Puerto Aventuras
COLONOS

PROPOSED SOLUTION FOR SARGASSUM MANAGEMENT

Why are we here?

PREVENT THIS FROM HAPPENING AGAIN!

*Photos Bahía Fátima 2025

PREVENT THIS FROM HAPPENING AGAIN!

*Photos Bahía Fátima 2025

BACKGROUND

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- We created a Sargassum Committee between neighbors and the team of Colonos.
- We studied past efforts
- We consulted with experts from academia and international and national organizations
- We attended regional-sargassum specific events and forums
- We had meetings with the Secretary of the Navy (Rear Admiral Topiltzin Tlacaletl Flores Jaramillo)
- We launched a formal and structured process to receive proposals

RFP PROCESS

- September 25, 2025: OPEN INVITATION to participate in the proposal process
- We approached various potential suppliers with the capacity to provide us with the necessary materials, reaching a number of 8 companies
- October 3 We created a communication structure via Odoo stipulating clear dates for the processes
- October 3-10 we had one on one meetings with the different suppliers to learn about their proposals
- October 15 first reception of proposals for review – WE RECEIVED 7 formal proposals
- October 15-30: Q&A sessions
- 5-6 November: Meetings with finalists and detailed analysis of their proposals

DISCLAIMERS

- None of us are experts in Sargassum management or barrier installation. We are neighbors/residents just like you!
- There is NO Perfect Barrier that we know of that solves 100% of the problem
- We are making decisions based on the knowledge we have acquired from dedicating many hours to understanding the phenomenon and its possible solutions, gathering information from expert suppliers in the field from whom we have learned the critical points of a solution such as the one we present today.
- We contacted the cases of SUCCESS and FAILURE in the area, and we have talked with those responsible for those projects. (Puerto Morelos // Akumal)
- We have NO other interest than the conviction that if we get organized and act FAST we can have a positive solution by 2026.
- In this first stage we are ONLY contemplating Bahia Fátima, Yacht Club and the Kantenah Lagoon. (We have as an additional quot the Caleta Sur and the bay of Dreams/Catalonia)

RFP: THE PROCESS

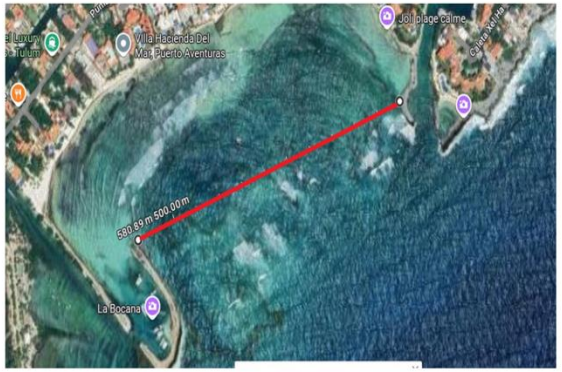
1st Round of Analysis of the Sargassum Committee

- The first relevant decisions during the analysis. (the ones we learned the most from are from the same suppliers)
- 100% of the proposals insist that Sargassum must not reach land!
- Sargassum Deflecting Barrier vs Sargassum Collection and Operation
- Decided on a Deflector Barrier vs collecting sargassum for Bahía Fátima

Pasos: Desde recolección en mar hasta extracción y disposición en tierra

Options for Fatima Bay analyzed:

Barriers with sargassum extraction operation



Look for sargassum to accumulate in an area and then extract

Extraction systems
And pumping analyzed

Reasons for discarding the first participants

- Company's experience and local footprint; some work with local partners (intermediaries)
- Type of solution focused on the operation of sargassum on land or in the barrier would be extremely costly and an operational nightmare
- Type of barrier and layout of the barrier
- Barrier guarantees, type of supply and availability, type of materials
- Types of fastening systems (anchor vs concrete slabs)
- Type of guarantees as a company (Surety Bonds/Insurance/Permits/etc)
- Operation and Maintenance Contract
- Payment costs and flexibility
- References in the area
- Formality and presentation of your proposals both in your deliveries and in live presentations.

