CLEAN-SHORE INITIATIVE – LARGE SCALE MARINE DEBRIS CLEAN-UP DRIVE AROUND THE COAST OF MALVAN, SINDHUDURG

PHASE -II

FINAL REPORT

Project Summary Sheet

- Project Title: Clean Shore Initiative - Large Scale Marine Debris Clean-up Drive along the coast of Malvan, Sindhudurg.
- Thrust Areas: Ecological Restoration, Climate Change Mitigation, Biodiversity / Coral Conservation, Community Involvement, and Community Engagement.
- Project Funded by : Maharashtra Pollution Control Board (MPCB)
- Collaborating Partners: Mangrove Cell, State Fishery Department, , Malvan Nagar Parishad, Neelkranti, Youth Beats for Climate, Maharashtra Maritime Board, Malvan Scuba Drivers Association.

Clean Shore Initiative - Large Scale Marine Debris Clean-up Drive along the coast of Malvan, Sindhudurg.
Phase -II

Introduction :

Marine debris, particularly plastic waste, represents one of the most pressing and complex environmental threats of the 21st century. The world's oceans are inundated with an estimated 8 to 12 million metric tons of plastic waste annually (Jambeck et al., 2015; UNEP, 2021), with projections indicating this could triple by 2040 without substantial intervention. Marine litter originates from both land-based sources, such as poorly managed urban waste, stormwater runoff, tourism, and industrial effluents, and ocean-based sources, including abandoned fishing gear, maritime transport, and offshore oil and gas activities.

This growing crisis directly undermines global efforts toward sustainable development, particularly:

- SDG 14 – Life Below Water: To conserve and sustainably use the oceans, seas, and marine resources.
- SDG 13 – Climate Action: Marine ecosystems, particularly mangroves and seagrasses, play a crucial role as carbon sinks.
- SDG 12 – Responsible Consumption and Production: By promoting the reduction and recycling of marine-bound waste.
- SDG 3 – Good Health and Well-being: Through the mitigation of human exposure to microplastics and associated toxins.

The Malvan coastal region in Maharashtra, situated within a designated Marine Protected Area (MPA), is globally recognized for its rich biodiversity, including coral reefs, seagrass beds, and endangered marine fauna such as olive ridley sea turtles, finless porpoises, dolphins, and other marine species. Despite its ecological significance, the area is increasingly affected by marine litter, particularly ghost nets (ALDFG—Abandoned, Lost, or otherwise Discarded Fishing Gear), polyethylene terephthalate (PET) bottles, multi-layered packaging waste, and microplastics.

Recent assessments conducted during Phase 1 of this initiative revealed the accumulation of over 2750 kg of non-biodegradable waste, with fishing nets comprising approximately 60% of the collected debris. Studies in comparable coastal ecosystems indicate that ghost gear and plastic can account for up to 70% of debris in marine habitats and continues to trap marine species unintentionally for years—a phenomenon known as "ghost fishing."

Scientific and Environmental Impacts of Marine Debris :

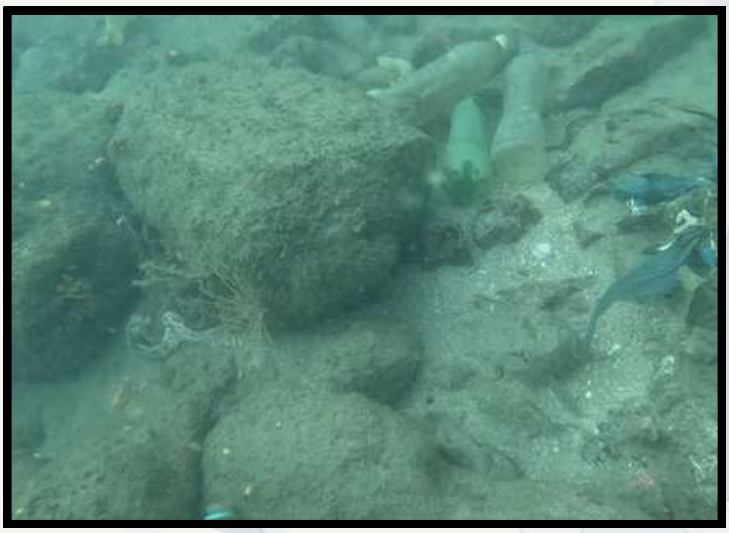
- Entanglement and Ingestion: Species such as sea turtles, dolphins, seabirds, and pelagic fish ingest or become entangled in debris, leading to injuries, reduced fitness, starvation, or death. For instance, 52% of sea turtles globally have been reported to ingest plastic (Schuyler et al., 2014).
- Habitat Disruption: Coral reefs are particularly vulnerable to physical damage from entangled nets and plastic entrapment, which reduce light availability, promote algal overgrowth, and increase disease susceptibility.
- Bioaccumulation and Toxicity: Plastics act as vectors for Persistent Organic Pollutants (POPs) like PCBs and DDT, and heavy metals that bioaccumulate up the marine food web. Microplastics have been detected in over 100 marine species and have been found in human stool, lung tissue, and placenta, posing as-yet-unclear long-term health risks.
- Carbon Sink Degradation: Plastic pollution affects blue carbon ecosystems—such as mangroves, salt marshes, and seagrasses—that sequester up to 70% more carbon per unit area than terrestrial forests. Degradation of these habitats compromises global climate goals.
- Economic Losses: Marine debris contributes to reduced fish catch, damaged fishing equipment, a decline in tourist appeal, and increased clean-up costs. A World Bank report (2019) estimates that marine litter costs the Asia-Pacific region up to $1.3 billion annually.

