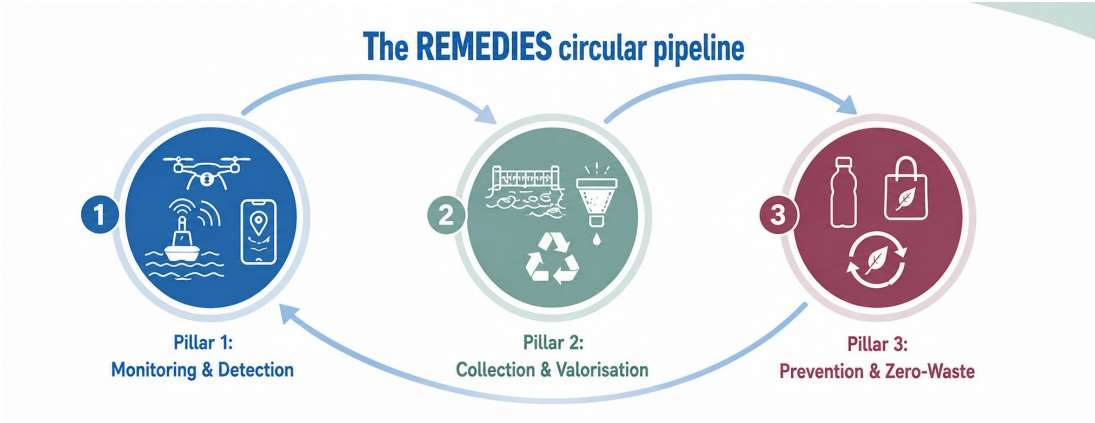
REMEDIES
MEDITERRANEAN SEA BASIN LIGHTHOUSE

Three Pillars for a Plastic Litter Free Mediterranean

To tackle the systemic crisis of marine plastic pollution across the Mediterranean basin, the REMEDIES project structured its technical and social interventions around three interconnected operational pillars.



Pillar 1 | Monitoring & Detection

We generate and share real-time data using drones, smart buoys, mobile apps and satellites to map plastic litter flows and identify pollution hotspots.

Pillar 2 | Collection & Valorisation

We intercept plastic before it reaches the sea through river barriers and wastewater filtration, then recover materials for circular uses.

Pillar 3 | Prevention & Zero-Waste

We reduce plastic at the source with reuse systems, zero-waste supply chains and behaviour change, eliminating single-use plastics from daily life.

Why was REMEDIES implemented this way?

To stop plastic pollution at every stage:

Cleaning up beaches isn't enough if plastic keeps flowing in, and preventing single-use plastic takes time. By combining Monitoring & Detection, Collection & Valorisation, and Prevention & Zero-Waste, REMEDIES tackles plastic before, while, and after it enters our waters.

To match the specific needs of every community:

Every region faces different challenges. REMEDIES 3-pillar setup allows local actors to pick and deploy the exact, field-tested technologies suited to their territory.

To turn emergency clean-ups into long-term local economies:

By combining smart monitoring, passive collection, and local zero-waste businesses, the REMEDIES 3-pillar structure allows regional leaders to turn marine waste into a complete, self-sustaining regional economy.

Co-creating a Plastic Litter Free Future

Co-funded by the European Union

Factsheet: Collection & Valorisation

Pillar 2

1. The challenge solved:

Intercepts plastic waste at critical entry points like river corridors, commercial marinas, and municipal wastewater streams, preventing macro-plastics from fragmenting or dispersing into the open sea.

2. Decentralised filtration infrastructure:

Deploys energy-efficient, self-powered river barriers and chemical-free ceramic membranes, providing localized treatment rather than relying on costly, centralized plants.

3. Local material recovery:

Directs collected waste into decentralized micro-recycling setups and mechanical reprocessing loops, transforming intercepted plastic into secondary raw materials, circular products, and closed water cycles.

METHODOLOGY AT A GLANCE

Want to understand the data behind this pillar?

Every Life Cycle Assessment metric, environmental indicator, and cost benchmark on this factsheet is defined in our REMEDIES Master User Guide & Methodology Manual. Use the guide to navigate the evaluation criteria, interpret the underlying metrics, and gain full transparency into how these REMEDIES solutions were measured.

Scan to access the methodology guide

INNOVATIONS / TECHNOLOGIES UNDER PILLAR 2

River Cleaning System



Free-floating boom for riverbank maintenance and plastic collection.

