

THE SARGASSUM RESILIENCE BOND

Financing the Caribbean Blue Bio-Economy

\$150M
FUND SIZE



THE MARKET FAILURE

The Great Atlantic Sargassum Belt (GASB) - an **8,850km seaweed belt** is a structural economic threat to the Caribbean's most vital industry. Hyper-bloom events have accelerated since 2011 in both frequency and severity, creating a chronic, worsening crisis with no private-sector solution:

\$3.5B

WHY CAPITAL MARKETS HAVEN'T SOLVED THIS

- 1. FREE RIDER EFFECT:** Without a sovereign coordination, no infrastructure gets built: A Punta Cana resort spending \$1.5M/yr on beach clearing has no incentive to intercept seaweed drifting to a competitor's beach.
- 2. MIDSTREAM INFRASTRUCTURE VOLUME RISKS:** Erratic feedstock makes biorefineries un-bankable: a plant designed for 500t/day goes bankrupt if only 50 arrive.
- 3. MISPRICED SOVEREIGN RISK:** Tourism accounts for 15-50% of GDP. A persistent influx acts like a slow-motion hurricane, eroding sovereign creditworthiness. Not intervening is the higher-risk strategy. b

11.6%

GDP Contraction during influx events

\$0 ROI

Current reactive beach clean-up

The Vicious Cycle: Bulldoze beaches at \$0.8-1.5M/km/yr → \$0 revenue → fiscal deficit widens → credit downgrades → borrowing costs rise → less capital for prevention → next influx hits harder. **Biomass contains extractable compounds worth \$1,700-2,800/dry ton - rotting on beaches or being landfilled.**

THE FINANCIAL INNOVATION

Core Thesis: Intercept sargassum offshore, process it into saleable commodities, funded by blue bond repaid by the very tourism revenue it protects. **The SRB breaks three market failures simultaneously: free-riding solved by sovereign levy, parametric insurance wraps feedstock volatility, and reactive cleanup becomes proactive infrastructure that strengthens sovereign credit.**

1. PROTECT

Offshore interception shields \$15B+ Caribbean tourism GDP before beach contamination occurs. Hypothecated tourism levy creates sovereign-backed anchor cashflow.

2. PRODUCE

Modular biorefineries convert intercepted biomass into alginate (\$5-8K/t), bio stimulants (\$2-5/L), and biochar. Kelp competitors pay to grow and harvest; our feedstock arrives free.

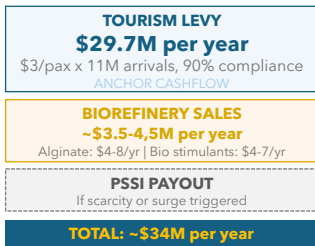
3. DE-RISK

An IDB Partial Credit Guarantee (PCG) elevates the bond to BBB+/A-, enabling institutional participation. A blended capital stack (Senior 60% / Mezz 25% / Junior first-loss 15%) matches each risk layer to the investor class best suited to bear it.

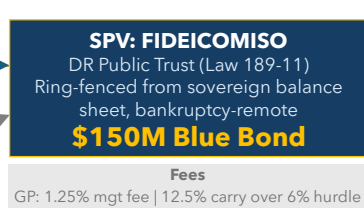
Parametric Supply Stability Insurance (PSSI) - wrapping feedstock volatility in a multi-sensor parametric trigger (AFAI + Sentinel-2 + HYCOM), converting erratic biology into a fixed, annuity-like cashflow. Premium: 12-15% gross, 8-10% effective after Junior tranche subsidy absorption.

FLOW OF FUNDS

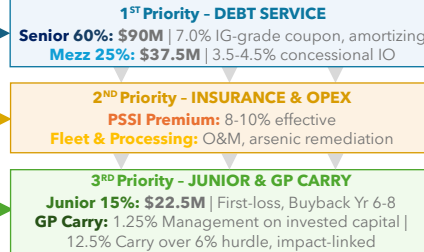
REVENUE SOURCES



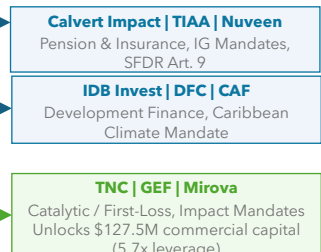
VEHICLE



PAYMENT WATERFALL



INVESTORS



STRUCTURAL PROTECTIONS

IDB PCG: Backstops senior debt service, lifts DR bond to IG-grade | **DSRA:** 6-month debt service reserve, held offshore | **PSSI:** Satellite-triggered payout | Swiss Re, Munich Re

Tourism Levy alone provides >1.83x DSCR - avoided municipal cleanup cost (\$5-10M) excluded from base case as additional cushion.

