



Sargassum Influx Update for **POLICY MAKERS**

Since 2011, Caribbean coastlines have been subject to unprecedented, massive, episodic inundations of floating sargassum seaweed. In the decade since sargassum influxes to the Caribbean emerged as a major issue, this has become a dynamic area of research. We have learned a great deal, but there remains much that is still unknown or poorly understood.

Background information on sargassum - such as what it is, the species that are involved, and where it generally comes from - is effectively covered in other publications such as these briefs:



Photo credit: Hayden Billingsy

Floating sargassum itself is not harmful. In fact, it is beneficial at sea, providing habitat for many marine species. It is the mass stranding of sargassum on coastlines that has significant negative impacts.



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This policy brief is based on the 2021 update to the UNEP-CEP white paper on Sargassum influxes to the Caribbean region.

The brief outlines the causes and effects of sargassum influxes, presents a sargassum strategy framework, highlights the complexity in Caribbean transboundary coordination and outlines important sargassum stakeholders. It also offers guidelines for incorporating forecasting into policy and planning, Potential, Limitations, and Risks of sargassum blue growth, and outlines the enabling environment for sustainable sargassum blue growth.

KEY MESSAGE:

Following the science: to support policy and decision making, scientific research can provide objective information on important issues, such as causes and effects, possible scenarios that may transpire, and probabilities of occurrence. Often when an issue is new, **objective** information is incomplete or inconclusive. Decisions made and policies set are inherently **subjective**, relying on judgement to balance risk and reward when there is no clear answer.

Other tools and information sources

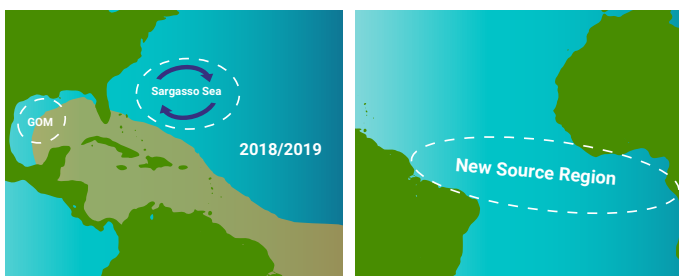
- [UNEP-CEP 2021 Sargassum white paper](#)
- [UNEP-CEP SPAW RAC Sargassum online forum](#)
- SargNet Listserve: [join here](#)
- [Sargassum hub](#)
- [UWI-CERMES website](#)
- [Sargassum Podcast](#)

Causes and Effects of Sargassum Influxes

By now, the effect or impacts of sargassum influxes to the Caribbean dating back to 2011 are well-known, and effectively documented in various places including the 2021 white paper and the briefs linked herein. Key economic sectors like tourism and fisheries are severely impacted and are often the focus of impact discussion, sometimes overshadowing impacts on public health and quality of life for residents and local beach users, maritime transport, as well as nearshore ecosystems.

At this stage, causes are less well understood than effects. This issue does not stem from a single or simple cause, but rather from a complex combination of causal factors. Understanding of this is critical to efforts in mitigation, and forecasting influxes that would support planning adaptive response.

A key step in understanding the causes was identifying the new consolidation region that is the source of these influxes, which was confirmed in 2013 through remote sensing.



With this knowledge, we can visualise an outline causal pathway:



There are likely numerous factors involved in the persistence and proliferation of sargassum in the new consolidation region. These are likely linked to the

broader underlying issues of land-based nutrient pollution and climate change.

Given the existence of the new consolidation region, scientists generally agree that sargassum influxes may be expected to continue as part of the 'new normal' until or unless mitigation is possible. In other words, the issue is unlikely to resolve itself without intervention.

Sargassum Strategy Framework

The 2021 white paper presents a strategy framework for responding that categorises and describes the available interventions and response strategies, outlines their monitoring needs, and identifies links to the Blue Economy. Consider using this structure to organise management plans.

Most interventions currently focus on adaptation to intermittent sargassum influxes as a hazard, because direct mitigation of the issue is currently not possible. This in turn is because the root causes (transfer to and persistence in the new consolidation region) are not well enough understood to target them.

The white paper provides an extended discussion on each type of strategy and an Appendix that lists projects and initiatives.

