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Norway

SME FOUNDATION

SUSTAINABLE DEVELOPMENT GOALS

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"Rethinking what materials return to the earth"

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PROBLEM STATEMENT

“From Waste Back to Soil: Closing the Loop with Sustainable Packaging and Plastic Treatment”

The project creates biodegradable packaging from organic waste as a replacement of plastic and a chemical system that safely breaks down the existing plastic harmful for our planet. Both solutions return materials to the soil, completing a natural and sustainable cycle.

Reimagining plastic as a resource, this project aims to produce compostable, water-resistant packaging. In parallel, it develops a soil-friendly method for polythene degradation, reducing the ecological impact of plastic. The process returns materials safely to the earth, forming a regenerative, circular cycle.

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The Problem

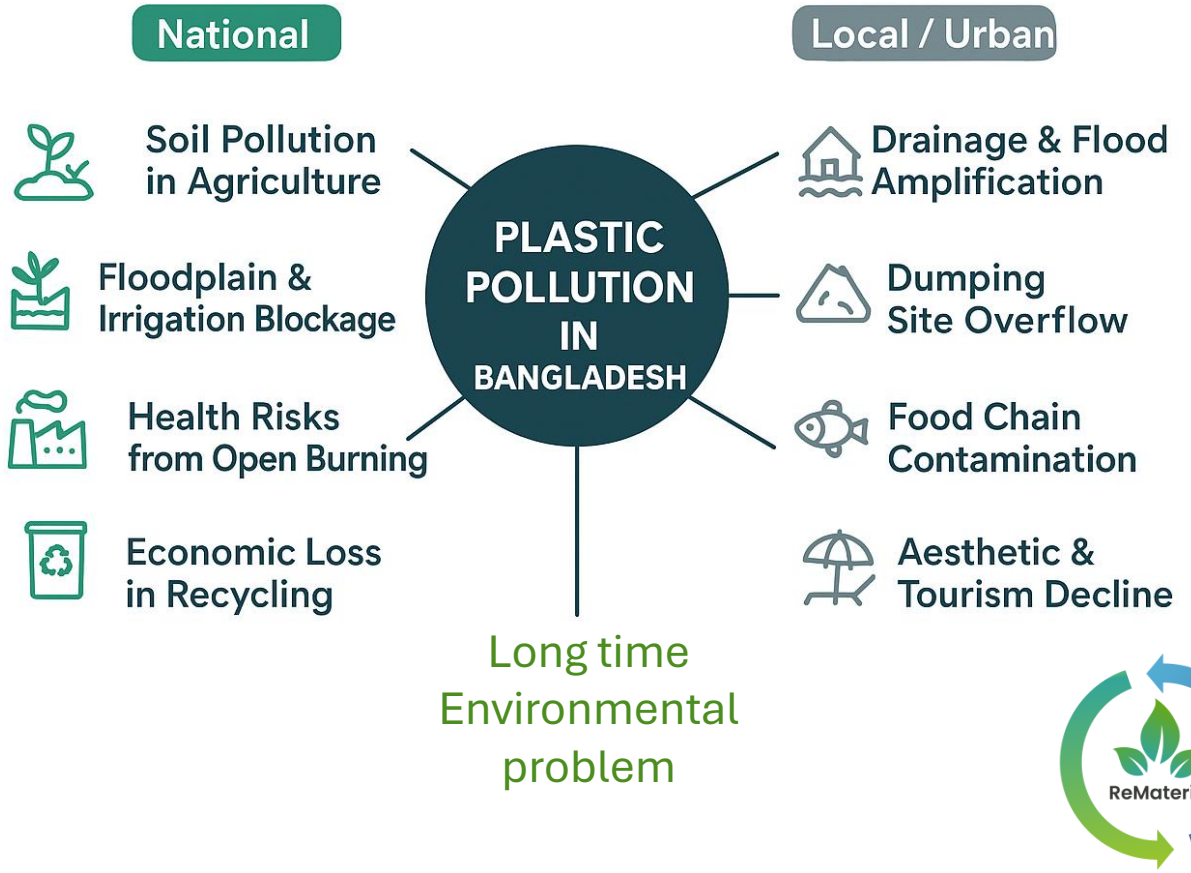
Uncontrolled plastic waste is choking our drains, contaminating our waters, and breaking down into invisible microplastic pollutants, threatening ecosystems and everyday life.

