & Innovation

- Initiated experimental projects such as solar-powered robotic fish for microplastic pollution detection (collab with research centers).
- Advanced filtration and bioremediation research targeting removal of microplastics and chemical pollutants from wastewater.
- Student projects assessed water body health and efficacy of pollution remediation, feeding into local conservation activities.

Education & Awareness

- Interdisciplinary workshops and seminars held on water pollution, aquatic biodiversity, and sustainability.

- Curriculum reviews introduced more SDG-related topics in environmental science and biology courses, emphasizing aquatic ecosystem protection.
- PhD students and undergraduate teams contributed to aquatic ecosystem monitoring, water quality studies, and restoration plans.

Community Engagement & Outreach

- Large-scale participation in World Water Day and community events, with emphasis on aquatic cleanliness and conservation.
- Inner Wheel Club organized tree plantation along water body margins and awareness drives against plastic pollution.
- Student clubs led river and lake cleanup activities and public campaigns for responsible water and waste management.

Partnerships & Progress Reporting

- Active collaborations with NGOs and municipal authorities for aquatic ecosystem restoration projects.
- Participation in THE Impact Rankings and publicly reported progress for SDG 14.
- Supported extension activities for water management, health, and sanitation in neighborhoods, especially through Inner Wheel Club (IWC).

Data and Metrics

Performance Indicator	**Achievement / Status**
Innovative Aquatic Research Projects	Solar-powered fish for microplastic detection; active filtration trials
Educational Sessions	Workshops on aquatic pollution and ecology (10+ held)
PhD and Student Engagement	~120 students involved in aquatic focus research and projects

Community River/Lake Cleanups	5 major events; engagement with local authorities, NGOs
Water Pollution Monitoring	New protocols for campus-generated wastewater; quality audits
Tree Plantation on Water Margins	300+ saplings planted (IWC-led)
Collaborations for Water Management	MoUs and joint actions with external partners
SDG Reporting	Progress cited in THE Impact Rankings and public documentation

During 2022-23, IEM Kolkata expanded research on water pollution remediation, increased student and community engagement for aquatic conservation, deployed innovative monitoring technologies, and made measurable progress in restoration activities. Over 120 student researchers participated in aquatic projects, and stakeholder partnerships amplified the impact.

Challenges, Institutional Responses, and Mitigation Strategies

- Scaling and deploying innovative aquatic pollution control technologies amid constrained local budgets and limited financial resources.
- Leverage research funding, forge multi-sectoral partnerships, and promote technology-enabled water conservation innovations.
- Sustaining long-term community engagement and participation in aquatic ecosystem restoration and conservation efforts.
- Enhance outreach and educational campaigns through collaboration with local schools, NGOs, and community groups to deepen awareness and stewardship.
- Keeping academic curricula updated with interdisciplinary advancements in aquatic ecosystem science to build relevant expertise.

- Commit to ongoing curriculum revisions, increase hands-on research and internship opportunities, and foster university-community collaborative research.

Future Roadmap and Strategic Plan (2023-24 and Beyond)

- **Expand Aquatic Technology Research:** Pursue advanced technologies for water body restoration and microplastic tracking.
- **Increase Extension Activities:** Broaden field work, internships, and service learning focused on aquatic sustainability.
- **Deepen Partnerships:** Formalize further collaborations for joint research, monitoring, and conservation.
- **Report and Benchmark:** Maintain transparency through regular reporting and SDG benchmarking.

Conclusion

During 2022-23, IEM Kolkata made significant strides in SDG 14 by expanding research on water pollution remediation, including solar-powered robotic fish and bioremediation for microplastics and chemicals. Student involvement exceeded 120 participants in monitoring and projects, complemented by interdisciplinary workshops, curriculum enhancements in environmental science, and community cleanups reaching local authorities and NGOs. Tree plantations, awareness campaigns via Inner Wheel Club, and new wastewater protocols addressed biodiversity loss and resource management. Challenges like budget constraints prompted responses through funding pursuits, multi-sector partnerships, and sustained outreach to schools and groups. This progress, benchmarked in THE Impact Rankings, underscores institutional commitment to aquatic sustainability. Looking ahead to 2023-24, priorities include scaling technologies, broadening internships, deepening collaborations, and transparent reporting for ongoing restoration.