Two finalist layouts and committee recommendation: Deflecting Barrier

DESMI
Make life flow

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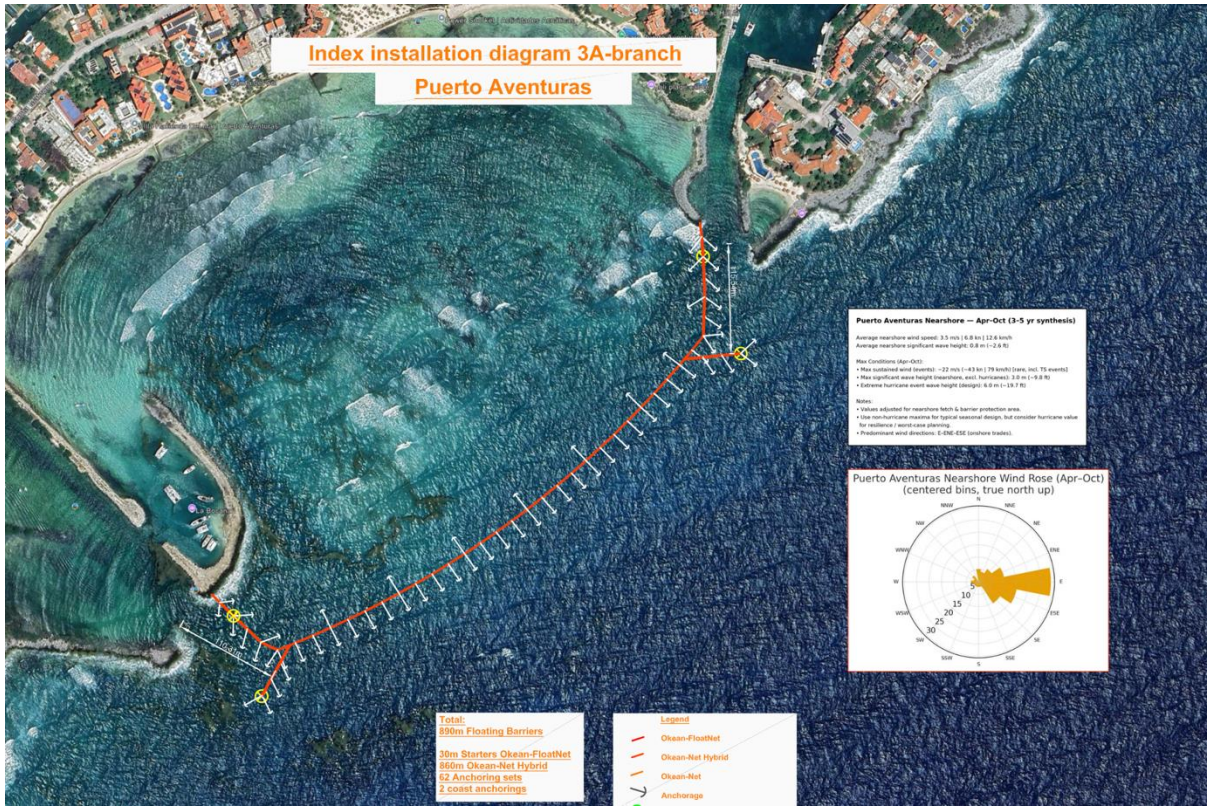


DESMI
Make life flow

CARACTERISTICAS

DESMI
Make life flow

Flotadores:

Flotadores DESMI Tipo Globo: Resistencia y Eco-Amigables

Tecnología probada:
- Flotadores sólidos (no inflables) rellenos de espuma de alta densidad.
- Soportan olas >2m, golpes e incluso perforaciones (ej: hélices de embarcaciones).

Ventajas ambientales:
- 0% poliestireno → Cumple normativas ecológicas.
- Mantenimiento fácil: Reemplazo rápido con solo 6 pernos inoxidables.

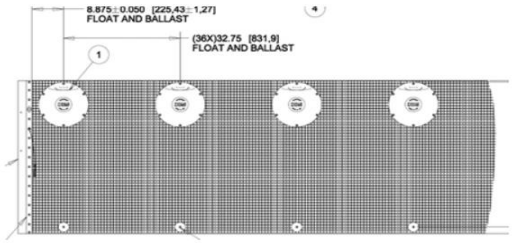
Fiabilidad:
Usados en las DESMI MESH BOOM y HD para mayor flotabilidad.