World plastics production reached **400.3 Mt** in 2022.

Relevance to our context in Bangladesh

In Bangladesh, rapid plastic consumption combined with weak waste management systems is intensifying urban and environmental pressures.

As a riverine country, plastic waste often finds its way into waterways—polluting rivers, clogging drainage systems, and disrupting aquatic ecosystems. Cities, industries, and communities alike are bearing the brunt of this growing plastic crisis.



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Most Affected Groups/ Sectors

Communities

- urban poor
- flood-prone neighborhoods
- coastal populations

Industry

- fisheries
- tourism
- food packaging
- recycling & waste management

Environment

- rivers
- wetlands
- oceans
- terrestrial wildlife
- soil health

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Why is there a NEED?

Plastic's low cost and easy availability have driven widespread use, resulting in significant health, environmental, and urban challenges. Introducing biodegradable alternatives and safe plastic degradation methods can help mitigate these impacts.

While developed nations are progressing with sustainable plastics and eco-friendly solutions, Bangladesh is still lagging behind.

Current Condition in Bangladesh

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Impacts of Plastic Use

FLOODING

REDUCED QUALITY OF LIFE

WATERLOGGING

POLLUTION

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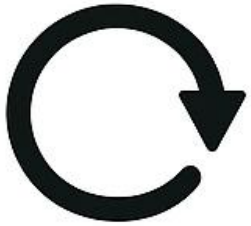
Reducing Consumption

BIODEGRADABLE ALTERNATIVES



REDOLUSM

SAFE DEGRADATION METHODS

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Reasons why Bangladesh lags behind in adopting biodegradable plastics

↓

- FINANCIAL LIMITATIONS
- RESEARCH AND INNOVATION GAP
- LACK OF POLICY SUPPORT
- LIMITED INDUSTRIAL CAPACITY
- LOW CONSUMER AWARENESS

By addressing plastic overuse, pollution, and unsafe disposal, ReMateria offers a solution that is both essential and uniquely tailored to Bangladesh's context.

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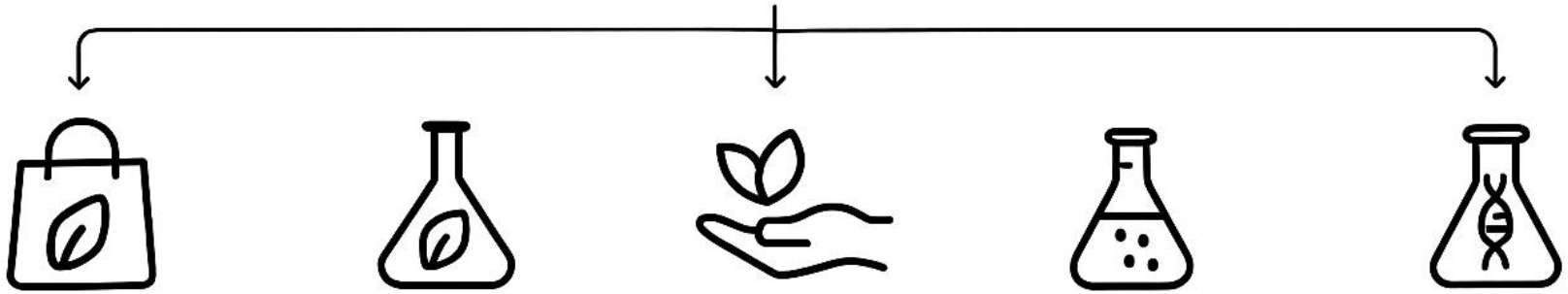
Core related Industries



