

DECISION BRIEFING · DB2

# Making Sense of the Blue Economy: *What's Worth Your Time?*

Ocean exposure is already inside most large product companies' cost structures. Few have mapped where. This brief locates where the exposure enters your balance sheet, why standard investment approaches miss it, and what the companies managing it well have done differently.

— OVERVIEW

# Key Findings

The companies winning with ocean exposure are treating it as decision infrastructure — a way to understand optionality as incumbent supply chains face accelerating regulatory and environmental pressure.

<p>ANNUAL OCEAN SERVICES</p> <p><b>\$2.5T+</b></p> <p>Total annual value of ocean-based industries, including conventional activity not yet sustainable</p>	<p>OCEAN 14 CAPITAL FUND VEHICLE</p> <p><b>\$151M+</b></p> <p>Fund commitments from Nestle Purina, IKEA, and Inca Group as limited partners</p>	<p>C6 ENERGY SERIES B</p> <p><b>\$25M</b></p> <p>BASF and Petronas as corporate investors in tropical seaweed mechanization, Indonesia</p>	<p>JDA EXCLUSIVITY WINDOW</p> <p><b>3–5 yrs</b></p> <p>Recommended for first-mover CPG partners seeking North American supply access</p>
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**01 Ocean risk is already in your cost structure through three separate channels.**  
Supply chains, regulations, and pollution litigation.

**02 Corporate investment in the blue economy is pointed at the wrong target.**  
Large CPG investments in ocean funds are ESG-motivated, not supply-chain-motivated. Procurement teams never see the benefit.

**03 Most companies cannot answer the exposure question regulators are now asking.**  
Biodiversity Beyond National Jurisdiction (BBNJ), Corporate Sustainability Reporting Directive (CSRD), and Taskforce on Nature-related Financial Disclosures (TNFD) are increasing expectations around traceability, provenance, and nature-related dependencies, though their legal force and scope differ.

## — SECTION 01

# Three levels of financial exposure

Ocean exposure does not arrive as a labelled line item. It enters through three levels, each requiring a different function to catch before it becomes a cost event.

<p><b>LEVEL 01</b></p> <h2>Supply Chain</h2> <p>DIRECT OPERATIONAL RISK</p> <hr/> <p>Sourcing volatility from ocean-dependent inputs. Immediate impact on COGS and margin.</p>	<p><b>LEVEL 02</b></p> <h2>Regulatory</h2> <p>ENVIRONMENTAL COMPLIANCE</p> <hr/> <p>Deadlines already inside the product roadmap. PFAS, CSRD, and biodiversity reporting.</p>	<p><b>LEVEL 03</b></p> <h2>Litigation</h2> <p>LIABILITY ACCUMULATION</p> <hr/> <p>Pollution and nature-loss liability accumulating ahead of legal provisions.</p>
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*"These are risks that are not just emerging. They are already embedded in cost structures and supply chains. The companies and sectors that are starting to think in this financial materiality lens around supply chain, regulatory exposure, reputational risk, and liabilities are the ones that are best prepared for the changes that are coming."*

**Martin Koehring**

HEAD OF THE CENTRE FOR PRIVATE FINANCE IN DEVELOPMENT, ODI GLOBAL

— SECTION 02

# Why capital keeps missing the mark

Blue economy investment is not short of capital. It is short of capital pointed at the right problem. Understanding the disconnect separates resilience from ESG noise.

