

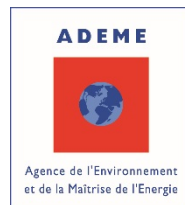
XIV^e CONFÉRENCE DE COOPÉRATION RÉGIONALE ANTILLES-GUYANE

MARTINIQUE – DU 03 AU 05 OCTOBRE 2018



LA CCRAG ELARGIT SON HORIZON

State of the art and valorisation perspectives for the Sargassum seaweed



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Calls for projects

2015 : First call for expressions of interest in Martinique, followed by a call for proposals in Guadeloupe, both launched by the French Agency for the Environment and Energy Management

Goals : definition of collection methods adapted to different environments, improvement of the phenomenon forecast and definition of valorisation techniques.

Eligible projects: studies, pilot operations, implementation of prototypes, t

Grantees

Martinique : 29 projects submitted, 10 selected

Ø 8 completed

Guadeloupe : 37 projects submitted, 14 selected

Ø 5 completed

Current management of collected Sargassum

Storage is for the moment the main outlet:

- **90% of collected Sargassum** is spread on dedicated land in Guadeloupe and Martinique.
- The **land** are selected with a focus on **minimum environmental impact** (distance from streams ...) and the **distance from residential areas**.
- **Transport** accounts for **1/3 of Sargassum collection costs**: storage solutions close to collection sites should be a priority.
- **Site contamination monitoring** will be carried out to study the environmental impact of this storage.





Valorisation channels

Sargassum valorisation remains rare because treatment is an important cost. Only high added value valorisation would support the collection.

- Composting: Sargassum enriches compost with trace elements and activates the process.

In **Martinique** co-composting with green and agricultural waste on the *Holdex* platform (more than 3,000 t processed this year). More anecdotally on *Sita Verde's* platform in Guadeloupe (Le Moule).

- Biostimulant

New channels are being studied by private projects of developers. Some are supported under the call for projects of the French Agency for the Environment and Energy Management, others are at the project stage.

- In Martinique and Guadeloupe
 - Biomaterials: Bioplastic (*LeFloch depollution* – study in progress)
 - Energy valorisation: pyrolysis, anaerobic digestion
 - Pharmaceuticals: molecules acting on oxidative stress and immunostimulation
- On other islands:
 - Biomaterials
 - Used in cob in construction (Puerto Rico)
 - Sargassum compression to make containers (Dominican Republic)



Constraints

Acceptance in a process

An unsettled resource

- Non viability of an economic model based only on Sargassum
- Must therefore integrate a channel based on more varied contributions
- Alternative : making the seaweed inert would preserve it and spread out its use over time, depending on the arrival.

A perfectible collection

- Need for pretreatment before valuation
- Algae collected on the beach with sand or even garbage
- Need to have fresh seaweed for some of the valorisation techniques
- Reduce algae volume by compaction / dewatering to optimize transport and storage.



Current limits of valorisation

Agricultural spreading	<p>Direct spreading of Sargassum for agriculture use is not recommended:</p> <ul style="list-style-type: none">– no fertilising effect was measured,– the presence of salts a risk of soil salinization,– the heavy metals present in Sargassum (arsenic in particular), as well as Chlordecone that they can fix constitute a risk of soil contamination.
Nutrition	<p>The presence of arsenic at high concentrations excludes any use for animal or human nutrition.</p>
Methanisation	<p>The presence of salts and sulfates at high concentrations strongly inhibits the biological process of anaerobic digestion.</p>
Composting	<p>The proportion of algae that can be incorporated into a standardized compost is limited by its high concentration of arsenic.</p>
Combustion	<p>The presence of arsenic requires strict control of emitted gases.</p>
Bioplastics	<p>The bioplastics produced are darker and slightly more brittle than conventional plastic.</p>



Perspectives

Impacts

- Further study of Sargassum contamination (ongoing, ECOSAR project).
- Monitoring of the storage sites (potential soil contamination).

Pretreatment

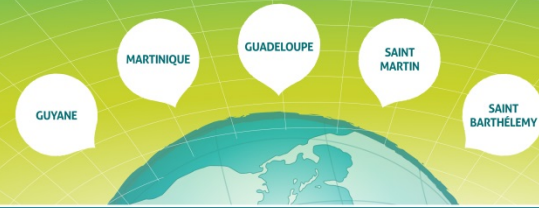
- Washing: removal of sand and salt to facilitate valorisation, study of specific processes to extract arsenic from the seaweed.
- Dehydration / compaction: reducing volumes for easier transportation, stabilising Sargassum to stop the production of H₂S and facilitate the storage.

Valorisation

- Pyrolysis / energy valorisation: washing and treatment of process water (arsenic, salts ...), drying of algae, control of arsenic concentrations of emitted gases.
- Chemistry of the algae: identification of bio-stimulant molecules already
 - ü Increase of the capacity of proven valorisation units (extension of the Holdex composting platform Martinique)
 - ü Possible support via the call for projects "Research, Development, Innovation".

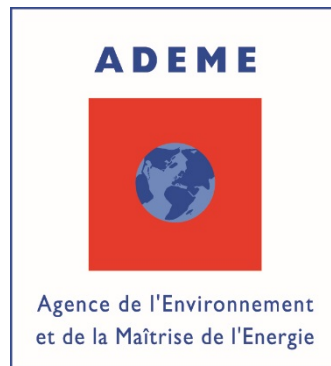
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Thank you for your attention



*Dimanche 16 septembre 2018
Lagon de Saint-François Guadeloupe*