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Marine Resources: A Blue Future in the CPG Industry

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Introduction

The consumer packaged goods (CPG) industry is constantly evolving, seeking sustainable and innovative solutions. Marine derivatives from ocean-based resources like seaweed, algae, and fish are gaining attention for their bioactive properties and environmental benefits. What makes this industry fascinating is its ability to offer natural, nutrient-rich, and eco-friendly alternatives. The growth potential is clear, with rising consumer demand for sustainability and health-focused products. Advances in biotechnology have made it possible to harness these ingredients effectively. Marine derivatives are game-changing for their biocompatibility, and we see this industry expanding across personal care, food, and even pharmaceuticals.

















Marine Resources: Overview

Marine resources are a treasure trove of valuable substances found within the ocean, including invertebrates, plants (e.g., seaweed, algae, seagrass) and microorganisms.

From these, marine derivatives are extracted or derived. The marine world offers a rich source of naturally effective products with applications across industries.

This industry is fascinating because it offers natural, nutrient-rich, and eco-friendly alternatives. Marine derivatives / bioactive have unique struct and chemical characteristics that are usually not possessed by terrestrial natural products. These substances can be divided into a variety of structural types including polysaccharides, proteins, pigments, polyphenols, enzymes, etc.

Marine Resources	 Marine Life	 Minerals, Salts and other resources			
Direct Derivative	 Food e.g., Seafood	 Oil e.g., fish oil	 Pharmaceuticals	 Food seasoning	 Pearls
Extracted Derivative	 MARINE DERIVATIVES		EXISTING <ul style="list-style-type: none"> Collagen Chitosan/Chitin Alginate Carrageenan Peptides Glycolipids 	EMERGING <ul style="list-style-type: none"> Fucoidan Marine enzymes Marine minerals Fucoxanthin Sterols Phlorotannins 	
Use Cases	 Cosmetics	 Chemical production		 Pharma and drug compounds	
	 Biomaterial	 Petrochemicals	 Biofuel		

Common examples include alginate from brown algae, collagen from fish skin, chitosan from shellfish, and omega-3 fatty acids from fish oils. Other emerging compounds like fucoidan and marine peptides are gaining interest for their health and skincare benefits.

These ingredients are valued for their anti-ageing, antioxidant, anti-inflammatory, and antibacterial properties, making them highly sought-after in the food, cosmetic, pharmaceutical, and home care industries.

Marine Derivatives: What do they offer?

Marine derivatives are composed of different chemical compounds with unique structures and properties, by understanding which, researchers and manufacturers are developing innovative and sustainable products across various industries

Home Care:

Derivatives like chitosan and seaweed extracts are gaining popularity in eco-friendly cleaning products due to their natural antibacterial properties. Alginate serves as a thickener and stabilizer, ensuring consistency. These ingredients offer sustainable, biodegradable alternatives to harsh chemicals, meeting the demand for greener household cleaning solutions.

Personal & Skincare:

Collagen, seaweed, and algae extracts are widely used in skin care for their anti-ageing, moisturizing, and healing benefits. Chitosan and fucoidan help soothe sensitive skin and provide hydration. These natural actives serve as effective alternatives to synthetic chemicals in anti-ageing and moisturizing products.

FMCG Sector:

Derivatives like Omega-3 from fish oils are popular in supplements and fortified foods. Seaweed extracts act as natural thickeners and stabilizers, while minerals enhance beverages and snacks. Their sustainability and health benefits make them appealing to FMCG companies focused on offering environmentally friendly and health-conscious products.

Properties



Home care

Surface-active agents
Sequestering properties
Water purification and treatment
Cleaning / Cleansing agents
Water purification and treatment



Personal Care

Anti-inflammatory,
anti-oxidant,
hydration properties
UV-blocking and absorption properties
Antibacterial and whitening properties
UV absorption, skin repair,
Oral care







CPG

Fatty acids like omega-3
fatty acids, protein supplements
Thickeners, gelling agents
Antibacterial and preservatives

Sources: [Link](#)

Benefits Associated With Marine Derivatives

The primary benefit of these ingredients lies in their sustainability, offering eco-friendly alternatives to traditional chemicals while promoting responsible resource usage.

