



# Detailed Project Report on Mini Compostable Carry Bag & Film Manufacturing Plant (2-Machine Model)



**By Farmer Council Of Bharat**



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## **1. INTRODUCTION**

Welcome onboard the Green team. We are delighted that you have chosen us as a partner in your plastic-free journey!

### **(1.1) About Greenomers**

Greenomers Private Limited manufactures biodegradable and compostable starch-based biopolymer granules specifically designed to act as an environmentally friendly substitute for plastic bags and disposable plastic products such as carry bags, garbage bags, tableware, packaging solutions, etc.

Greenomers polymers break down naturally in soil within six months, leaving behind no harmful residues.

Our product is engineered to integrate into current, existing manufacturing processes seamlessly. No significant changes or investments are required in equipment, ensuring a smooth transition to eco-friendly production.

Greenomers offers a competitive pricing structure, comparable to virgin plastic granules, allowing you to adopt sustainable practices without affecting your bottom line.

By choosing Greenomers, you help reduce plastic pollution and take a step toward a healthier planet.

### **(1.2) Scope of Report**

This report is intended to act as a project report for the party interested in setting up a blow film factory for the purpose of manufacturing compostable and/or biodegradable film products such as carry bags, garbage bags, mulching rolls, nursery bags, etc.

Technical details and financial details are provided for compostable and/or biodegradable carry bags, as an indicative product for the entire category of products that are manufactured from compostable and/or biodegradable film.

Cost estimations are provided from the perspective of the current prevailing rates, wages, and rents in the Indian market. Depending on the final location of the factory, the expenses are expected to change accordingly. All these are indicative estimates, and final estimates must be confirmed with the Greenomers team.

## 2. OVERVIEW OF THE MARKET

### (2.1) The Plastic Problem

Plastic is inarguably one of the most important inventions of the 20th century. Its lightweight, durable, and versatile nature has made it indispensable as the optimum choice of material for a host of applications. From packaging to medical equipment, electronics to construction, plastic is a coveted material for its convenience. To the degree that it is so ubiquitous today, it is one of the leading causes of climate change.

Plastic pollution has become one of the most imminent threats to our planet today. Every year, [19-23 million tonnes](#) of plastic waste leak into aquatic ecosystems, polluting lakes, rivers, and seas. Once here, it can alter habitats and natural processes, reducing ecosystems' ability to adapt to climate change, thus directly affecting millions of people's livelihoods and quality of life. Further, since it is non-biodegradable, it can take anywhere between 20 and 500 years to break down, which, coupled with its typical single-use design, leads to its rapid accumulation in nature.

### (2.2) Compostable/ Biodegradable Plastic

Over the past few years, compostable/biodegradable plastics have become immensely popular. As people and governments have realised the level of harm plastic brings along with its convenience, there has been a rapid increase in demand for alternatives.

Within the market, the '**starch blend**' category is expected to remain the largest segment in the biodegradable plastic market throughout the forecast period 2026–2030, in terms of both value and volume, compared with PLA, PHA, and biodegradable polyesters. This can be attributed to the easy and wide-scale availability of starch obtained from crops like corn and [potatoes](#).

#### Drivers of the market:

- **Awareness:** Increasing awareness about the consequences of plastic-use and the need for a more sustainable option is driving the move from conventional plastic to its biodegradable counterpart. The **Ellen McArthur** Foundation predicts that by 2050, our oceans will contain more plastic than fish. Such statistics have propelled the public conversation towards the negative environmental, climate, and health aspects of plastic.
- **Regulations and policies:** Approximately 30 countries in Africa, Asia, North America, and Europe have completely banned plastic bags. Some countries have imposed user fees on the sales so that the use of plastic can be reduced and plastic pollution can be decreased.
- **Corporate adoption:** Companies are increasingly coming under the public eye for the plastic waste they create. Thus, major corporations are increasingly committing to sustainability goals that include reducing plastic waste. For instance, Coca-Cola aims to use at least 50% recycled material in its packaging by 2030, which includes exploring biodegradable options.