Sustainable Packaging Industry	Green Chemis-ry / Chemical Manufacturing	Environmental & Biotechnology	R&D / Material Science	R&D / Material Science
Ecovia Ltd. Joana Paper Product Industry EnGreen	ACI Chemicals Eon Chemicals Ltd. Square Chemicals	Waste Concern BioGreen Bangladesh	BSCIR BUET Materials and Chemical Engineering Dp.	BUET Materials and Chemical Engineeringt

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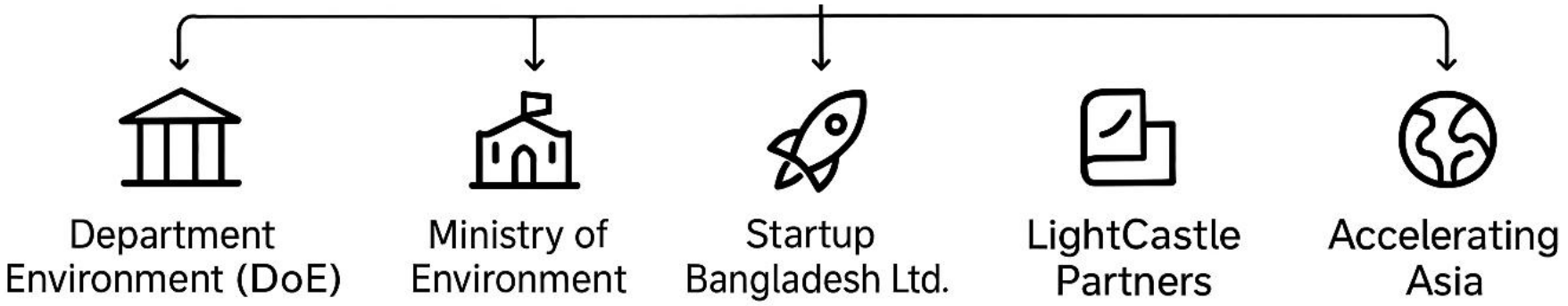
Supporting Sectors



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Existing Solutions and Our Competitors

SOIL-DEGRADABLE, WATER-RESISTANT PACKAGING MATERIAL

- Ecovia Ltd.
- EnGreen
- Joana Paper Product Industry
- BD Jute Bags Ltd.

CHEMICAL AGENTS FOR POLYTHENE DISSOLUTION

- Eon Chemicals Ltd.
- ACI Chemicals
- Waste Concern

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TAM SAM SOM

Market Tier	Description	Basis of Estimation / Key Assumptions	Estimated Value (USD)
TAM (Total Addressable Market)	Total plastic consumption in Bangladesh that could potentially be replaced by biodegradable or degradable alternatives.	BD Bangladesh uses ~1 million tons of plastic annually (DoE & World Bank). Average packaging-grade plastic cost = USD 1,000 per ton = 1,000,000 × 1,000 = USD 1.0 billion	≈ 1.0 Billion
SAM (Serviceable Available Market)	Portion of plastic usage realistically accessible: mainly urban packaging, retail, FMCG, and municipal sectors.	Around 25–30% of total market can transition (due to urban focus, awareness, and policy readiness). = 30% × 1.0B = USD 300 million	≈ 250–300 Million
SOM (Serviceable Obtainable Market)	Early adopters and realistic penetration within first 3–5 years.	Expected 5–8% adoption from key sectors (supermarkets, F&B, city corporations). = 7% × 300M = USD 21 million	≈ 15–25 Million