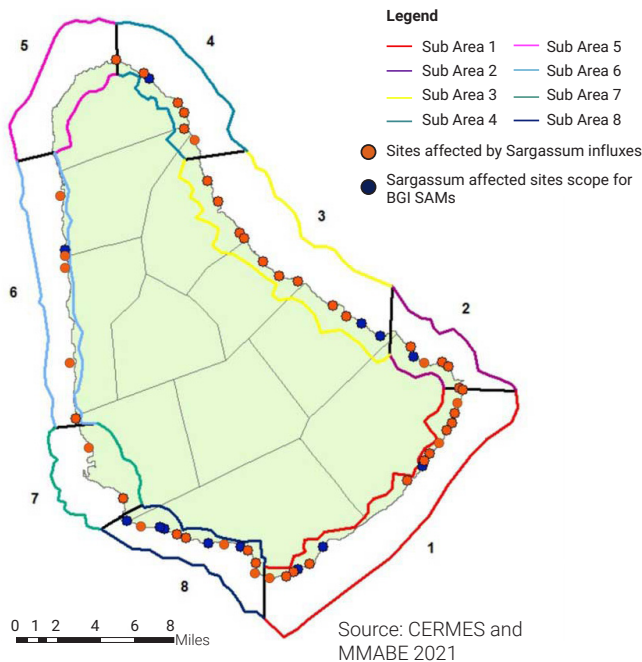
Complexity in Caribbean Transboundary Coordination

The Wider Caribbean Region (WCR) is geopolitically diverse and complex. There are numerous political entities, vast differences in size, and varying levels of development. The region contains numerous small island developing states (SIDS), with the well-known associated sustainable development challenges. While there are many commonalities and valid generalisations, the region is less homogenous and more variable than many realise. This has implications for both how sargassum impacts countries and territories of the region, as well as the suitability of responses. A blanket approach for the region is not suitable, as approaches and technologies that work well in one location may not be transferrable to another.

Critical analysis of the specific situation in each territory is required to identify and prioritise specific impacts, determine the appropriate course of action, and efficiently allocate resources. Hazard exposure and vulnerability mapping is recommended. The simple example below is a starting point, to which additional spatial information - tourism, fisheries, communities and more - can be overlaid to assess what type of impacts occur where.

Caribbean regional ocean governance arrangements are complex, reflecting the overall complexity of the region.

Having taken an in depth look at governance of natural resources at the regional level, the CLME+ Project recommended a Strategic Action Programme with an Interim Coordination Mechanism. Policymakers are encouraged to leverage SAP-ICM for effective regional coordination on the sargassum issue.



Sargassum Stakeholder Mapping

Since the impacts of sargassum influxes are multi-sectoral, there is correspondingly a wide range of stakeholders. Stakeholder dynamics, interrelationships, and interests are often complex, reflecting the complexity of the region.

A regional stakeholder map developed by UNEP-CEP is structured around three broad categories:

- Stakeholders responding to sargassum influxes as a hazard
- Stakeholders responding to sargassum as an opportunity
- Stakeholders with broad interests in sargassum as hazard and/or opportunity.

Each of these broad categories is sub-divided into specific interest like tourism, fisheries etc., and stakeholder organisations for each category/interest are identified across the public, private, and civil society/voluntary sectors.

This regional stakeholder map can be used for regional coordination and projects, and the map framework can be used to populate stakeholder maps at the subregional, national or subnational level as needed.

Incorporating Available Forecasting into Policy and Planning

Sargassum forecasting tools provide the best available predictions of sargassum outlook based on input data and models. These can be useful for planning interventions and management, such as mobilization of barriers or collection/ harvesting operations or advising stakeholders.

Find a sargassum forecast for your location:

- Region-wide: [SaWS](#)
- Region-wide: [NOAA AOML Experimental SIR](#)
- Region-wide: [SAMTool](#)
- Region-wide: [SATsum](#)
- Eastern Caribbean: [UWI-CERMES](#)
- French Caribbean: [MeteoFrance](#)

Think of sargassum forecasts as similar to weather forecasts. Forecasters are providing information based on models and probability estimates – the forecast is not a guarantee.

Currently, sargassum forecasts are limited by several factors that researchers are working to resolve. You can help forecasting improve by implementing a consistent monitoring programme in your territory that quantifies the stranded sargassum and making that information available to forecast developers linked above.

