

# SHEET 4

## RETENTION AND REMOVAL OF SARGASSUM AT SEA



### Retention in coastal waters

In coastal waters of the Gulf of Mexico, the French Antilles, St. Lucia or the Dominican Republic (i.e. waters between the coast and two kilometers offshore), booms are the most common method. There are two types of booms- blocking booms and deflecting booms. Both kinds are made of nets and floats moored in the seabed with the help of professional divers who are aware of the sensitive areas and those suited for the fixations. Several companies manufacture these booms successfully tested in the field: Algeanova, Difope, le Floch Dépollution, Elastec, Cubisystème etc... The use of these barriers must comply with the environmental standards of the country concerned. In Mexico for example, the standards are very strict: the booms cannot be made of lead or polyester, the substrates must be neutral in polluting elements and the anchoring zones are defined by a competent authority linked to the Ministry of Sustainable Development. Mexico's authorities also recommend the installation of containing barriers, while in France these installations are not subject to any particular provision.

Hampering the Sargassum at sea, **the blocking booms** spare bays, beaches and harbors of massive strandings. The retention capacity of these booms can vary according to their length, some of them measure up to 1300m, such as the one between Vauclin and François, in Martinique. The seaweeds contained by the booms must be collected, otherwise they will deteriorate at sea potentially having a strong environmental impact (this phenomenon is still inadequately studied in fact); and also running the risk of their weight to rupturing the containment skirts.

**The deflecting booms** are placed in a position that redirects the Sargassum where collection will be easier. They require a good understanding of local configuration (currentology, swell conditions, wind) and a better control of environmental conditions to avoid redirecting the Sargassum slicks to a sensitive area, such as unprotected beaches.





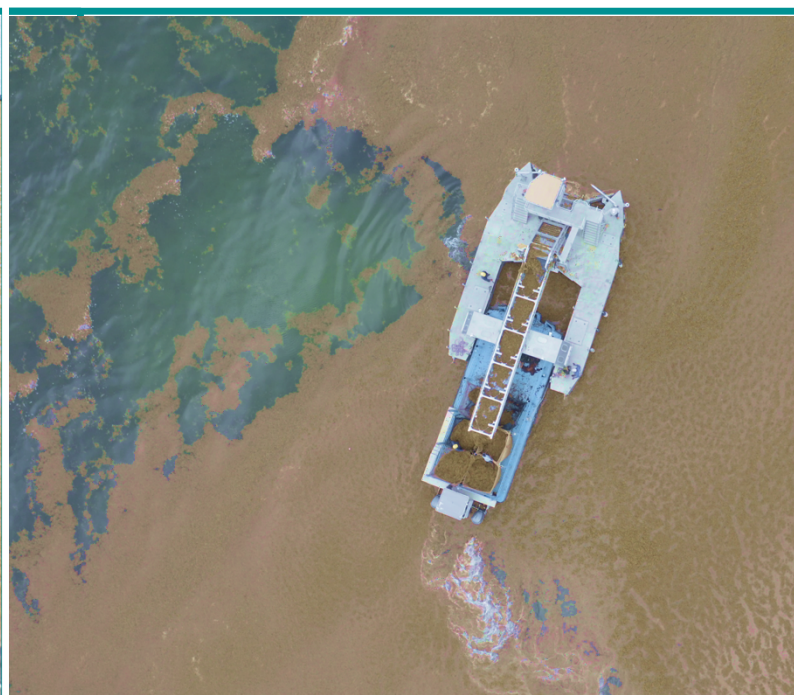
### Collection methods in coastal waters

These two kinds of booms certainly have many advantages, however several drawbacks are to be noted. A study carried out by ADEME (the French Environment and Energy Management Agency), in collaboration with the Guadeloupe Department of the Environment, Development and Housing (DEAL), and the Prefecture of Martinique, draws a "panorama of dams and collecting devices". It reminds us that because of their tricky moorings, their constant and expensive maintenance, and their low sturdiness in case of important natural events (storms, cyclones, strong swells etc...), these infrastructures are in fact only temporary solutions to a recurrent problem.

The deflecting booms do not allow the retention of Sargassum, whereas the blocking booms must necessarily be associated with its collection. Here again, there are various possible methods.

Most of the time, barges are used to rake up the sargassum contained by the blocking booms (see picture). These narrow, shallow-draft boats can navigate in shallow areas and are highly maneuverable. Depending on their size, their storage capacity varies, and their collection efficiency can range from 8 to 140 cubic meters (or nearly 35 tons). The largest collection barges are generally used to recover Sargassum contained in the dams, while the smallest can collect the Sargassum slicks located near the beaches. Amphibious tool carriers can also be used to push the seaweed towards collection points; they complement other collection methods.

Some localities such as Guadeloupe and Martinique have small fleets of "harvester", barges more or less narrow and therefore movable, equipped with a conveyor belt system, to collect large amounts of seaweeds in calm waters. While they harvest the seaweed a tipper barge can be paired for storage.



In the Dutch islands of Bonaire, St. Eustatius and Saba (south of Puerto Rico), the recovery of Sargassum at sea is recommended, but only allowed with barges with collection mat and storage capacity. Also, a series of measures (experienced diverse expertise, verification of the fauna in the area etc...) must be applied before the mechanical recovery of Sargassum at sea, to oversee and preserve the marine life linked to Sargassum patches.

### How to install these barriers?

In the French Antilles and most of the Caribbean, many different actors can initiate the boom installations, such as local associations, town halls, communities, hotels, etc. Project owners must also obtain an authorization to occupy public maritime space. Most states contribute more or less to boom installation projects financing on adapted sites that were studied upstream, except for the Dominican Republic where hotels operate via service providers, via the recovery of Sargassum and with beach clean-ups. In Mexico, the State is increasingly investing in collection initiatives, but most of the activity is still managed by hotels. In France, these actions are part of the communal safeguard plans, itself part of the 2018 Sargassum plan.

Building a dam requires the presence of local professional divers with precise understanding of the environment where it might be installed. Indeed, some areas are more delicate than others, some seabeds may be rich in fragile fauna or flora species.

Finally, satellite data sharing enables us to predict massive Sargassum events locations, and therefore to place the deviating or blocking booms in the most effective way possible.



### SOURCES

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Agency for the Environment and Energy Management (ADEME)  
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Marine Marie-Charlotte, Company referent for the Waste and Circular Economy Unit, Sargassum seaweed collection and recovery engineer  
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Dutch Caribbean Nature Alliance - Prevention and clean-up of sargassum  
[www.gob.mx](http://www.gob.mx)