Background & Rationale :

The Marine Debris Cleaning Program was initiated in the Malvan region in November 2024 to address the escalating challenge of marine pollution and its adverse impacts on coastal biodiversity, marine ecosystems, and local livelihoods. Phase I of the program successfully brought together key stakeholders—including fishermen, government bodies, non-governmental organisations, and tourism operators—through a series of structured clean-up drives, awareness initiatives, and baseline data collection activities. This phase not only resulted in the removal of significant quantities of marine debris but also established a strong foundation for community engagement, cross-sector collaboration, and collective environmental responsibility in the region.

Phase II of the Marine Debris Clean-up Drive aims to build upon the achievements and learnings of the initial phase by intensifying efforts to remove non-biodegradable and hazardous waste from ecologically sensitive coastal and marine zones. A key focus of this phase is to deepen community participation and awareness while promoting long-term stewardship of marine ecosystems. Through targeted interventions at high-impact pollution sites and collaborative action with local stakeholders, Phase II seeks to address persistent marine debris issues, safeguard marine biodiversity, support sustainable livelihoods, and reduce the environmental and socio-economic risks associated with marine pollution along the Konkan coastline.

Building on the momentum of the past year, the program now has expanded scope in the current year, with an emphasis on scaling both impact and reach. This expansion will include increasing the frequency and geographical coverage of clean-up activities, engaging additional coastal villages, strengthening partnerships with local authorities and educational institutions, and introducing improved waste management and monitoring systems. The integration of technological tools for data collection and impact assessment will further enhance effectiveness. Overall, the program aims to transition from short-term awareness-building towards long-term behavioural change and sustainable coastal conservation practices, ensuring lasting protection for Malvan's marine ecosystems. The initiative also contributes to enhancing the potential for sustainable ecotourism, as the ecological integrity and visual quality of marine ecosystems are critical to visitor experience. Healthy, debris-free coral reefs support marine biodiversity and are a key attraction for responsible tourism, whereas the presence of plastic waste and other marine debris significantly diminishes the ecological and aesthetic value of these habitats. By restoring reef environments, the initiative supports both conservation outcomes and nature-based livelihood opportunities linked to ecotourism.



Marine Debris Clean-up Initiative Phase II

Total Number of Drives:	08	
Date	Drive I : 9th December 2025 Drive II: 10th December 2025 Drive III: 12th January 2026 Drive IV; 13th January 2026	Drive V : 18th February 2026 Drive VI: 19th February 2026 Drive VII: 30th March 2026 Drive VIII: 31st March 2026 Drive IX: 29th April 2026
Total marine debris removed	3320 kgs	
Tentative ocean floor cleaned	175 hectares	
Location	Areas adjoining Malvan Marine Sanctuary, Rock Garden, Chivla Beach, Suwarna Kada, Tarkarli, Kawada Rock	
Total Number of Beach and Mangrove Clean-up Drives:	12	
Total Waste Removed	1830 kgs	


MARINE DEBRIS CLEAN-UP
INITIATIVE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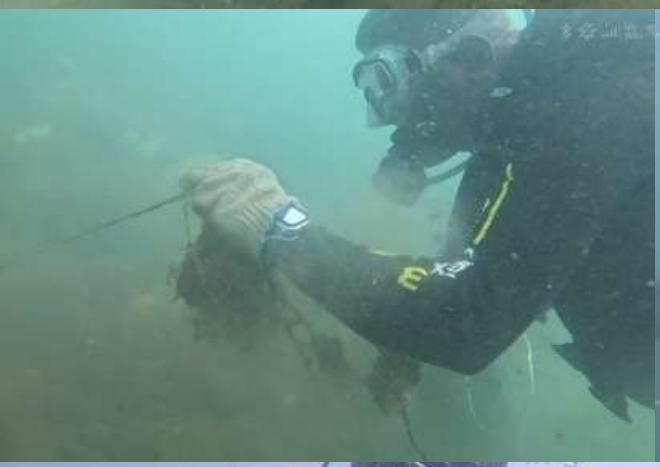
Under-water Reality Revealed

As evidenced in the photographs, substantial accumulation of plastic debris was observed on the ocean floor, including within coral reef ecosystems. In several locations, abandoned fishing gear (ghost nets) was found entangled around live coral colonies, resulting in physical abrasion, restricted coral growth, and increased susceptibility to stress and damage.