CAPITAL STACK & TARGET INVESTORS

VEHICLE Notes issued under New York law, on-lent to Fideicomiso Sargazo, bankruptcy-remote.	TENOR / GRACE 12 years (2yr construction + 10yr ops) Interest-only Yr 1-4 Principal Yr 5-12
COUPON 7.0% fixed IDB PCG elevates Sub-IG → BBB+/A-	PCG COST ~80bps guarantee + 50bps standby = ~\$1.17M/yr on \$90M
NET IRR* Blended fund: 6.1%, (arithmetic consequence of catalytic structure, not a target)	GP FEES 1.25% mgt fee on invested capital 12.5% carried interest over 6% hurdle, linked to verified impact outcomes. Fee tiered by tranche - Junior absorbs management fee.
OPERATOR SPV > Tier-1 JV/O&M co-manufacturer (binding pre-close)	TAX CONFOTUR 10-yr stat exemption (Law 158-01)

*Each tranche priced to mandate:

Tranche	Size	Target Investors	Mandate Fit	Return
Senior 60%	\$90M	Calvert Impact, TIAA, Nuveen	TIAA \$6B+ sustainable portfolio; SFDR Art. 9 mandates. 7.0% IG coupon, amortizing; PCG lifts DR sovereign (8.5%) to BBB+. DSCR ≥ 1.62x, clears IG-only constraint.	7%
Mezz 25%	\$37.5M	IDB Invest, DFC, CAF	IDB runs Sargassum Innovation Quest; DFC Caribbean climate mandate; CAF issued own €100M blue bond. 4.0% concessional IO + bullet from \$171.8M pre-bullet (sinking fund 4.6-5.1x cover).	3.5 - 4.5%
Junior 15%	\$22.5M	TNC, GEF, Mirova, SOF	Mirova led Carbonwave Series A (sargassum-specific). First-loss + impact: 200km coast, 15K ha restored, 30K+ tCO ₂ e/yr. 0-3% return. Unlocks \$127.5M commercial capital (5.7x leverage).	First-loss

REVENUE MODEL & UNIT ECONOMICS

SOURCE	MECHANISM	ANNUAL
Tourism Levy	\$3/pax x 11M x 90% sovereign-backed starts Yr C1	\$29.7M
Alginate	5K dt x 80kg/dt x \$8/kg · 55% seasonal utilisation	\$1.6M
Bio stimulants	Residual biomass → liquid fertiliser, \$2/L wholesale	\$1.9M
Carbon Credits	\$0 base case, Biochar removal \$150 - 177/tCO ₂ e = Bull	\$0M
TOTAL	Levy = 80% of revenue (sovereign anchor)	~\$34M

CONVERSION CHAIN: 50K wet tons → 5,000 dry tons → 80kg/dt alginate (25th percentile) → \$8/kg (20% kelp discount). **COST:** \$652/dt fully loaded incl. arsenic remediation (62→0.8mg/kg). **GROSS MARGIN:** 15-30%. Excluded upside: pharmaceutical grade alginate (\$25+/kg), Verra Scope 17 removal credits (\$30-80/tCO₂e).

DSCR: Levy-only DSCR 1.83x at Yr 5. Trough Senior DSCR 1.62x (base). Levy alone covers 4.2x during construction IO. **Senior DS declines as principal amortizes:** DS drops from \$17.6M (Yr 5) to \$12.0M (Yr 12). **Levy starts Yr C1 - IDC fully covered;** \$15.7M surplus seeds DSRA.

SCENARIO ANALYSIS

SCENARIOS	LEVY	OFFTAKE	PSSI / CARBON	BLENDED IRR	DSCR
BEAR	\$3/pax, 80%	-30%	Scarcity payout	0-1%	1.21x
BASE	\$3/pax, 90%	100%	No trigger	6.1%	1.62x
BULL	\$3/pax	+40%	Surge + removal \$	5-7%	1.76x

USE OF PROCEEDS