### **Limitations of the market:**

- **Technical performance:** Biodegradable plastics often face challenges in terms of performance characteristics such as durability, heat resistance, and barrier properties compared to traditional plastics.
- **Cost:** Biodegradable plastics generally tend to be more expensive to produce than traditional plastics, impacting their competitiveness in the market.
- **Recycling:** Despite being biodegradable, these plastics often require specific conditions (e.g., industrial composting facilities) to break down effectively, which are not universally available.

**We are proud to share that Greenomers has been able to beat all of these limitations!**

Greenomers are **technically and economically comparable** to conventional plastic.

Further, Greenomers biopolymer is '**home compostable**', meaning it can biodegrade in soil naturally within 180 days, without the need for the specific conditions of temperature, humidity, etc. available only in industrial composting.

### 3. Product Profile

#### Products Manufactured

- ☐ Compostable Carry Bags
- ☐ Compostable Grocery Bags
- ☐ Compostable Garbage Bags
- ☐ Compostable Courier Bags
- ☐ Compostable Stretch Film
- ☐ Compostable Nursery Bags

CARRY BAGS



GROCERY BAGS



GARBAGE BAGS



COURIER BAGS



STRETCH FILM

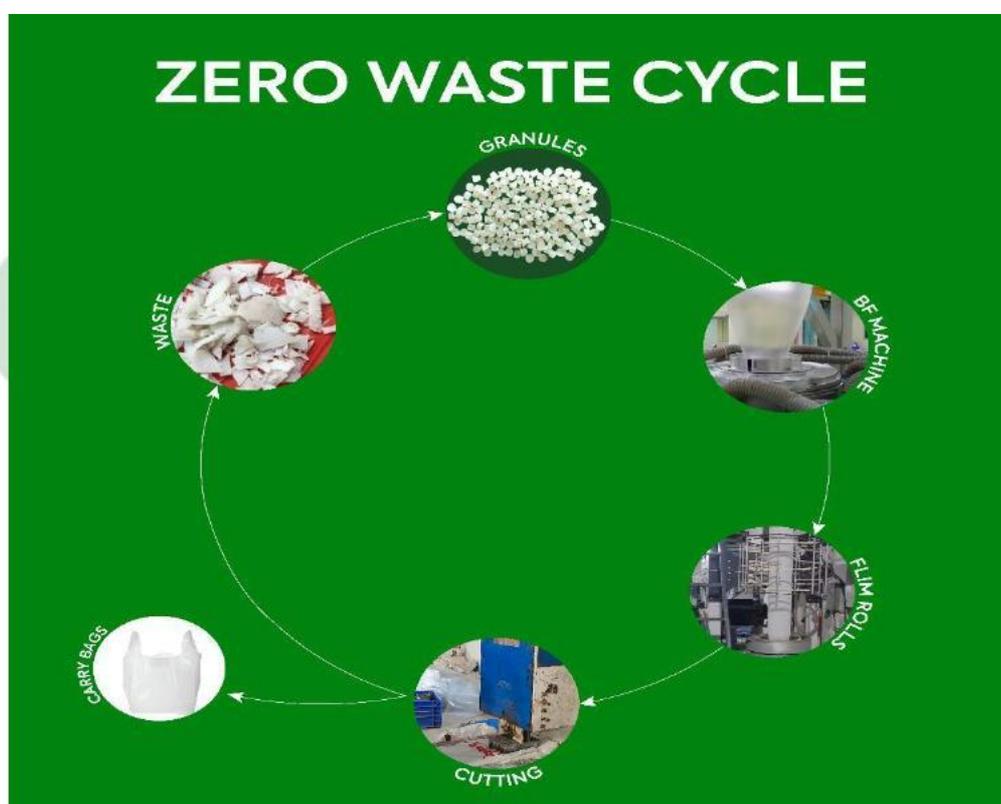


NURSERY BAGS



## 4. Manufacturing Process

1. Procurement of certified compostable granules from Greenomers PVT LTD
2. Feeding granules into blown film machines
3. Film extrusion, cooling, and winding
4. Punching and cutting into carry bags
5. Quality inspection
6. Packing and dispatch