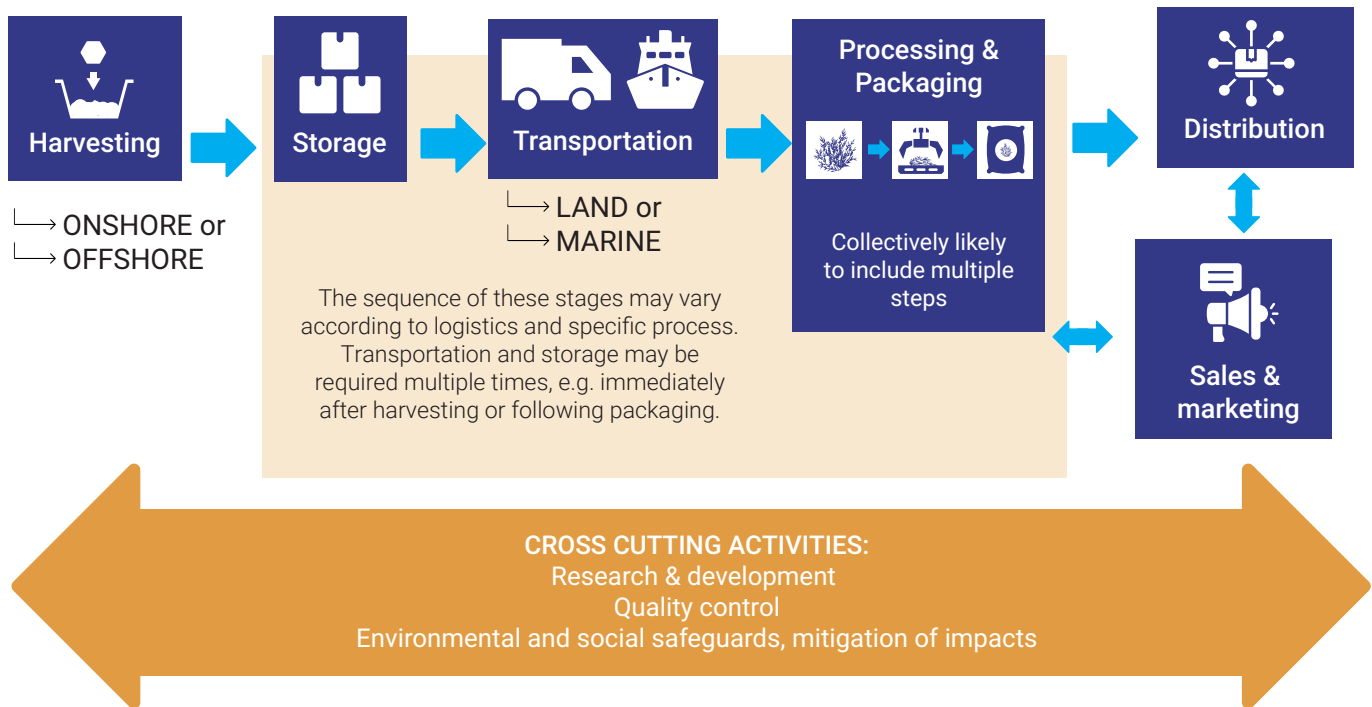
Sargassum Blue Growth: Potential, Limitations, and Risks

It is posited that adaptation may come through converting the hazard to an benefit. There is potential for commoditisation of sargassum through variety of uses including agriculture e.g. as a soil amendment, bioenergy, bioplastics, bioremediation and purification, construction e.g. [Sargablock](#) and cosmetics among others (see [FAO-CERMES Uses Guide](#)).

Efforts are underway to assess feasibility and marketability of sargassum uses and products, extending even to nascent product development. While promising, several factors remain uncertain or unresolved on both the supply and demand sides:

- When extracting sargassum as a raw material, its availability is highly variable and difficult to predict
- Not all applications are the same, e.g. some processes require fresh sargassum, others dry; some uses achieve a better yield with certain types of sargassum; salt content is also a factor
- Sargassum may be unsafe for some applications because of toxins/ contaminants such as heavy metals – more research is needed – see current information here.

Sargassum value chain schematic



- Small scale operations requiring low volumes of sargassum are unlikely to make a significant dent in the massive volumes of influxes. Large-scale operations, if feasible, offer better chances of using up the sargassum as a co-benefit, but may themselves result in negative impacts such as displacement of residents or small businesses.
- There is a need to map out the full process for sargassum uses as shown below. Costs for each stage must be factored in. Logistics are likely to vary significantly across territories, and may be especially complex/ costly in small islands
- Potential environmental and social impacts for each stage must also be considered, e.g. harvesting from beaches may damage the beach ecosystem, or there may be environmental impacts of the storage or the production process such as strong odours or potential pollution.

While efforts to explore the potential opportunity are underway, the reality is that sargassum inundations remain more of a hazard than a benefit until key issues are resolved.

The potential commoditisation of sargassum also raises issues around ownership and extraction rights to the 'resource.' Policymakers are encouraged to consider how sargassum fits into existing natural resource ownership and rights legislation and policy in your territory, and pursue updates as needed.

Enabling Environment for Sustainable Sargassum Blue Growth

The Caribbean is in the process of exploring the Blue Economy concept and developing regional and national strategies. Sargassum opportunities and responses should be integrated into Blue Economy strategic frameworks and plans. The sargassum strategy framework on page 5 identifies links between sargassum responses and Blue Economy sectors.