PRIVATE EQUITY & VC	THE GAP	THE CORRECTION
<p><b>Wrong return profile at corporate scale</b></p> <ul style="list-style-type: none"> <li>• Ocean companies at corporate scale do not generate VC multiples</li> <li>• Most ocean companies are regionally strong, not globally scaled</li> <li>• PE exits before technology reaches a manufacturing line</li> </ul>	<p><b>Neither type protects your supply chain</b></p> <ul style="list-style-type: none"> <li>• Corporate investment is ESG-motivated; procurement teams never benefit</li> <li>• Regulatory exposure accumulates while capital goes to sustainability messaging</li> <li>• Supplier access windows close while pilots are under review</li> </ul>	<p><b>Investment structured around a specific dependency</b></p> <ul style="list-style-type: none"> <li>• Identify the input with the highest disruption cost</li> <li>• Quantify the two-year cost of losing access to that input</li> <li>• Build a financial instrument around protecting it</li> </ul>

*"The specialty ingredients that you're getting from the open ocean...will have a decent corporate return and satisfy a bunch of corporate mandates, such as the ESG benefits. They will not meet a venture capital level type return. They will be regionally strong but they will not be nationally or globally scaled. Therefore, it's not a financial investor game. It is definitely a corporate investor game because all of the attributes deliver value to the CPG player."*

**Adam de Sola Pool**  
INDEPENDENT INVESTOR

— SECTION 03

# Ocean exposure by sector

The exposure channel, the regulatory clock, and the first action differ by sector.

## CONSUMER PACKAGED GOODS (CPG)

 <p><b>BEAUTY &amp; PERSONAL CARE</b> Marine-derived actives with no origin documentation</p>	 <p><b>SUSTAINABLE PACKAGING</b> Ocean packaging materials adding system complexity, not solving it</p>	 <p><b>NUTRACEUTICALS &amp; SUPPLEMENTS</b> Marine-origin ingredients with no traceability back to sourcing context</p>
<p>Marine cosmetic bioactives can trigger BBNJ notification requirements when sourced beyond national jurisdiction. Most cosmetics procurement records do not verify origin at that level.</p> <p><b>FIRST STRATEGIC ACTION</b> Audit marine-derived actives for BBNJ origin compliance.</p>	<p>Bio-based ocean packaging materials remain too early to solve the immediate issue. The sharper risk is PFAS phase-out and microplastics rules, not marine material adoption.</p> <p><b>FIRST STRATEGIC ACTION</b> Map PFAS and microplastics exposure by SKU deadline.</p>	<p>Omega-3s, marine collagen, and bioactive peptides are high-value ingredients with ocean-origin supply chains that rarely carry ecological origin. BBNJ and TNFD both create reporting obligations.</p> <p><b>FIRST STRATEGIC ACTION</b> Build origin metadata for top three marine-origin ingredients.</p>

## FOOD & BEVERAGE

 <p><b>SEAFOOD &amp; AQUACULTURE</b> Fisheries depletion driving input price volatility</p>	 <p><b>ALTERNATIVE INGREDIENTS</b> Seaweed, algal protein: hype versus structural readiness</p>	 <p><b>NATURE-BASED SOLUTIONS</b> Mangrove and shrimp co-investment models outperforming ESG-only approaches</p>
<p>Retailers sourcing from depleting stocks are absorbing price volatility they have not yet translated into supply chain risk assessments. Sustainable aquaculture and certified wild-catch are the structurally sound near-term alternatives.</p> <p><b>FIRST STRATEGIC ACTION</b> Stress-test top seafood supplier against a two-year depletion scenario.</p>	<p>Seaweed in animal feed, algal proteins, and marine bioactives are attracting significant investment. Many are not yet structurally ready to replace conventional ingredients at manufacturing scale.</p> <p><b>FIRST STRATEGIC ACTION</b> Apply the Three Warnings framework before greenlighting any marine-ingredient pilot.</p>	<p>In Indonesia, investment in mangrove restoration combined with shrimp farming has improved hatchery yields, reduced pollution around farms, and strengthened ecosystem health simultaneously.</p> <p><b>FIRST STRATEGIC ACTION</b> Map where nature-based investment directly reduces input cost.</p>

— SECTION 03 — CONTINUED

# Natural Resources

The exposure channel for natural resource companies centres on system-level constraints, regulatory risk, and the gap between investment narrative and commercial evidence.