### Plant Location & Infrastructure

- ▣ **Area Required:** ~2,000 sq. ft.
- ▣ **Power Requirement:** 35 HP
- ▣ **Water Requirement:** Minimal (cooling only / Under Water Storage - 5000 litres)
- ▣ **Infrastructure** - Height should be min. 20 fts, well-ventilated, Industrial shed

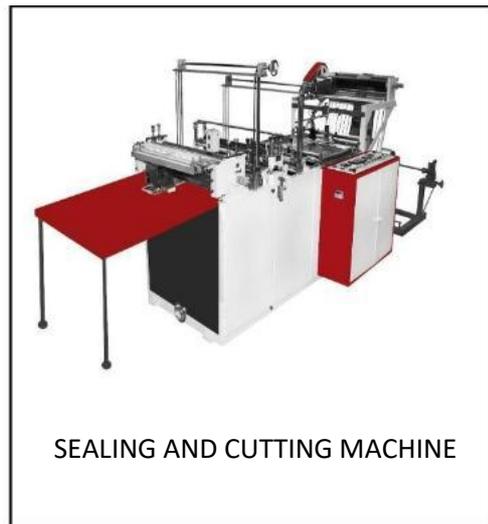
The location will be selected to ensure ease of logistics

#### (4.1) Equipment Required

The main machinery required to make biodegradable film products is a **blow film machine**. Some auxiliary machinery, such as Cutting and Sealing, Punching machines, a compressor, etc. are also required. The blow film machine is pictured below:



BLOW FILM MACHINE



SEALING AND CUTTING MACHINE



PUNCHING MACHINE



RECYCLING MACHINE



AIR COMPRESSOR



## 5. TECHNICAL DETAILS

### (5.1) HSN CODE

Harmonised System of Nomenclature (HSN Codes) is used to classify goods in a systematic manner globally for taxation and other purposes. The HSN Code for biodegradable bags is 4202.

### (5.2) NIC CODE

The National Industrial Classification 2008 (NIC-2008) Code 22208 is used for the manufacture of polymer/synthetic/ PVC water storage tanks. NIC-2008 seeks to provide a basis for the standardisation, collection, analysis, and dissemination of industry (economic activity) wise economic data for India.

### (5.3) Governing specifications: India

- **IS 17899 T: 2022:** This standard is applicable for the assessment of biodegradability of plastics in aqueous conditions, soil conditions, municipal solid waste condition and composting conditions.

### (5.4) Governing specifications: Global

The following standards will be certified against by Greenomers. Since you will be purchasing Greenomers granules, no action is required on your end. We will provide a letterhead that will contain the requisite details.

- **ISO 17088:2021:** This standard by the International Organization of Standardization specifies procedures and requirements for plastics and products made from plastics that are suitable for recovery through organic recycling. It addresses the four aspects of disintegration during composting, ultimate aerobic biodegradation, no adverse effects of compost on terrestrial organisms, and control of constituents.

- **ISO 14855-2:2018:** This standard specifies a method for determining the ultimate aerobic biodegradability of plastic materials under controlled composting conditions by gravimetric measurement of the amount of carbon dioxide evolved. The method applies to the following materials: natural and/or synthetic polymers and copolymers, and mixtures of these, plastic materials that contain additives such as plasticizers or colourants, water-soluble polymers, and materials that, under the test conditions, do not inhibit the activity of microorganisms present in the inoculum.

- **EN 13432:** The European standard specifies requirements and procedures to determine the compostability and anaerobic treatability of packaging and packaging materials, or to test for industrial compostability of packaging. It addresses the following



characteristics: biodegradability, disintegration during biological treatment, effect on the biological treatment process, and effect on the quality of the resulting compost.