Microplastic Filtration System Clera.One



On-site filter units for removing microplastics and suspended solids.

Wasser 3.0. PE-X®



Floating storage for captured microplastics and other collected waste.

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WASSER 3.0

TRL 8+

Pillar 2 | Collection & Valorisation

Wasser 3.0 PE-X®

Owner: Wasser 3.0

MP & TSS removal at Mykonos WWTP (48,000 PE). One unit, two pollutants: installed after the conventional activated sludge line, the Wasser 3.0 PE-X® pilot removed microplastics (MP) and suspended solids (TSS) together – stable despite tourist peaks and septic-truck deliveries.







86 ± 8 % MP removal

95 ± 3 % TSS removal

70 ± 20 % COD reduction

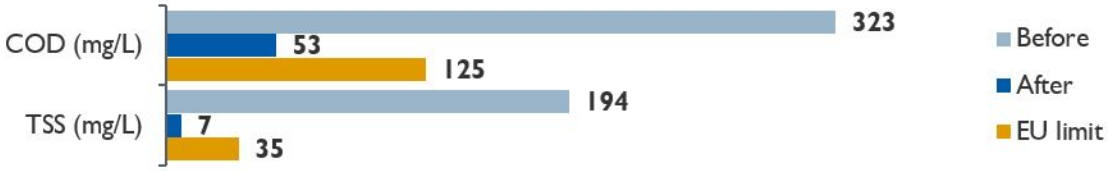
93 ± 7 % turbidity

How "Clump & Skim" works

1. **Dose** hybrid silica gels into a stirred reactor
2. **Clump** MP of all polymer types bind together
3. **Fix & float** agglomerates > 1 mm float up
4. **Skim & recover** with added TSS reagent

No fouling · **MP + TSS in one unit** · up to 75 % lower OpEx · EU-REACH compliant

Effluent vs. EU discharge limits



What the graph shows

- Mean COD and TSS before / after
- Before = conventional activated sludge effluent
- Orange: EU limits (91/271/EEC)

Key Findings

- **Before:** TSS over limit in 5 of 5 loops
- **After:** all loops within limits
- **UWWTD:** MP monitoring by 2027

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Wasser 3.0 gGmbH · Dr. Katrin Schuhen
schuhen@wasserdreinull.de · wasserdreinull.de

Sources: Sturm et al., Clean Technol. 2026, 8, 32 (Nov 2025, 5 loops, 30 samples); Sturm et al., Water 2025, 17, 711 (Mykonos MBR ≈ 25 bn MP/yr). Limits: COD 125, TSS 35 mg/L.

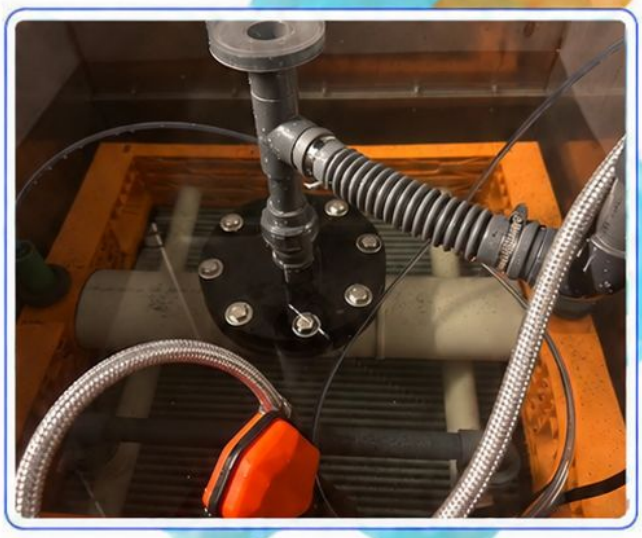
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Pillar 2 | Collection & Valorisation

