Green Inland Ports

Good Practices

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Floating bins waste management

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1.1 Description

A floating litter bin is a waste container designed for marinas, ports, and yacht clubs (Seabin Foundation, n.d.). The floating bins create a suction on the water surface, trapping floating waste, such as micro- and macro plastics and microfibers. In addition, the floating bins can scoop off organic material such as algae and leaves. The collection bag of a floating bin, such as a Seabin, can catch about 20 kilogrammes of waste before it needs to be emptied (Niedersachsen Ports, n.d.-b).

Floating bins work best in inland areas, where wind and currents naturally direct debris into a centralised spot. Although they can be placed almost anywhere, they are particularly efficient where waste is collected by external forces such as wind and tides.

Three things are needed for a floating bin to function properly:

- An immersion depth of at least 1.25 metres;
- A controllable environment and good access for emptying;
- A pontoon and a power source, which are needed for installation.

Once installed on a pontoon, the bin moves with the tide, drawing in surface water via a submersible pump and filtering out waste through a natural-fiber collection bag before returning the water to the environment. (Niedersachsen Ports, n.d.-a, Seabin Project, n.d.). Figure 1 shows an example of a floating bin from the Seabin Project.

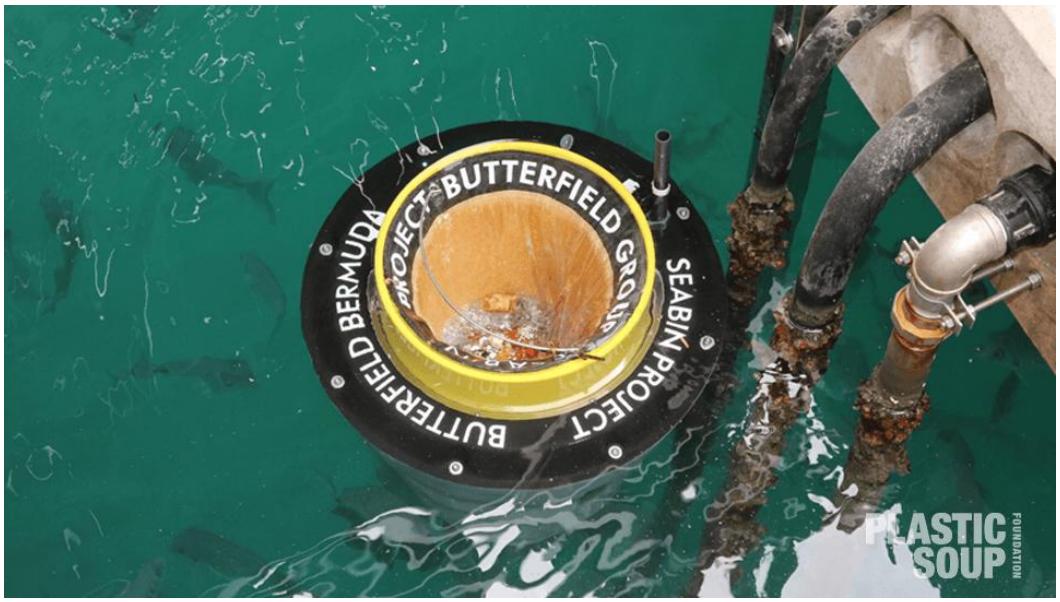

Figure 1 - Example of a floating bin from the Seabin Project (Plastic Soup Foundation, n.d.)

1.2 Aim

The specific goal of a floating bin is to remove floating waste from the water. Seabin, the inventor of the floating sea debris separators (floating bins), mentions that their aim is to contribute to ocean conservation and fight plastic waste.

1.3 Ports that use floating bins

- **Niedersachsen Ports** have an agreement with Seabin company.
- **The Port of Brussels** has a waste barrier that stops the spread of floating (plastic) waste and is studying other available options and techniques to tackle this problem.
- **HAROPA Port** uses self-propelled bins that collect waste in the port basin (HAROPA Port, 2023).
- **The Port of Seville** has an agreement with the municipal cleaning company, which carries out periodic clean-ups by boat to remove floating waste from the port basin.

1.4 Stakeholders

- **Port authority**: Floating bins can contribute to a waste management programme. It is the decision of the port authority whether to implement it or not. According to Poralu Marine, (n.d.), a Seabin V5 costs about EUR 5,000-, excluding maintenance costs.
- **Waste collection company**: Port authorities have an agreement with a (local) waste collection company. When the floating bins are emptied, the waste is collected. The waste collection company can also collect it periodically.
- **Manufacturers of floating bins**: Floating bins, such as those developed by Seabin, are designed to remove floating waste from port waters Polluters (such as ships or other visitors of the port): Educational signs can be placed around the floating bins, which may lead to less pollution over time.

1.5 Voluntary or mandatory

This good practice is voluntary. Under the Convention on the Collection, Deposit, and Reception of waste generated during navigation on the Rhine and other inland waterways (CDNI), there are certain minimal requirements that inland ports must meet with regard to waste reception facilities. Within such a waste management system, floating waste bins can be useful in reducing floating (plastic) waste in port waters.

1.6 Realised/potential impact

The Niedersachsen Ports have a total of four floating bins from Seabin in operation. With these four floating bins, they have already collected 2,300 kg waste in the past two years.

1.7 Possible obstacles

- A floating bin is relatively expensive. The Seabins used in Niedersachsen Ports cost about EUR 5,000 each (Poralu Marine, n.d.). In addition, floating bins consume energy to create suction and

staff have to maintain the floating bins. The level of pollution in ports from maritime waste depends on wind and currents, which cause waste accumulation. Efficiency potential varies by port location.

- According to the second survey conducted within the Green Inland Port (GRIP) Project among inland ports and other relevant parties, not many parties have implemented this good practice. Therefore, it is challenging to comment on the difficulty of implementation. Additionally, there is minimal interest among those who have not yet adopted it, as it scores 3.1 out of 10 on the interest scale (1 being low interest, 10 being high interest).

1.8 Key learnings

- Floating bins can be both preventive and serve as a clean-up purpose. The floating bins collect floating (plastic) waste from the port basin. Within the Seabin Project, educational signs are also placed around the floating bins to explain more about the project and the dangers of plastic waste in the water.
- Floating bins achieve the greatest effect in parts of the port area where floating waste is collected by external forces such as tides and wind.

1.9 Sources

HAROPA Port. 2023. Collecting, processing and managing marine waste, https://www.haropaport.com/en/collecting-processing-and-managing-marine-waste.

Niedersachsen Ports, n.d.-a. Der Seabin, Oldenburg.

Niedersachsen Ports, n.d.-b. Seabin, Oldenburg.

Plastic Soup Foundation. n.d. Solutions, https://www.plasticsoupfoundation.org/en/solutions/seabin/.

Poralu Marine, n.d. Seabin Mobile Accessory, Port.

Seabin Foundation, n.d. Education, Research and Innovation for Cleaner Oceans, Mullumbimby:

Seabin Project. n.d. Seabin Project, https://www.google.nl/url?sa=i&url=https%3A%2F%2Fmedium.com%2Fdesign-thinking-for-social-innovation%2Fseabin-creates-a-new-way-of-bringing-planetary-impact-to-anyones-reach-in-order-to-improve-the-e72eb108a9b6&psig=AOvVaw20L0u6k91GQVf39ZhUxWmA&ust=1720770698604000&source=images&cd=vfe&opi=89978449&ved=0CBQQjhxqFwoTCOCngcbAnocDFQAAAAAdAAAAABAI.