- **ASTM D6400:** This globally recognized biodegradation test standard is a four-part biodegradation test for evaluating biodegradability that includes elemental analysis, [plant germination](#) (phytotoxicity), and mesh filtration of the resulting particles. Although it is most often used for [plastics](#) and other solid materials, it can also be used for many other solid materials, including [paper products](#), [textiles](#), [foam](#), and food packaging.
- **ASTM D5338:** This biodegradation test method is a core component of the ASTM D6400 testing method. It is an aerobic biodegradation test standardised to a minimum of 90 days in an aerobic and controlled composting environment.

### (5.5) Licenses & Statutory Approvals

#### OPTION - A

Approval	Estimated Cost (₹)	Timeframes
GST Registration	Nominal	1 month
Factory License	₹25,000	1 month
Pollution Control Board Consent	₹50,000	2-3 months
Udyam (MSME) Registration	Nil	Nil
CIPET Certification	₹3,50,000	9-10 months
CPCB Certification	₹1,00,000	5 months
<b>TOTAL</b>	<b>₹5,25,000</b>	<b>20 months</b>

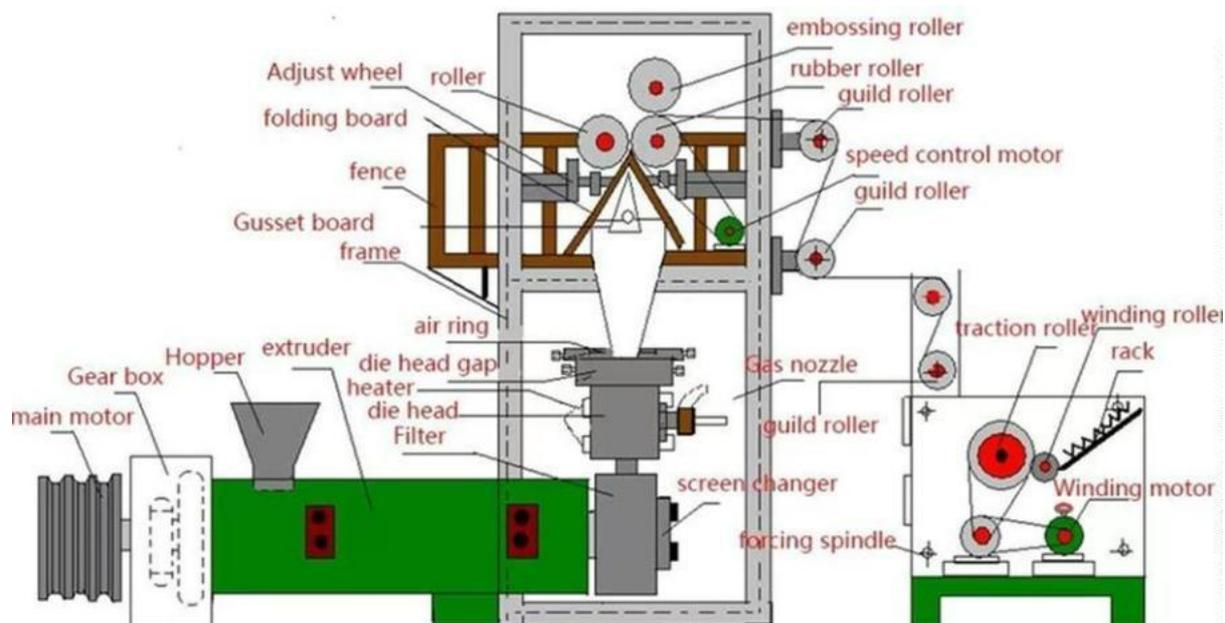
#### OPTION - B

##### Take NOC from Greenomers Private Limited

Approval	Estimated Cost	Timeframes
GST Registration	Nominal	1 month
Factory License	₹25,000	1 month
Pollution Control Board Consent	₹50,000	2-3 months
Udyam (MSME) Registration	Nil	Nil
<b>TOTAL</b>	<b>₹75,000</b>	<b>5 months</b>

### (5.6) Qualitative parameters for the material

- ☐ Length of film
- ☐ Width of film
- ☐ Thickness of film (microns)
- ☐ Colour of film
- ☐ Tensile strength of film
- ☐ Stability of the bubble formed by the blow film machine
- ☐ Sealing properties
- ☐ Texture of the film (smoothness)



The components of the machine are outlined in the following.