Microplastic Filtration System Clera.One

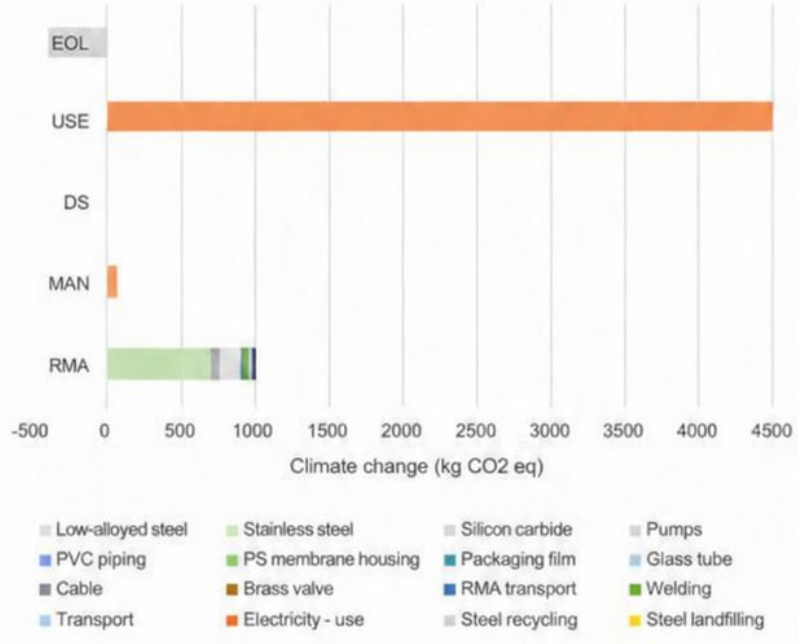


Owner: Clera.One

On-site wastewater treatment using Silicon Carbide (SiC) ceramic membranes. Removes 99.9% of microplastics and heavy metals from vessel-washing runoff and laundry greywater while consuming 70% less energy, enabling 100% water reuse.

- SiC ceramic membranes
- 99.9% microplastic removal
- 70% less energy
- 100% water reuse

Hotspot assessment



What the graph shows

- Environmental impacts generated throughout the technology's life cycle.
- Relative contribution of energy use, materials and transport.
- Potential benefits of material recovery at end-of-life.

Key Findings

- Electricity consumption during operation is the largest environmental hotspot.
- Stainless steel and silicon carbide are the main material contributors.
- Manufacturing and transport have comparatively low impacts.
- Recycling of steel at end-of-life partially compensates for impacts generated during production.
- Environmental performance can be further improved through energy-efficient operation.

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Pillar 2 | Collection & Valorisation

River Cleaning System

Owner: River Cleaning

A modular, self-powered floating barrier deployed diagonally across river courses. Uses natural water current to spin floating turbines that guide macro-litter to riverbank storage cages with a 97.4% collection efficiency and zero external power.



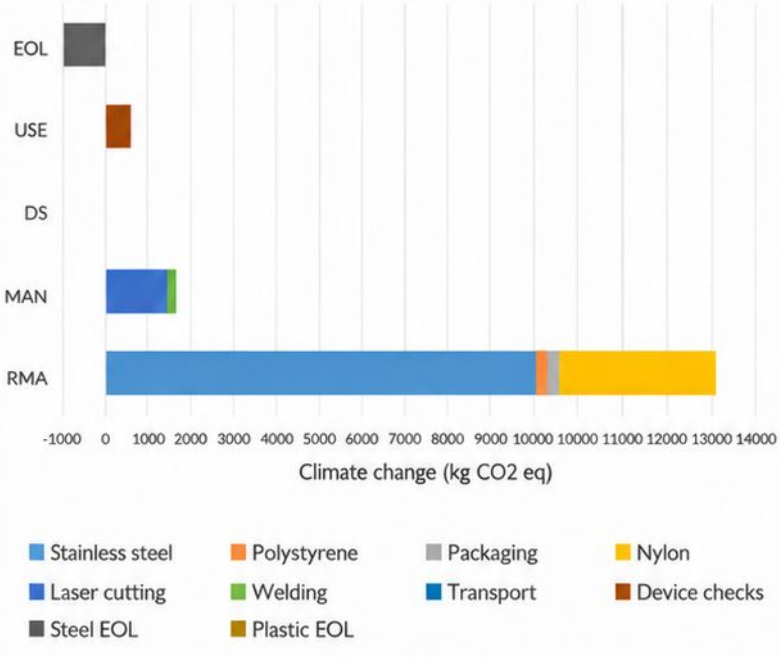
97.4% collection efficiency

Zero external power

Passive operation

Riverbank storage cages

Hotspot assessment



What the graph shows

- Environmental impacts associated with materials, manufacturing and operation.
- Comparison between production impacts and low operational impacts.
- Contribution of recycling to overall performance.

Key Findings

- Most environmental impacts occur during raw material acquisition.
- Stainless steel represents the largest environmental hotspot.
- The technology operates passively and therefore requires very little energy.
- Operational impacts are significantly lower than those of active treatment technologies.
- Recycling of steel at end-of-life helps reduce the overall footprint.

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