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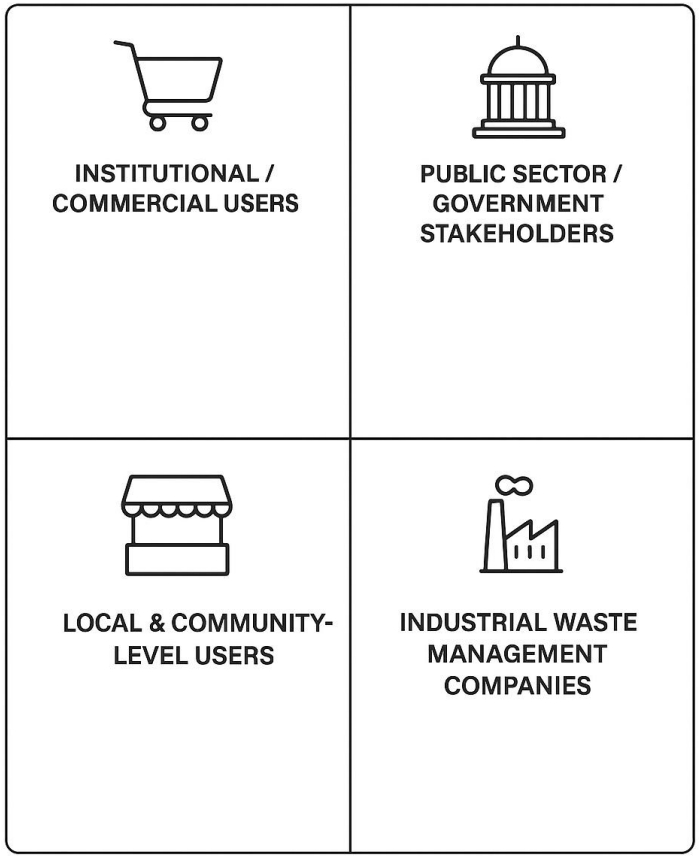
Target Customers



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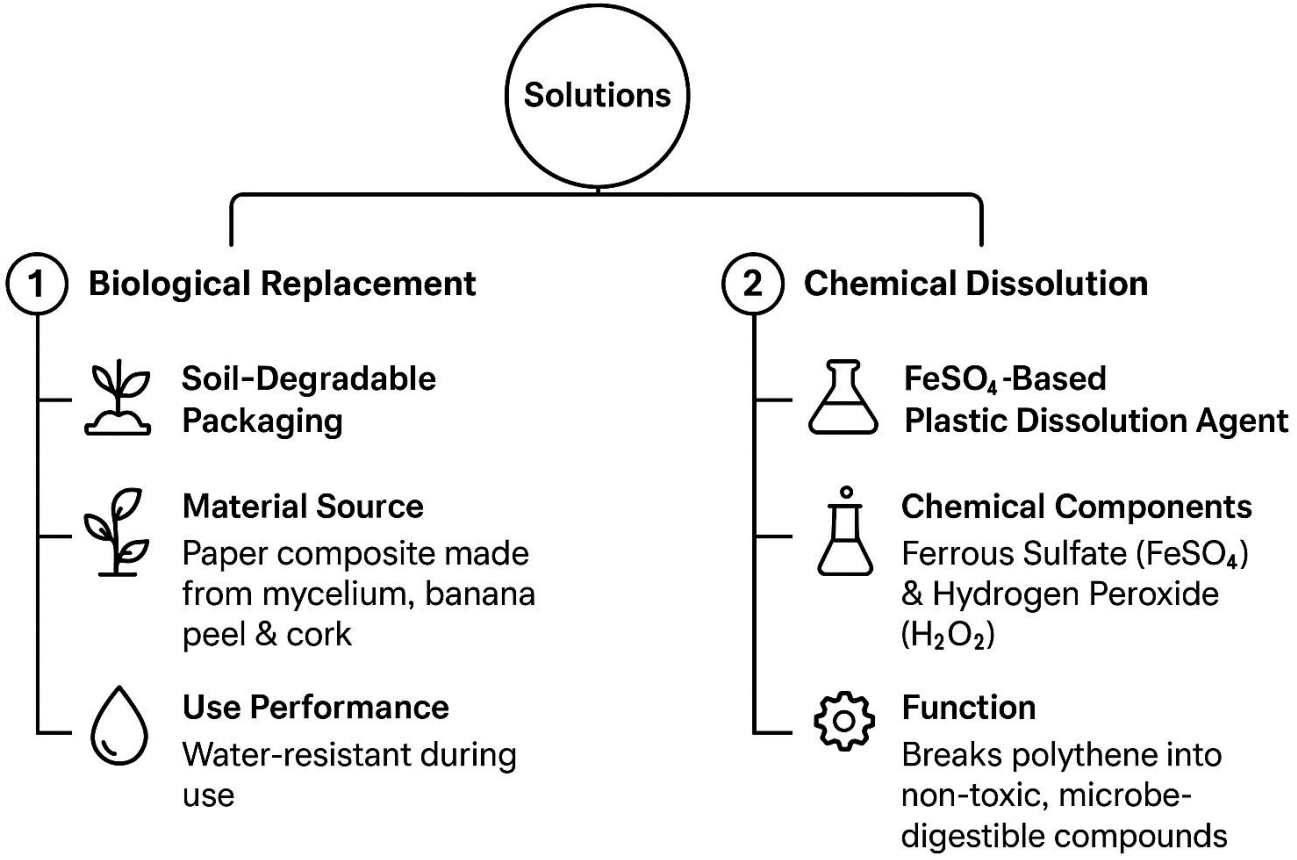
The Solution & Product/Technology



