Scalable full-cycle marine litter remediation in the Mediterranean: Robotic and participatory solutions

SeaClear2.0

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Co-design Activities for Tackling Marine Litter - Stakeholder Workshop in Marseille, France
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The SeaClear2.0 stakeholder workshops

Identifying site-specific issues and co-designing applicable solutions are essential steps in effectively tackling marine litter. As part of the SeaClear2.0 project, ISOTECH Ltd is implementing its DeCyDe-4 decision support method in a series of participatory workshops with stakeholders in eleven countries around Europe and the Mediterranean (including non-EU member countries) to map site-specific marine litter problems and co-design solutions.

The fourth workshop: Marseille France

The fourth workshop was held in Marseille, France, on 16 September 2025. Organised in collaboration with the SeaClear2.0 partner SubseaTech, within the framework of the SeaClear2.0 system demo in Marseille, the workshop convened 15 invited stakeholders representing public bodies, waste management, industry, and civil society.

Local Insights: Marine Litter Challenges in Marseille

Participants worked collaboratively to identify key challenges that Marseille is facing regarding marine litter. The following challenges were identified:

1. Unique characteristics of the city: Marseille is located near the mouth of the Rhône River. All the waste that enters the river upstream ends up in the sea surrounding the city. Furthermore, the city's unique topography and geomorphology, coupled with the predominant wind, the north-westerly Mistral, contribute to the trapping of waste on beaches and in the Calanques. This is exacerbated by the fact that Marseille is the second most densely populated city in France, after Paris, and is a hub of touristic activity.
2. Mismanagement of waste: a key cause of the mismanagement of waste in the city of Marseille is the behaviour of the population and the lack of environmental sensitisation, which leads to inappropriate waste disposal and littering. The lack of awareness in the HoReCa and commercial sectors regarding waste minimisation, separation at source, proper waste management and recycling also contributes to the mismanagement of waste. As a result, land-based waste from the city is a major contributor to marine litter.
3. Lack of waste management infrastructure: linked to the mismanagement of waste is the fact that there is insufficient waste management infrastructure around the city to allow people to dispose of their waste properly. Infrastructure is mostly available in touristic and affluent areas, with other areas being hugely underserved.
4. Complexity of responsibilities: responsibilities related to waste management are fragmented among the various public bodies, creating 'grey' areas and contributing to

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the mismanagement of waste.

5. Overconsumption of single-use plastics: Despite the single-use plastics directive coming into effect, overconsumption of single-use plastics remains a significant problem. This is closely linked to on-the-go consumption and the tendency to purchase ready meals, instead of cooking at home.
6. Politics: differences among the leading political parties result in disagreements regarding changes in policy and spending regarding key issues, including waste management.
7. Waste on wave breakers: there is a large accumulation of waste on wave breakers caused by the inappropriate disposal of waste from users (i.e. people who go fishing, swimming or sunbathing on the wave breakers). They are not cleaned by the relevant authorities. Furthermore, local environmental associations/CSOs are not allowed to access them to clean them, due to the current health and safety rules.
8. Historical waste at the Marseille Port: historically, people used the Port of the city of Marseille as a dump site for their waste. This has resulted in the accumulation of historical waste in the port.
9. Vandalism: e-scooters and rental bikes are regularly thrown in the water as a result of vandalism.
10. Emerging marine litter items: gas cylinders for nitrous oxide (a recreational inhalant) are increasingly found on beaches around the city of Marseille. These are quite expensive to recycle (~3000 €/tonne).

The workshop participants prioritised two important challenges for deeper discussion and the identification of solutions: (1) the mismanagement of waste; and (2) the overconsumption of plastic waste.

Targeted Solutions for Waste Mismanagement

To address the challenges stemming from the mismanagement of waste, stakeholders proposed the following measures:

- Conduct a state-of-the-art diagnosis of waste distribution, infrastructure, and practices to identify gaps and best practices.
- Develop fit-for-purpose waste management infrastructure across the city, including underserved areas.
- Establish a multi-stakeholder working group with decision-makers, waste managers, and CSOs to ensure participatory decision-making regarding waste management and shared ownership of solutions.
- Optimise the operation of 'déchèteries' (green points) for commercial waste to make them more efficient, accessible, and user-friendly.

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Solutions to Address the Overconsumption of Single-Use Plastics

In relation to the overconsumption of single-use plastics, the stakeholders proposed the following solutions:

- Implement educational, hands-on programmes at schools to demonstrate and teach about the importance of sustainable lifestyles, including cooking classes to reduce the consumption of ready meals, gardens to grow their own food to reduce the purchase of packaged fruits and vegetables, repair/DIY workshops, and advocating for a mostly vegetarian diet.
- Implement a Deposit Refund System (DRS) to incentivise the collection of single-use beverage containers.
- Incentivise the direct sales of local produce to consumers. This can be supported by the establishment of 'local money', a local currency that can be used specifically for this purpose.
- Work with HoReCa enterprises to promote the use of reusable take-out food packaging.

Cross-cutting Solutions

Participants stressed that education, awareness-raising, and collaboration across sectors must underpin all solutions to ensure long-term impact..

This workshop in Marseille highlighted the urgency of addressing both land-based and consumption-driven sources of marine litter. By bringing together diverse stakeholders to openly discuss challenges and co-design targeted solutions, the process fostered shared responsibility and a collective vision for change. The insights and proposals developed here will not only support local action but will also feed into the broader SeaClear2.0 policy analysis and the White Paper to be published in 2026, ensuring that Marseille's experience contributes to shaping effective, scalable strategies for tackling marine litter across Europe and the Mediterranea

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