



# Case Study

for Plastic Innovation Challenge

## Zerocircle

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# Startup Summary



Date of Incorporation  
**Jul 20, 2020**



Headquarters  
**Pune, India**

## The Founder



**Neha Jain, the founder of Zerocircle,** holds a background in journalism from Christ University, Bengaluru, and a diverse professional journey spanning roles at Google, Aditya Birla Money, and a logistics startup she founded in 2012.

In 2020, Neha founded Zerocircle, which uses seaweed to create sustainable alternatives to harmful petroplastic products promoting biodiversity and green job creation. Inspired by the ocean’s untapped potential, she collaborated with experts like Dr. CRK Reddy, a renowned marine biologist, to develop biodegradable materials that leave no microplastic footprint. With Zerocircle, Neha is driving systemic change, enabling businesses in FMCG, hospitality, FnB and textiles to replace single-use plastics with sustainable, nature-derived alternatives

## Introduction

**Zerocircle** is a material science company manufacturing **home-compostable and ocean-safe products** using seaweed to replace harmful petroleum-based plastics, particularly single-use plastics.

## Products/Services Provided

**Barrier Coatings:** Water-based, home-compostable coatings that replaces harmful PE linings and dispersion barrier coatings in food packaging. They create customizable solutions for the F&B and hospitality industry like burger clamshell boxes, Food boxes, food trays and other similar paper food packaging alternatives with seaweed.

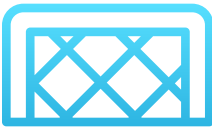
**Pellets and Films:** Sustainable alternatives to single-use flexible plastics, compatible with standard plastic manufacturing lines. They create thin film like garment bags, flowraps and sachets for fashion and food industry.

**Seaweed Paper:** Wood-free paper which is food safe made from seaweed and biobased ingredients, suitable for secondary and primary packaging applications

coated  
with  
seaweed

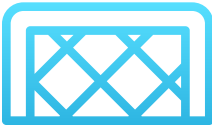
## The Solution

Zerocircle produces **home-compostable** and **ocean-safe products** using seaweed, replacing petroleum-based plastics. Their proprietary technology allows manufacturers worldwide to integrate seaweed resins into existing infrastructure without major modifications.



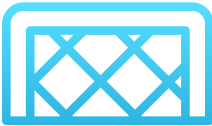
### Barrier Coatings

Oil, grease, and oxygen barrier coatings that are home-compostable and food-safe, ideal for takeaway containers, burger boxes, and bakery packaging.



### Pellets and Films

Made from natural polymers, these serve as sustainable alternatives to single-use plastics in applications such as garment bags and shopping pouches.



### Seaweed Paper

The first-of-its-kind, wood-free paper combining algal bloom biomass with land waste resources, used for labels, tags, and monocarton

## Value Proposition

**Hyper Home-Compostability:** Zerocircle materials are certified hyper home compostable, biodegradable and recyclable. The materials completely degrade within 180 days. Their materials have been rigorously tested globally by organisations for ocean and marine eco-system safety.

**Seamless Industry Adoption:** Designed for drop-in replacement in existing production lines.

**Regulatory Compliance:** Free of PFAs and synthetic additives, ensuring food safety and recyclability, FSC certified and biodegradable.



# Potential Use case for the Hospitality Sector

Zerocircle's innovations are highly relevant to the hospitality sector more so now because their products solve address key challenges for brands and businesses when it comes to ESG goals, waste management, and customer expectations for truly green solutions.

### Here's how:

**Reducing Non-Degradable Waste:** Hospitality businesses rely heavily on single-use plastics, especially disposable paper packaging, which persist in the environment for decades. Zerocircle’s hyper-compostable materials decompose naturally, reducing landfill burden.

**Food-Safe Applications:** Zerocircle's seaweed-based coatings are designed for grease and oil resistance, making them ideal for disposable food packaging such as clamshells, food boxes, and bakery wrappers. These materials are entirely free of harmful chemicals like PFAs and microplastics. The products are FSC certified, biodegradable and recyclable.

**Alignment with Sustainability Goals:** As consumers and regulators demand eco-friendly alternatives, seaweed materials help hospitality businesses transition from plastic and plastic coated paper-based products to sustainable, marine-safe solutions.

**End-Use Specific Design:** Zerocircle designs materials with their lifecycle in mind. For instance, a disposable food box or single-use toiletries wrapper made from seaweed-based material decomposes within months and can be recycled, aligning perfectly with its short-term use.

**Global Relevance:** For island nations and coastal regions where the hospitality industry thrives, seaweed materials are particularly impactful, as they address local waste disposal challenges and protect sensitive ecosystems.

## Quantified climate and social impact

Zerocircle’s seaweed-derived solutions provide scalable, ocean-safe alternatives to petro-based plastics, reducing reliance on fossil fuels and agricultural inputs. Seaweed farming benefits coastal communities, particularly women, and supports the blue economy

3,000

tons of plastic paper products to be replaced by 2028.

Replace upto

500

million UNITS of single-use plastic items annually.

### Eco-Friendly Materials

Zerocircle’s solutions decompose naturally, reducing pollution costs and enhancing market appeal.



## Pilots

### Pilots for Coating and Coated Products

Successfully piloted with two leading sustainable food brands in India with commercially available Zerocircle coated paperboard to establish high-performing non-plastic materials for the food industry, and market readiness of coated paper products.

India

Pilot with a European paper converter to establish manufacturing adoption ease with seaweed-based coated products on traditional conversion lines especially for high-volume orders.

Europe

### Pilots for Pellet and Films

Piloted with a sustainable fashion brand based in the US to establish performance and product readiness of seaweed-based thin films for primary packaging in the fashion industry.

India and USA

### Pilots for Seaweed Paper

Piloted with an Indian luxury fashion brand to establish the use case of seaweed paper for hand tags and paper tags.

India

Piloted with a tech startup to establish the use case of secondary monocation packaging of mobile phones with seaweed-based paper.

India

### Industry needs

- Replacing harmful petroleum-based single-use plastics with anti-plastic compliant materials.
- Providing home-compostable and recyclable, biodegradable, microplastics and PFAs free coatings for food packaging.
- Offering biodegradable films for flexible packaging in the hospitality sector.

### Outcomes

- Commercially available with end-to-end solutions in key global markets.
- Successful trials of food-safe, oil, grease, and oxygen barrier coatings on paper substrates, with no oil leakage and compliance with food migration safety standards.
- Large-scale pilots with manufacturers and converters processing 50-150 tons of coated paper daily, targeting the HORECA industry.
- Successful extrusion of seaweed-based pellets into films for sustainable packaging applications.

## Long term goals and target

Over the next five years, Zerocircle plans to

- Expand market reach globally, including Asia, North America, GCC, Australia
- Expand and scale production capabilities for Zerocircle's patented seaweed pellets, films and paper
- Scale production of seaweed-coated paper products, targeting food brands and distributors, with an aim to manufacture up to 30 million coated paper boxes per month by 2026.
- Innovate new products such as seaweed adhesives and replacements for materials like polystyrene and rigid packaging.