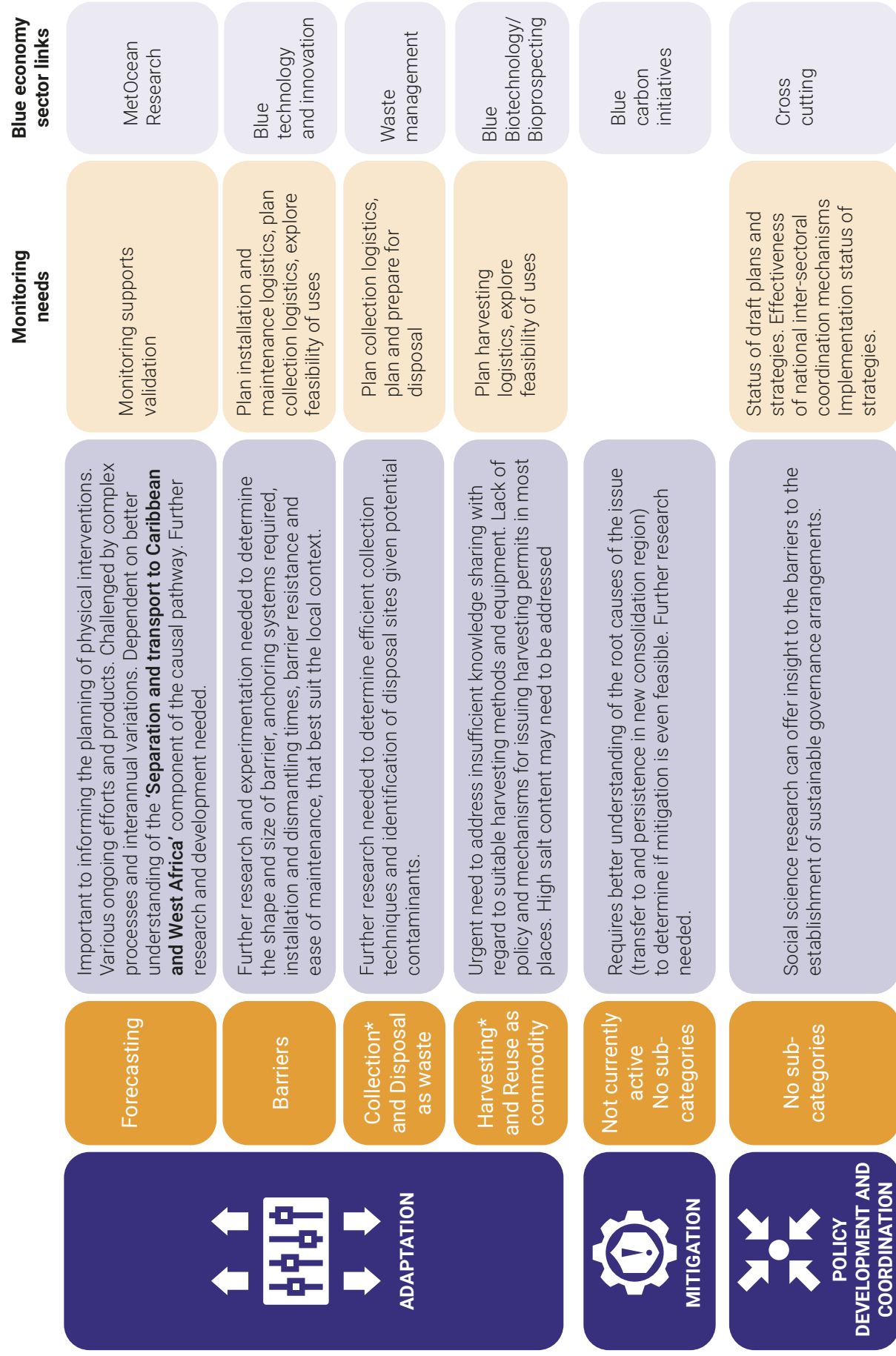
Compiling spatially explicit information (mapping) on where sargassum lands, parties and assets affected, and resources available (as outlined above) is recommended. This, along with clear policies and regulations, contributes to the enabling environment by reducing uncertainty for investors.

Protocols and standards are needed to prevent environmental damage and ensure the safety of products for consumptive or contact uses.

Governments may wish to consider Public-Private Partnerships (PPPs) and/or Blended Finance models to encourage private sector involvement in sargassum exploitation.

Territories are advised to develop policy that encourages investment in sargassum exploitation in such a way as to mitigate the negative impacts, while putting safeguards in place against risks such as environmental impacts, conflict around resource rights, or displacement of people or small businesses.

Strategy framework



* Note that 'collection' and 'harvesting' here overlap significantly, the difference is in the next step, whether disposal or putting the material to use.