Flotadores Esféricos DESMI: Máximo Rendimiento, Mínimo Mantenimiento.

Seguimiento perfecto de olas:
- Diseño hidrodinámico que reduce resistencia al viento/oleaje, reduciendo el número de anclajes.
- Flexibilidad de la malla náutica → Operación estable incluso con olas altas.

Bajo impacto visual:
- Permiten el paso de luz → Integración discreta en entornos turísticos.

Eficiencia comprobada:
Parte clave del sistema DESMI MESH BOOM para playas limpias.



La malla naútica está fabricada con filamentos de poliéster recubiertos de un material especial en color negro, altamente resistente a los rayos UV, agua salada, resistencia superior a las 6 Toneladas, completamente libre de componentes tóxicos que puedan dañar el medio ambiente.

Su diseño uniforme y tonalidad oscura le otorgan un perfil discreto, minimizando el impacto visual en entornos marinos. Gracias a su superficie lisa y a la distribución equilibrada de sus filamentos tratados, el flujo de agua circula con mayor eficiencia, reduciendo significativamente la acumulación de organismos marinos.

Esta característica no solo optimiza su rendimiento, sino que también disminuye la frecuencia de mantenimiento requerido, haciendo de esta barrera una solución tan ecológica como práctica.

OKEANIS
FLOATING BARRIERS

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Especificaciones técnicas de la barrera Okean-Hybrid Net		
Tipo	a)Okean-Hybrid Net HD 18/120/2000 PA	b)Okean-Hybrid Net Ultra HD 18/120/2000 UHMWPE
Altura total	200 cm	200 cm
Francobordo	50 cm	50 cm
Calado	150 cm	150 cm
Peso	9.2 Kg/m	7.7 Kg/m
Carga de rotura por tracción (solo carga lineal total de la cuerda)	25,000 Kgf	27,000 Knf
Flotabilidad	22.5 lt/m	22.5 lt/m
Longitud de secciones	15m - 20m -25m-30m	15m - 20m -25m-30m
Partes del sistema		
	Malla	18 mm
	Composición del hilo	a)Polyamide or b)UHMWPE
	Resistencia a la rotura del hilo	a)150 Kp and b)160 Kp
	Resistencia media a la rotura por tracción	a)150 Kp / 18 mm Longitudinal 5,000 Kp/m, Transverse 9,000 Kp /m b)160 Kp / 18mm Longitudinal 5,300 Kp/m, Transverse 9,500 Kp /m
Soporte de flotación	Base de soporte y resistencia de los productos Okeanis	Instalado cada 100 cm, Flotabilidad 22.5 lt/m Flotadores de HDPE estabilizados UV y doblemente reforzados
Elementos de tensión/Lastres	Parte superior	Elemento de tensión: cabo flexible sintético estabilizado UV, 12 cordones de fibras externas de poliéster HT. Resistencia a la rotura por tracción 9,000 Kgf Color: naranja
	Parte intermedia	Elemento de tensión: cabo flexible sintético estabilizado UV, resistencia a la rotura por tracción 9,000 Kgf. Lastre adicional de estabilización media para la versión UHMWPE 1,2 Kg/m
	Parte inferior / Lastre de estabilización	Cadena galvanizada en caliente de 2 Kg/m, cosida con cabo adicional de 9,000 Kgf y conectada con grilletes AISI 316 de grado marino o cabo de plomo con peso 2.0 Kg/m
	Hilo de costura	Partes superior e intermedia Costura de tipo artesanal. Todas las costuras se realizan con hilo UHMWPE de alta durabilidad ≈700 Kp
Elementos de conexión	Grilletes, tornillería y herrajes	Diseño exclusivo que evita conectores intermedios y transfiere la tensión directamente a los elementos principales. Grilletes, tornillería,tuercas y herrajes de unión en acero inoxidable AISI 316 de grado marino

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Presentation INMAR CARIBE

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Okeanis Sargassum Barriers
Puerto Aventuras Condominium

Innovative, Efficient and Durable Engineering

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OKEANIS
FLOATING BARRIERS

Okeanis: Leading Engineering in Floating Barriers

More than 20 years of experience in the development of solutions for coastal protection against solid floating waste.

Engineering in floating barrier systems considered one of the most effective in the global market.