NATURAL RESOURCES

 <p><b>OFFSHORE ENERGY</b></p> <p>System integration bottlenecks, not technology, limiting scale</p>	 <p><b>MARINE CRITICAL MINERALS</b></p> <p>Regulatory and reputational risk likely outweighs near-term strategic value</p>	 <p><b>MARINE CARBON REMOVAL</b></p> <p>High interest, unclear pathway to scale: mispriced in both directions</p>
<p>Offshore wind is technically mature and investable, but faces system-level constraints: installation vessel capacity, grid integration, and supply chain for critical minerals.</p> <div data-bbox="177 1115 555 1256"> <p><b>FIRST STRATEGIC ACTION</b></p> <p>Assess grid infrastructure timeline risk for offshore energy exposure.</p> </div>	<p>The resource base is not yet well characterised, and ESG exposure, reputation risk, and litigation risk are all significant factors that go beyond the headline supply opportunity.</p> <div data-bbox="608 1115 986 1294"> <p><b>FIRST STRATEGIC ACTION</b></p> <p>Apply a financial materiality lens before adding deep-sea mining to supply strategy.</p> </div>	<p>Marine carbon removal attracts strong interest but often lacks a clear pathway to scalability. Capital is chasing perceived growth potential in an area where the underlying economics are still forming.</p> <div data-bbox="1038 1151 1417 1330"> <p><b>FIRST STRATEGIC ACTION</b></p> <p>Separate mCDR investment thesis from coastal restoration before committing capital.</p> </div>

## — SECTION 04

# The compliance question you cannot answer

BBNJ, CSRD, and TNFD are increasing expectations around traceability, provenance, and nature-related dependencies, though their legal force and scope differ. Understanding which applies to your business is the first step toward compliance preparation.

## LAYER 01 · BBNJ

## BBNJ Agreement

BIODIVERSITY BEYOND  
NATIONAL JURISDICTION

• JANUARY 2026 · IN  
FORCE

Binding global law for marine genetic resources. If your origin coordinates are beyond national jurisdiction, notification is now a legal mandate. Most procurement data is currently blind to this coordinate.

## LAYER 02 · TNFD

## TNFD Framework

TASKFORCE ON NATURE-  
RELATED FINANCIAL  
DISCLOSURES

• 2025-2026 · ADOPTION

Investor expectation for nature-related financial risk. Identifying coastal and deep-sea vulnerabilities is now a standard requirement for private capital and valuation.

## LAYER 03 · CSRD

## CSRD Disclosure

CORPORATE SUSTAINABILITY  
REPORTING DIRECTIVE

• JANUARY 2023 · IN  
FORCE

EU nature-reporting. Requires detailed supply chain mapping of biodiversity dependencies several tiers back. Climate-reporting is no longer the ceiling; it is the floor.

*"Greater clarity around access, benefit-sharing and provenance can help reduce uncertainty for companies using marine genetic resources, but this remains an evolving regulatory area and should not be treated as fully settled."*

**Martin Koehring**

HEAD OF THE CENTRE FOR PRIVATE FINANCE IN DEVELOPMENT, ODI GLOBAL

## — SECTION 05

## When risk reaches the balance sheet

Pattern: identify the supply chain dependency, calculate disruption cost, build a financial instrument.

COMPANY	DEPENDENCY	RISK	INSTRUMENT	OUTCOME
Nestlé · Ocean 14 Capital	Pet food volumes	Input disruption cost	Equity Fund Investment	<b>SUPPLY RESILIENCE</b> Upstream infrastructure protected to secure future raw material costs.
Thai Union · Blue Bonds	Global Fisheries	Cost of ecosystem loss	Blue Bond Issuance	<b>CAPITAL ALIGNMENT</b> Borrowing costs directly tied to the health of the primary resource base.
Cargill · Supply chain co-investment	Seaweed supply chains	Continuity failure	Upstream Co-investment	<b>SYSTEM SECURITY</b> Downstream continuity ensured through direct upstream system intervention.