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How It Works

1. Biological Replacement

Composite Formation: Mycelium acts as a natural binder, blending with banana peel and cork fibers.
Water Resistance: Surface treated to resist moisture while maintaining biodegradability.
Degradation Process: After disposal, microbes in soil break down the material within 2 to 3 months, leaving no toxic residue.

2. Chemical Dissolution

Reaction Mechanism: Uses Ferrous Sulfate ($FeSO_4$) with Hydrogen Peroxide (H_2O_2) to trigger Fenton's reaction.
Depolymerization: Breaks long-chain C–H bonds in polythene into smaller, non-toxic molecules.
Soil Integration: These byproducts are then digested by soil microbes, restoring natural balance without harming fertility. (graphics)

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Unique Characteristics

1. Dual-Approach Solution
2. Locally Sourced Materials
3. Environmentally Safe Chemistry
4. Adapted for Bangladesh Perspective
5. Sustainable Circular Model (graphics)

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BUSINESS MODEL

COST ANALYSIS (Monthly Operating Costs)

Component	Cost (BDT)	Remarks
Raw Materials (Food-grade Paper Pulp, Rolls)	2,500,000	Primary cost; price fluctuates based on import.
Machinery Maintenance & Depreciation	500,000	For paper plate/glass forming & cutting machines.
Factory Rent & Utilities	400,000	Includes electricity, water, and waste disposal.
Labor & Staff Salaries	600,000	Factory workers, quality control, admin, and sales.
Packaging & Logistics (Distribution)	300,000	Bulk packaging for B2B, retail packaging for B2C.
Marketing & Sales	200,000	Focused on B2B (restaurants, events) & "Go Green" campaigns.
Total Estimated Monthly Cost	**4,500,000**	**~5% variation depending on raw material prices.**

1 YEAR REVENUE (Year 1 Projection)

Item	Value (BDT)
Selling Price (Per Unit - *Avg. Pack of 100*)	120 BDT
Total Revenue	8 Cr
Cost per Unit (Material + Labor)	60 BDT
Total Production Cost (COGS)	4 Cr
Gross Profit	**4 Cr**
Fixed Overheads (S.G.&A)	1.4 Cr
Net Profit	**2.6 Cr**
Net Margin	**~32.5%**