The Process

As implemented during Phase I of the Marine Debris Clean-up Initiative, trained and certified scuba divers conducted systematic subtidal surveys. This was followed by debris retrieval operations across multiple benthic habitats, including sandy substrates, rocky reefs, and coral reef ecosystems. These underwater clean-up interventions targeted debris accumulation zones. Divers executed controlled dives in accordance with standard safety protocols and selectively removed marine debris, primarily comprising plastic components, glass articles, and abandoned fishing gear (ghost nets). At several locations, strong currents and reduced underwater visibility posed operational challenges. Despite these constraints, the divers carefully and selectively removed plastic debris and ghost nets entangled around sensitive coral reef structures, ensuring minimal disturbance to the benthic habitat. These underwater interventions significantly contributed to reducing direct physical stress on coral ecosystems and improving overall seabed conditions.



The Quantum of waste

For a long time, marine pollution has been commonly perceived as a surface-level issue, with plastic waste assumed to float and accumulate only along shorelines. However, observations from the coral reef sites during the clean-up drives clearly challenge this assumption. Significant quantities of plastic bottles, food wrappers, plastic bags, and other plastic materials were found settled on the ocean floor, alongside metal scrap, glass bottles, and large volumes of abandoned fishing gear (ghost nets). In several reef locations, the density of marine debris was so high that it visibly exceeded the presence of reef-associated fish, highlighting the scale and severity of the problem.

Through four targeted clean-up drives under Phase II, the initiative successfully covered approximately 175 hectares of marine and coastal area and facilitated the removal of nearly 2980 kg of marine debris. These results underscore the urgent need for sustained underwater clean-up interventions and demonstrate the tangible impact of focused, science-informed action in relieving pressure on fragile coral reef ecosystems.

Sr. No	Drive	Date	Marine Debris
01	Drive - 1	9th December 2025	345 kg
02	Drive - 2	10th December 2025	309 kg
03	Drive - 3	12th January, 2026	212 kg
04	Drive - 4	13th January, 2026	258 kg
05	Drive - 5	18th February 2026	420 kg
06	Drove - 6	19th February 2026	456 kg
07	Drive - 7	30th March 2026	450 kg
08	Drive - 8	31st March 2026	530 kg
09	Drive - 9	31st April	340 Kg
Total Removal Waste			3320 kg

Beach Clean-up Drives

The beach cleanups were conducted as a vital part of the Marine Debris Cleanup Initiative, alongside ongoing marine cleanup drives. These efforts saw active participation from local fishing communities and NGO partners such as Youth Beat for Climate, Neelkranti, and Mangrove Foundation. Cleanups were carried out across key coastal locations including Dandi, Chivla, Bunder Jetty, and the adjoining mangrove areas. Large quantities of plastic waste and marine debris were removed from both beaches and mangrove ecosystems. This collaborative effort highlights the importance of community-driven action in protecting coastal and marine environments.

Total Number of Beach and Mangrove Clean-up Drives	12
Total volume of waste collected	1830 kg

Beach and mangrove Clean-up Drives

Outcome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A total of 1830 kg from coast and 3320 kg from the ocean floor (Coral reefs) removed

Outcome

Around 175 hectares of ocean floor including the coral reefs cleaned so far

Awareness Sessions in Schools and Colleges

Samudrarakshak Sanmelan

Samudrarakshak Sanmelan was a platform to discuss key issues and challenges related to coastal conservation and the livelihoods of traditional fishing communities. The event also recognised and appreciated the efforts of stakeholders and the scuba diving team for their valuable participation in the marine debris clean-up initiative.

Collaboration for success

We extend our sincere gratitude to all individuals and organisations for their valuable support and collaboration in making the Marine Debris Clean-up Initiative a success. Your collective efforts have significantly contributed to protecting our marine ecosystems.

MAHARASHTRA

SAGAR SHAKTI OCEANS and PEOPLE

महाराष्ट्र वन विभाग

vanashakti

मालवण नगर परिषद मालवण

नीलक्रांती

YOUTH BEATS FOR CLIMATE

Fisheries Department
Govt of Maharashtra

स्वच्छ भारत
एक कदम स्वच्छता की ओर

vanashakti

Contact:

Phone Number:
9967632302/ 7977670832

Website:
vanashakti.org

Location:
Bhandup village- east