

BioPack · Clean Industry

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Country: Costa Rica · Tres Ríos, Cartago **Category:** Clean Industry **Impact Areas:** Mitigation, Circular Economy
Stage: Prototype **Team Size:** 2 **Website:** —

Elevator Pitch

BioPack turns coffee pulp and banana leaf waste into compostable food containers via hot-press molding. We replace single-use plastic packaging with a locally sourced biocomposite that closes two agricultural waste loops in Costa Rica.

Climate Problem

Costa Rica imports 70,000+ tons/year of single-use plastic packaging, discarded within hours. Meanwhile, coffee processing and banana farming generate massive lignocellulosic waste — polluting waterways (BOD up to 20,000 mg/L) and emitting methane in land

Solution

BioPack CR: a compostable clamshell food container made from coffee pulp (structural core) and banana leaf (natural grease barrier via cuticular waxes), bound with cassava starch and formed by hot-press molding. Fully biocompostable under EN 13432 in 3-6

Revenue Model

B2B sales of compostable containers to restaurants, sodas, and delivery platforms. Target unit cost under ₡350 at scale with aluminum molds and solar-assisted drying. Premium positioning supported by Law 9786 mandating single-use plastic replacement in CR

Target Market

B2B: restaurants, “sodas” (local eateries), and food delivery platforms in Costa Rica's Greater Metropolitan Area. Over 70,000 tons of single-use food packaging are imported annually. Law 9786 mandates progressive replacement of single-use plastics.

Social Impact

People Living in Extreme Poverty

Demand Evidence

Field research: surveys with end consumers, soda owners, and delivery operators. 85% report spills as top complaint, 70% prefer compostable options if performance matches conventional packaging.

Competitors

Imported EPS/PP clamshells dominate on price (?50-150/unit). Local molded fiber alternatives are minimal. No competitor in Costa Rica combines coffee pulp + banana leaf in a single biocomposite. Our intrinsic wax barrier differentiates us from generic fib

Founder Expertise

Product design and biocomposite R&D (Fabrizio): formulation, hot-press molding, 3D printing, CAD, user research. Production and visual communication (Keilyn): hands-on prototype finishing, mold work, graphic deliverables, and field material collection.

External Support

Academic mentorship from Prof. Osvaldo Ruiz (LCI Véritas, Product Design). Mechanical testing specimens submitted to Instituto Tecnológico de Costa Rica (TEC) for tensile, compression, and flexion characterization. No financial support received.

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