Projects executed in multiple countries, including Greece, Mexico, Dominican Republic, Gibraltar, Portugal, Dubai, Saudi Arabia, Angola, Albania, and Qatar.

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BEACH, MARINA & GOLF RESORT

Inmar Caribe

- Inmar Caribe is a 100% Mexican company and a pioneer in the development and implementation of sargassum barrier systems.
- It has over 6 years of experience in the design of specialized projects.
- It focuses on the supply and installation of Okeanis barrier systems.
- Its main task is the protection of the Caribbean coasts against the sargassum invasion.

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Efficiency in Redirection and Containment

- Up to **99% reduction of sargassum** in the protected area (based on weather conditions).
- **Hydrodynamic design:** Controls the diversion of sargassum while allowing the natural flow of water and marine life.
- **Significant reduction** in cleaning costs compared to manual or reactive methods.

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Resistance to Extreme Climate Conditions

- Operates under extreme tropical climate wind conditions, up to 70 km/h, waves up to 2.5 meters, proven in real environments.
- State-of-the-art materials: Resistant to corrosive marine environments and UV rays for optimal long-term performance.

- Built-in flexibility and elasticity to absorb impacts from waves and debris without compromising integrity.
- Its design allows it to remain in the water under extreme weather conditions, removing partial segments or the entire barrier depending on the intensity of the weather conditions.

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Long-Term Durability

- 8 to 10-year service life, ensuring a profitable investment.
- Uniform distribution of impact and tension forces to prevent premature damage and wear.
- Vertical stability in waves and tides, maintaining optimal position without drifting.

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Our Proposal for Puerto Aventuras

Installation: Okeanis floating barriers, adapted to the tropical conditions of the Mexican Caribbean.

Areas to be protected: Bahía de Fátima (870 m), Caleta Club de Yates (20 m), Caleta Kantenah (50 m).

Responsible: Inmar Caribe, experts in implementing Okeanis barrier systems, operation, and monitoring.

Objective: Protect beaches from massive sargassum by redirecting algae offshore, allowing marine fauna passage.

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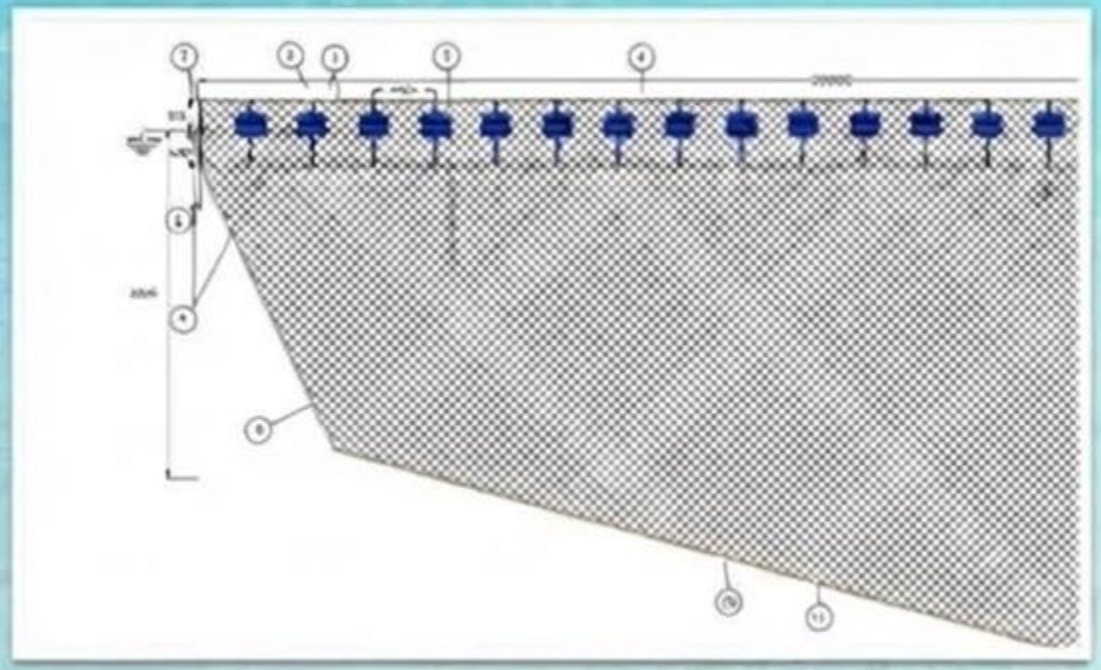
Closures in Caletas



Okean Float

Caleta Kantenah

Caleta Club de Yates

Implementation

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The solution proposed by Inmar Caribe with Okeanis barriers represents a strategic investment in the coastal sustainability of Puerto Aventuras. We recommend moving forward with technical validation and contract signing to guarantee effective protection starting in the first quarter of 2026.