*"Every company has a material interest in supporting the systems that support their business because those are downside risks... all companies that have supply chain exposure to nature, which as we have produced in 2020, you know, 50% of all GDP is strongly or heavily linked to nature, then those companies ought to be making those sort of cargo level investments."*

**Ronald Tardiff**

HEAD OF OCEAN INNOVATION, WORLD ECONOMIC FORUM

## — BOTTOM LINE

# What to do now

## THE BOTTOM LINE

## Ocean exposure *does not wait.*

The companies that map their ocean exposure first face compliance with fewer surprises, manage supply chain disruption before it becomes a cost event, and build the documentation frameworks that regulators are now requiring. The first move is an exposure audit, not an investment decision.

## IMMEDIATE ACTION

Map ocean inputs across your top ten suppliers.  
Document sourcing context sufficient for BBNJ and CSRD review.

## THIS YEAR

Build a financial instrument around the input with the highest disruption cost. That structure becomes the template for managing the exposure systematically.

## — CONTRIBUTORS

# Authors & contributing experts

## — DECISION BRIEF AUTHORS

<p><b>Daniel Morales, PhD</b> Technical Director CPG</p> <hr/> <p>Leads consumer packaged goods practice. PhD in Chemical Engineering from NC State University. Has led over 100 projects spanning innovation strategy, product and process development, sustainability, and technology trends across the CPG industry.</p>	<p><b>Garreth Wheaton, PhD</b> Senior PA F&amp;B and CPG</p> <hr/> <p>PhD in Chemical and Biomolecular Engineering from NC State University. Specializes in packaging innovation and sustainability across food and beverage and consumer goods verticals.</p>	<p><b>Gareth Armanious, PhD</b> Technical Director F&amp;B</p> <hr/> <p>Built and leads the F&amp;B team. Expertise spans food, beverage, and life sciences, rooted in a research background in membrane protein biochemistry and prior coordination roles in oncology research.</p>	<p><b>Christian Salles</b> Technical Director NR&amp;E</p> <hr/> <p>Technical Director for Energy Strategy with over 20 years of experience managing complex assets. Expert in secondary recovery implementation, infrastructure debottlenecking, and industrial project de-risking globally.</p>
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**CONTRIBUTING EXPERTS**

## Martin Koehring

Head of the Centre for Private Finance in Development, ODI Global

Martin Koehring is Head of the Centre for Private Finance in Development at ODI Global, a think tank focused on sustainable development policy and finance. He previously led blue finance work at UNEP FI and spent several years at The Economist Group heading the World Ocean Initiative, where he co-led the World Ocean Summit. His work sits at the intersection of financial materiality and ocean governance.

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## Mark J. Spalding

President, The Ocean Foundation

Mark J. Spalding is President of The Ocean Foundation, where he has led the organization for over 20 years. The Foundation operates across 40 countries on six continents. Spalding advises three public equity portfolios and approximately 14 private equity firms at various stages of capital maturity and leads proprietary work on corporate KPI frameworks and blue economy taxonomy for institutional investment clients.

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## Ronald Tardiff

Head of Ocean Innovation, World Economic Forum

Ronald Tardiff is based in Geneva at the World Economic Forum, where he leads all ocean innovation work and serves as executive for 1000 Ocean Startups, a coalition of 67 member organizations supporting over 850 ocean impact companies worldwide. His work covers both broad blue economy strategy and specific innovation areas including pollution remediation and nature-positive transitions for corporates.

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## Adam de Sola Pool

Independent Investor

Adam de Sola Pool is a Cambridge, Massachusetts-based investor in ocean technology. He built and led what became the largest wind and solar developer in Central Europe, exiting the business for more than 2 billion euros. Since then, he has focused on ocean tech investing, mentoring startups through MIT and Harvard, and backing companies including Ocean Rainforest.

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