Natural and Sustainable	 <p>Biodegradability</p>	 <p>Eco-Friendly</p>	 <p>Renewable Resources</p>	 <p>Reduced Carbon Footprint</p>
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Marine ingredients offer a wide range of benefits across different industries. Below are some of the key advantages:

Bioactive Compounds	 <p>Biopolymers</p>	 <p>Biosurfactants</p>	 <p>Biofuels</p>	 <p>Natural preservative/ colorants</p>
Natural and Sustainable	 <p>Rich in Essential Nutrients</p>	 <p>High Protein Content</p>	 <p>Abundant Vitamins and Minerals</p>	 <p>Low in Saturated Fat</p>
Biocompatibility	 <p>Sustainable and Safe</p>	 <p>Reduced Toxicity</p>	 <p>Support Regenerative Medicine</p>	 <p>Low Risk of Allergies</p>
Health Care	 <p>Anti-inflammatory properties</p>	 <p>Anti-oxidant properties</p>	 <p>Improves immune function</p>	 <p>Anti-Aging Properties</p>

Sources: [Link 1](#), [Link 2](#), [Link 3](#)

Rise of Products Using Marine Actives: Industries

- Gaining popularity across various CPG categories, attracting interest from both large and smaller players
- While food, beverages, and cosmetics have seen significant exploration, the home care sector remains a promising area for innovation, offering opportunities to develop novel products with unique bioactive properties



Food & Beverage

- **Largest consumer** of marine-derived ingredients, used as **nutritional supplements, functional foods, and natural food colorants**
- Some key players include:



Cosmetics & Personal Care

- **Observing a significant increase** in the use of marine-derived ingredients, particularly in high-end and natural products
- Commonly used in **skincare products followed by hair care and body care products**
- Some key players include:








Home Care

- Marine-derived ingredients are still a **relatively new segment in-home care**
- **Ongoing research** on their use in cleaning products as **natural surfactants, emulsifiers, and antimicrobial agents**
- Some key players include:



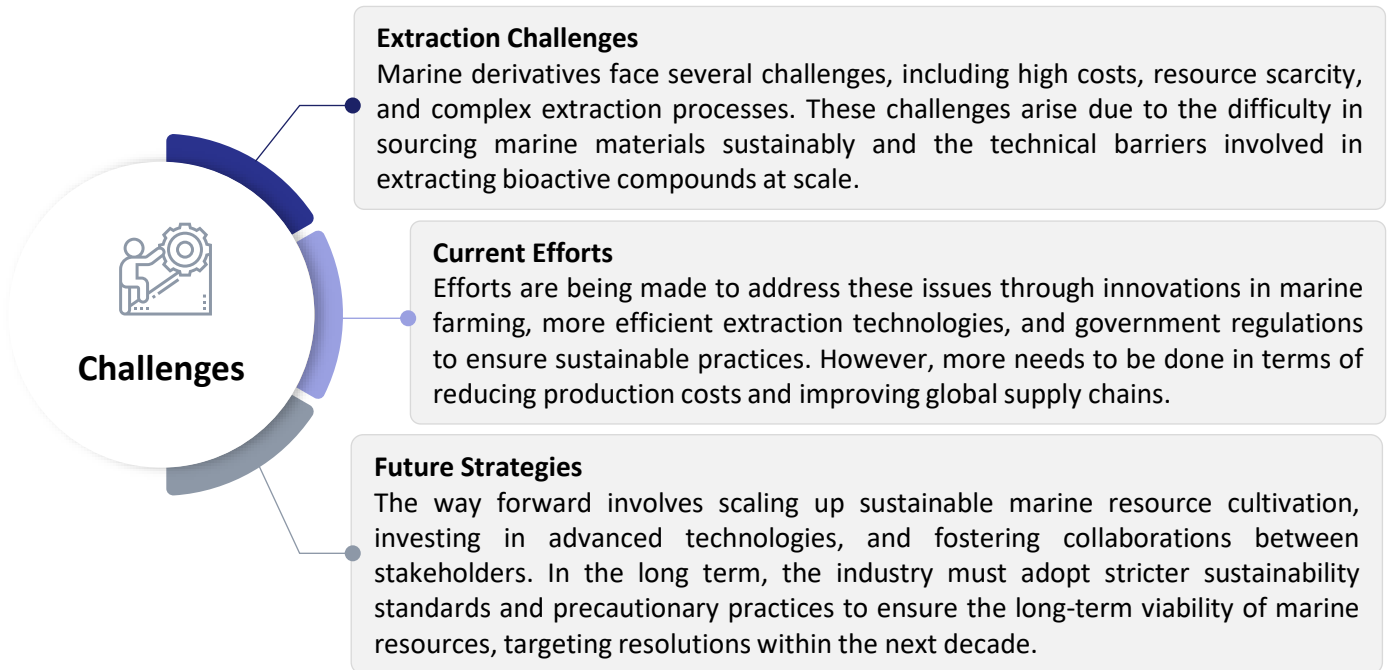
Implementation Instances: How Companies are Using Derivatives





Big players like Unilever are venturing into niche areas like home care applications, to establish their products using marine derivatives. Even ingredient manufacturers are focusing on leveraging derivatives to enhance skin and hair health.