### (5.7) Testing facilities (Global)

- India: Central Institute of Petrochemicals Engineering & Technology (CIPET)
- India: Indian Plastic Institute (IPI)
- Germany: TUV Rheinland
- Luxembourg: Eurofins Sustainability Services
- USA: BPI (**Biodegradable Products Institute**)



#### **(5.8) Raw materials sourcing**

Greenomers Private Limited

#### **(5.9) Blow film machine / Punching machine manufacturers**

- ▢ Vikas Industries
- ▢ Vmosa Extrutech
- ▢ Ocean Internationals
- ▢ AMAN Impex
- ▢ Heaven Extrusions
- ▢ Ruian Zhenjing Private Limited
- ▢ Shubham Extrusions
- ▢ Reifenhauer

#### **(5.10) Cutting Sealing Machine Manufacturers**

- ▢ Gayatrikrupa Engineering Works
- ▢ Anox Industries

#### **(5.11) Recycling Machine Manufacturers**

- ▢ Ashok Extrusion Tech

## 6. FINANCIAL DETAILS

### (6.1) Machinery Investment

Particulars	Quantity	Amount (₹)
Blown Film Machine (35 mm)	1	8,75,000
Blown Film Machine (45 mm)	1	12,00,000
Punching Machine	1	1,20,000
Cutting and Sealing Machine	1	6,50,000
Air Compressor	1	1,00,000
Recycling Machine	1	7,00,000
Wiring Cost & Installation	-	4,00,000
Tool Box & miscellaneous equipment	-	1,50,000
Printing Machine	1	Optional
<b>Total Machinery Cost (Without GST)</b>	-	<b>₹41,95,000</b>
<b>TOTAL</b>	-	<b>₹ 49,50,100</b>

### (6.2) Manpower Requirement (For 24 hours operations/6 days a week)

Designation	Per Shift Workers	No. of Shifts	Total Workers	Per Person Salary (₹)	Monthly Cost (₹)
Operator (Self)	-	-	-	-	-
Cutting Sealing Operator	1	2	2	15,000	30,000
Helper	1	2	2	15,000	30,000
<b>Total</b>	<b>3</b>		<b>6</b>		<b>₹60,000</b>

Note: 1. Machine operated directly by the owner.

2. The monthly salary of employees is structured based on Tier 2-3 city standards and may vary from city to city, optimized accordingly.



### (6.3) Operating Cost (Monthly)

Expense Head	Amount (₹)
Raw Material (COGS)	27,28,440
Team	60,000
Travel	3,333
Insurance	2,700
Compliance and Legal	16,666
Electricity	1,05,000
Breakdown and Maintenance	3,333
Factory Rent + Expenses	20,000
<b>Total Operating Cost</b>	<b>₹29,39,472</b>

### (6.4) Revenue & Profitability Analysis

#### Revenue Assumptions

- ☐ Production: 35 Tonnes/month
- ☐ Average selling price: ₹99/kg

**Monthly Revenue: ₹34,65,000**

#### Profit Calculation (Monthly)

Particulars	Amount (₹)
Monthly Revenue	₹34,65,000
Total Monthly Cost	<b>₹29,39,472</b>
<b>Net Monthly Profit</b>	<b>₹5,25,528</b>

### (6.5) Break-Even & ROI Analysis

- ☐ Estimated break-even: **8 Months**
- ☐ Expected annual profit: **₹63,06,336**