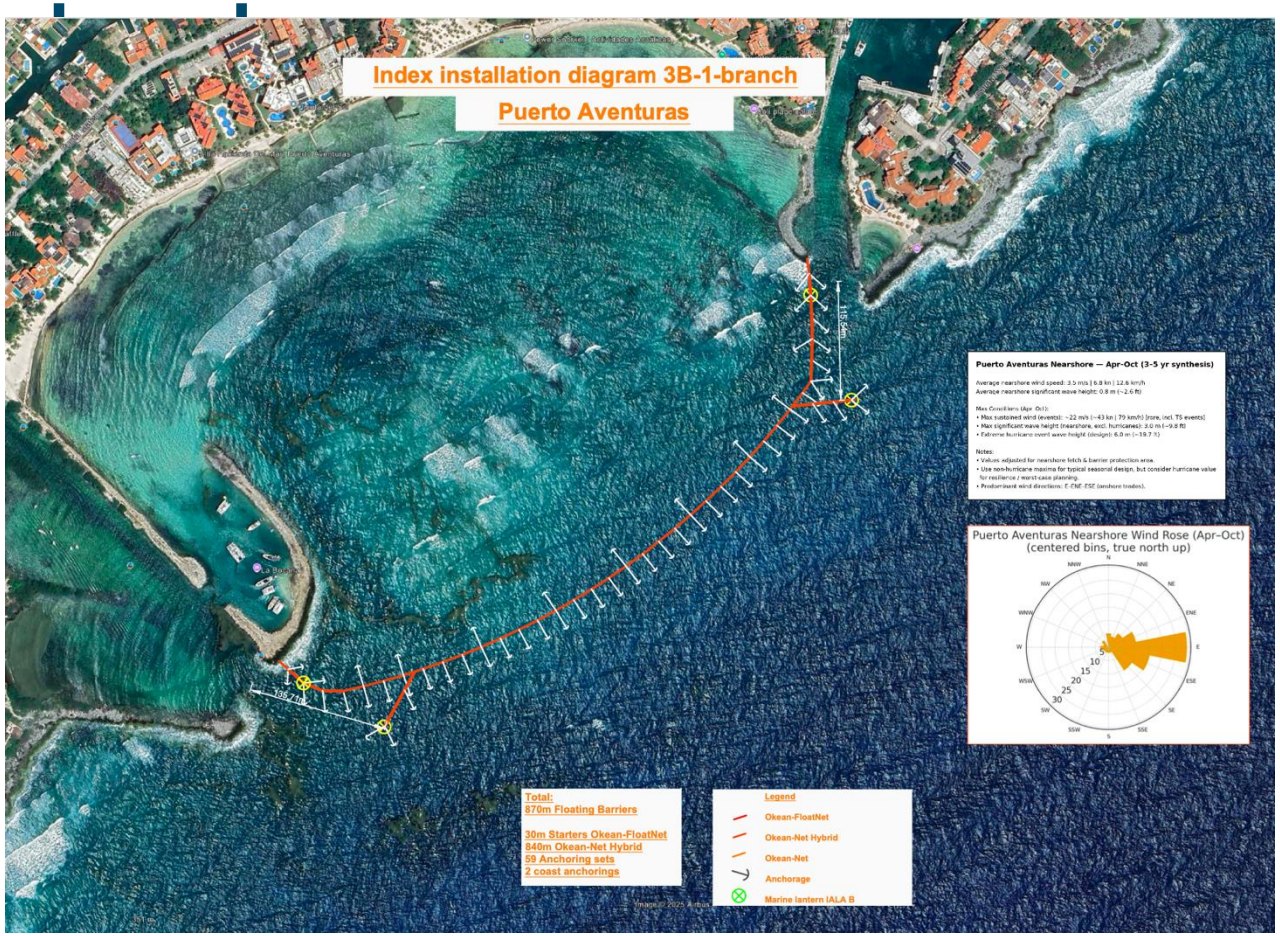
Costs and Execution Plan

Comprehensive plan to be presented at the FEB Assembly

Seek investment approval in:

1) OKEANIS DEFLECTOR BARRIER (INMAR CARIBE)

2) OPERATION AND MAINTENANCE OF THE BARRIER


Index installation diagram 3B-1-branch
Puerto Aventuras
Puerto Aventuras Nearshore — Apr–Oct (3–5 yr synthesis)
Average nearshore wind speed: 3.5 m/s | 6.8 kn | 12.6 km/h
Average nearshore significant wave height: 0.8 m (~2.6 ft)
Max Conditions (Apr–Oct):
• Max sustained wind (events): ~22 m/s (~43 kn | 79 km/h) [rare, incl. TS events]
• Max significant wave height (nearshore, excl. hurricanes): 3.0 m (~9.8 ft)
• Extreme hurricane event wave height (design): 6.0 m (~19.7 ft)
Notes:
• Values adjusted for nearshore fetch & barrier protection area.
• Use non-hurricane maxima for typical seasonal design, but consider hurricane value for resilience / worst-case planning.
• Predominant wind directions: E, ENE, ESE (onshore trades).
Puerto Aventuras Nearshore Wind Rose (Apr–Oct)
(centered bins, true north up)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
5
10
15
20
25
30
115.4m
138.7m
Total:
870m Floating Barriers
30m Starters Okean-FloatNet
840m Okean-Net Hybrid
59 Anchoring sets
2 coast anchorings
Legend
Okean-FloatNet
Okean-Net Hybrid
Okean-Net
Anchorage
Marine lantern IALA B


Legend
Okean-FloatNet
Okean-Net Hybrid
Okean-Net
Anchorage
Marine lantern IALA B
Total:
18-20m Floating Barriers
45m Okean-FloatNet Extended- or
1 Anchoring set
2 coast anchorings


Legend
Okean-FloatNet
Okean-Net Hybrid
Okean-Net
Anchorage
Marine lantern IALA B
Total:
50m Floating Barriers
45m Okean-FloatNet Extended- or
Okean-Hybrid Net
5m Starters
3 Anchoring sets
2 coast anchorings
Index installation diagram 3-A
Puerto Aventuras

Investment and operation and maintenance

Breakdown of investment and operation costs:

Beachfront owners cover 30% of the total investment and operation and the rest of the homeowners cover the remaining 70%. ***(12% of the keys (beachfront) covers 30% of the costs)***

Investment in Okeanis Barrier installed in PA:

$6.6 million pesos of investment including VAT. (approximately 360k USD)

Monthly Barrier Operation

$193 thousand pesos including VAT.

Average cost per key and per property

	By Key VAT incl	Average house 5 keys
• Initial investment in USD		
• Beachfront Property	$122 USD **one time fee!**	$ 610 USD
• Property without beachfront	$ 39 USD **one time fee!**	$ 195 USD
• Monthly Operation and Maintenance		
• Beachfront Property	$ 68 MXN monthly	$ 338 MXN
• Non beachfront Property	$ 22 MXN monthly	$ 108 MXN

Current Sargassum Operating Costs

- During 2025
  - Colonos designated for Sargassum collection: $420,000 MXN
  - Beachfront Condos spent between: $200,000-$800,000 MXN
  - Hotels spent $250,000 – $500,000 MXN
  - Independent homes spent $50,000- $100,000 MXN
  - Etc...