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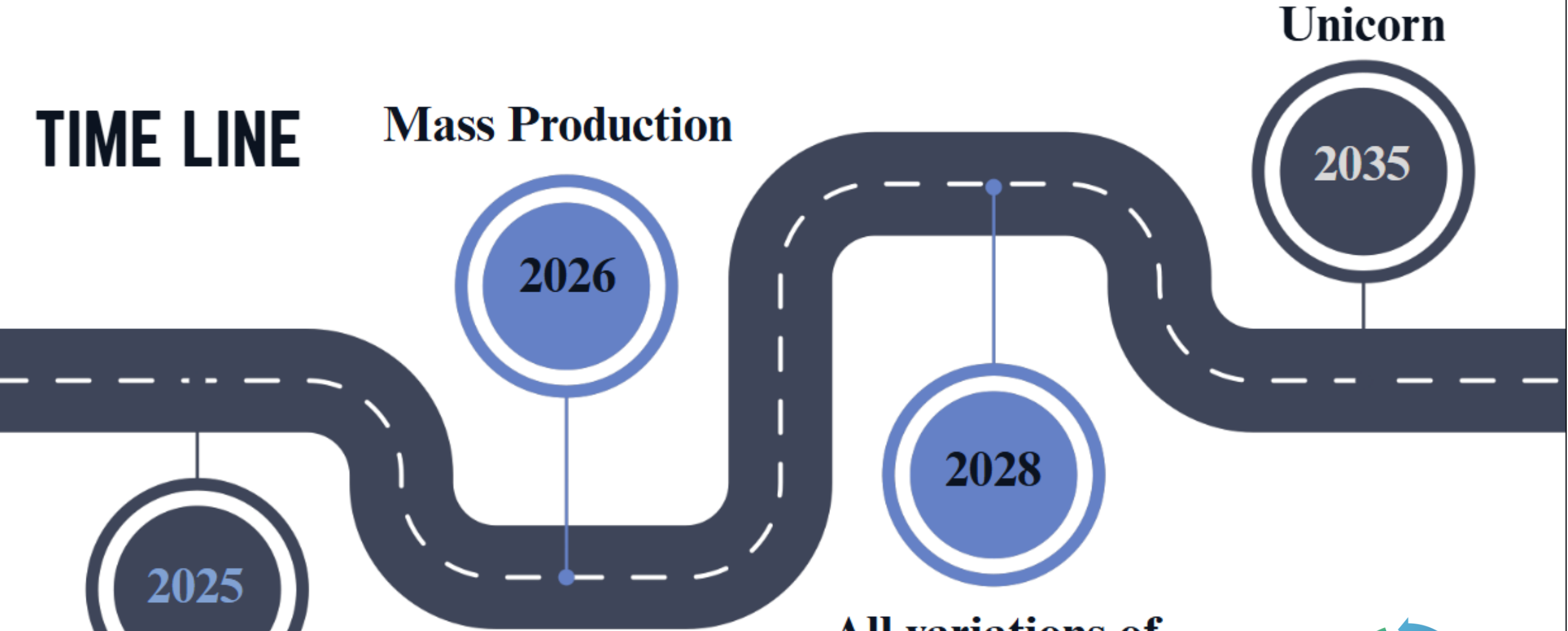
5 YEAR PLAN

(Note: All monetary values are in Crores (Cr) BDT)

Year	Units Sold (Packs, in Lakhs)	Per Unit Price (BDT)	Total Revenue (Cr)	Cost Per Unit (BDT)	Gross Profit (Cr)	Fixed Cost (Cr)	Net Profit (Cr)	Net Margin
1	66.67	120	8.00	60.00	4.00	1.40	2.60	32.50%
2	100.00	118	11.80	58.00	6.00	1.80	4.20	35.59%
3	150.00	115	17.25	55.00	9.00	2.20	6.80	39.42%
4	220.00	115	25.30	52.00	13.86	2.80	11.06	43.72%
5	300.00	112	33.60	50.00	18.60	3.50	15.10	44.94%

TIME LINE


Mass Production
2026
Unicorn
2035
2025
Prototyping
2028
All variations of
model and growth

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Team Members

CEO

A A M
Rownak Shahriar Ruhan
4th year Student of
ME, BUET

Chief Architect

Samia Mehnaz Maliha
4th year Student of
Arch, BUET

CTO

Turjoy Dey
4th year Student of
CSE, BUET

Chief Planner

Rafia Taosin Esha
3rd year Student of
URP, BUET

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Thank You

LET'S COLLABORATE WITH

Team Rematería

+8801714844677

aamrs.ruhan@gmail.com

/TriChokro Rematería
/Rownak Shahriar Ruhan

Kazi Nazrul Islam Hall, BUET
Palashi, Dhaka-1000, Bangladesh