<p>ALGAKTIV</p> <p><i>Specializes in microalgae and biotechnology</i></p>	<ul style="list-style-type: none"> Introduced Densidyl, a hair care active ingredient derived from microalgae (<i>Spirulina Maxima</i> Extract) is a phycocyanin Designed to combat hair loss and graying Results backed with in vitro and clinical testing Claims that Densidyl is the first cosmetic ingredient to target both the emossome (emotional stress) and the exposome (environmental stressors) by modulating cortisol and melatonin levels and controlling external aggressors
<p> DSM</p> <p><i>Specializes in ingredients manufacturing</i></p>	<ul style="list-style-type: none"> Offers PEPHA®-CTIVE CB, produced from microalgae <i>Dunaliella salina</i>, rich in amino acids and carbohydrates Protects and stimulates mitochondria by increasing ATP levels in skin, improves its radiance Results supported by in-vitro and in-vivo testing
<p> Frosch</p> <p><i>Specializes in Manufacturing Ecological Products</i></p>	<ul style="list-style-type: none"> Frosch introduced marine-derived formulations Frosch Marine Minerals Toilet Cleaner” as part of their eco-friendly line that contains marine minerals and algae-derived ingredients
<p> Unilever</p> <p><i>Specializes in Product Manufacturing</i></p>	<ul style="list-style-type: none"> Unilever and Innova Partnered to explore the cleaning potential of Lactam, an organic compound developed from natural chemicals in seaweed Lactam mimics seaweed’s unique ability to stop bacteria growing and spreading Also possesses self-cleaning potential for banknotes, medical devices, etc.
<p> Hi-Q Marine Biotech</p> <p><i>Specializes in Marine Biotechnology</i></p>	<ul style="list-style-type: none"> Hi-Q Marine Biotech International Ltd developed FucoSkin® a fucoidan-rich extract derived from the brown seaweed <i>Laminaria Japonica</i>, known for its excellent anti-aging and photoprotective benefits
<p> KD Pharma Group™ Creating Health Solutions</p> <p><i>Specializes in Health Care</i></p>	<ul style="list-style-type: none"> KD Pharma to Acquire dsm-firmenich’s Marine Lipids Business; transaction includes the MEG-3 fish oil product portfolio and two associated production sites in Canada and Peru in exchange for a minority stake in the enlarged KD company

Beyond the Hype: Addressing the Challenges of Marine Derivative Use

While marine derivatives offer significant potential, there are several challenges that need to be addressed for their widespread adoption.



 <p>Supply Chain Volatility</p>	<ul style="list-style-type: none"> • Difficulty in collecting marine organisms due to their remote locations and low abundance • Concerns over sustainable harvesting and potential impacts on marine biodiversity • Seasonal fluctuations impact availability of marine resources
 <p>Complexity of Compounds</p>	<ul style="list-style-type: none"> • Complex chemical structures and instability of marine-derived compounds complicate synthesis, isolation, and formulation
 <p>High Costs and Technical Barriers</p>	<ul style="list-style-type: none"> • Expensive R&D and challenges in cultivating marine organisms for consistent production • Complexities in extracting and purifying diverse compounds • Inconsistent raw material quality may impact the processing and manufacturing process, requiring adjustments to ensure product consistency and quality
 <p>Regulatory and Legal Issues</p>	<ul style="list-style-type: none"> • Navigating regulatory frameworks and intellectual property rights • Ethical concerns related to bioprospecting and benefit-sharing in international waters • Changes in fisheries regulations, environmental policies, or trade agreements can disrupt supply chains and increase costs

Source: [Link 1](#), [Link 2](#)

Future Potential: The Growing Trend of Marine Derivatives

Future Trends

Rising demand for sustainable ingredients will significantly grow the marine derivatives industry, especially in personal care, food, and pharmaceuticals. As awareness of the blue economy increases, industries will shift to responsibly utilizing marine resources.

The focus will be on developing biodegradable, natural alternatives that support environmental health. With innovation and government support, marine derivatives will promote sustainability across sectors, reducing reliance on synthetic chemicals and fostering a circular, resource-efficient economy.

- Marine derivatives offer vast potential for various industries due to their unique properties and sustainability benefits.
- As research and technology advance, it is expected to play a significant role in addressing global challenges for various industries

Market Growth

- Current market of **marine-ingredients is valued at US\$ 9,709.0 million in 2023** with estimated **CAGR of 6.4%** from 2023-2033 and reach **US\$ 18,058.5 million by end of 2033**

Consumer Demand

- Consumers are **increasingly seeking natural and sustainable products** and marine-derived ingredients align with this trend

Research & Development

- **Ongoing research** (patents and scientific publications) **to explore** new marine species and compounds
- Increasing **efforts on deep-sea exploration** to discover yet unexplored resources
- Growing focus on **sustainable extraction** methods

Government & Regulatory Support

- Many governments are **supporting the development and use** of marine-derived resources like developing research institutes, providing research grants
- The number of **regulatory approvals granted** for marine-derived products indicates growing acceptance and safety globally

Source: [Market Report](#)

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