Approx total expenditure on collection/logistics **alone in 2025** =

1.5 million pesos – 2 million pesos

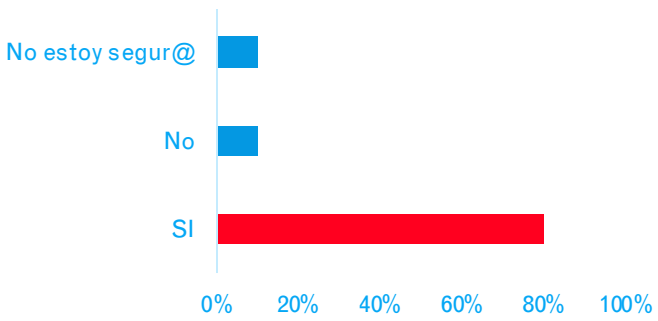
Total cost of the barrier – $6.6MDP VAT incl. (useful life of the barrier 7 years) so approximately $940,000 MXN per year for the whole project

*Approximate data with information from some condominium managers

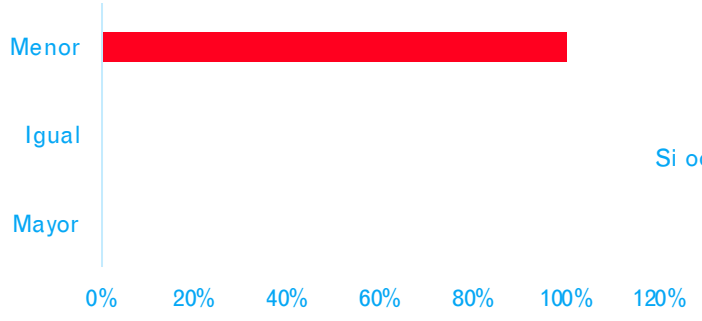
PA Brokers Survey

4 Quick survey asked to brokers / owners of rental Real Estate in PA. (via surveys in WhatsApp groups)

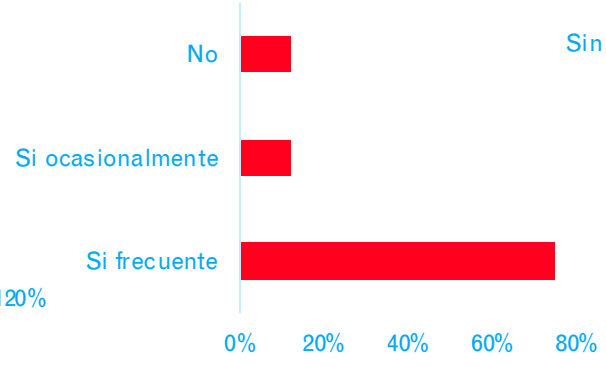
Do you think that the presence of sargassum this year affected the demand for vacation rentals in your area?



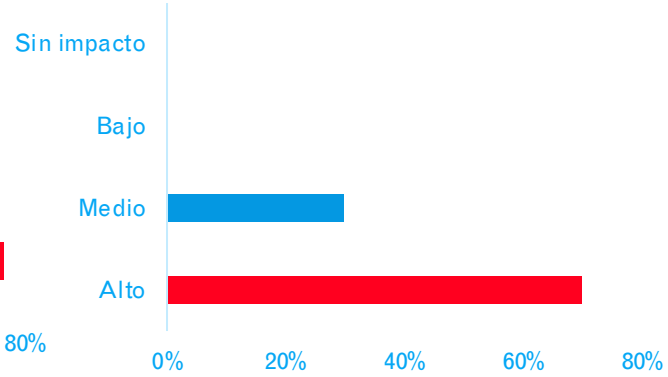
Compared to the previous year, how would you describe the occupancy level during the sargassum season?



Did you receive comments or cancellations from guests especially related to sargassum?



Overall, how much do you think sargassum impacted your vacation rental income this year?



What impact $$$ did it have on the entire community?

*Survey conducted with Brokers/owners of rental properties in Puerto Aventuras during November 2025

Other "hidden" costs

- Cost of people getting sick?
- Discredit/Decrease in property value?
- Handling Sargassum in a correct and ecological way?
- Damage to local flora and fauna?
- Disappearance of beaches due to taking sand at the time of sargassum collection?

Our Goal

PUERTO AVENTURAS 2026:

SARGASSUM-FREE COMMUNITY

CERTIFICADO DE CALIDAD

COMUNIDAD LIBRE DE SARGAZO

SARGASSUM FREE COMMUNITY

What do we need?

- Your support!!

How?

- We need to share this effort with the entire community!
- We need to vote in favor of this initiative in February.
- We can't wait until the February Assembly due to the timelines. We need to come up with the 30% deposit if we want a solution by 2026!

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THANK YOU