



# Bioplastics

[Source: BS](#)

## Why in News?

In February 2024, Balrampur Chini Mills, Uttar Pradesh one of India's leading sugar producers, announced a Rs 2,000 crore investment in **India's first bioplastics factory** to produce [Bioplastics](#).

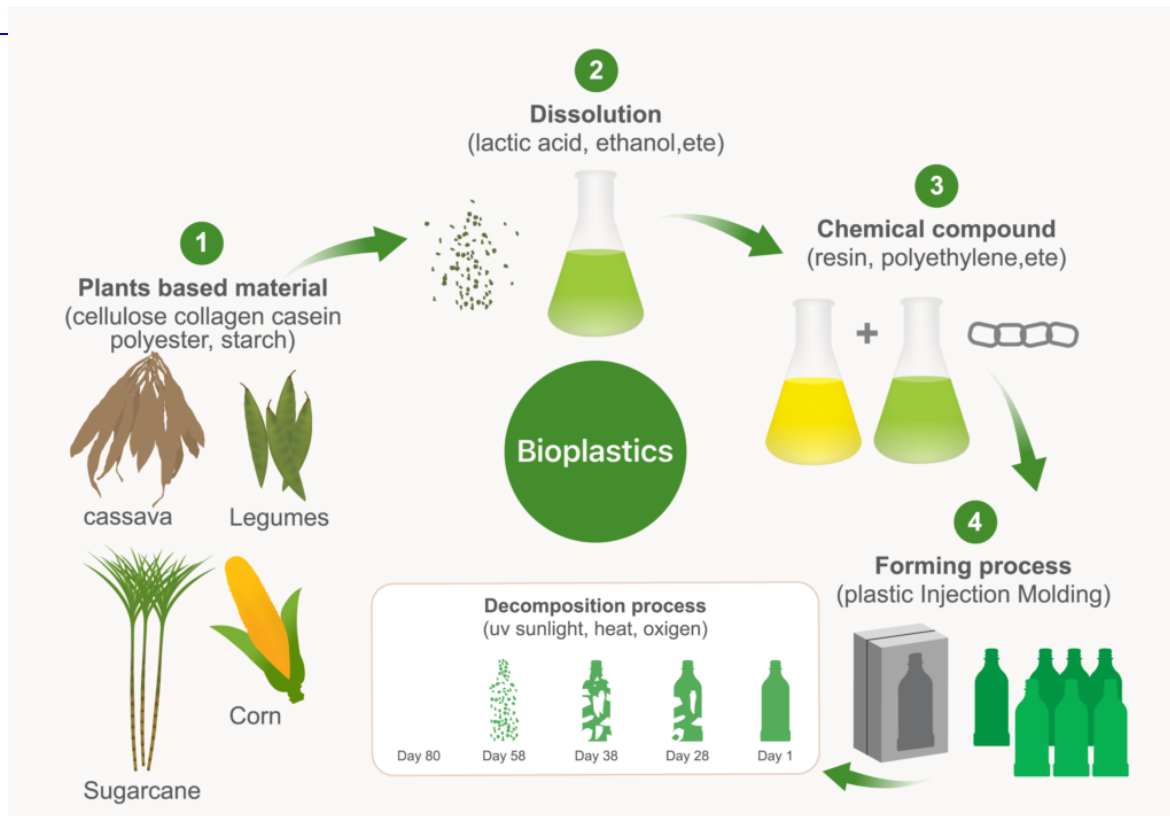
- This project is expected to play a pivotal role in **diversifying the sugar industry and** contributing to environmental sustainability by introducing **biodegradable alternatives** to [petroleum-based plastics](#).

## What are Bioplastics?

- **About:** Bioplastics are derived from [renewable organic](#) sources like [sugarcane, corn](#), unlike traditional plastics made from petroleum. They are **not always biodegradable or compostable**.
  - Bioplastics are produced by **extracting sugar from plants like corn and sugarcane** and converting it into **polylactic acids (PLAs)**. Alternatively, they can be made from **polyhydroxyalkanoates (PHAs)** from microorganisms which are then [polymerized](#) into **bioplastic**.
- **Advantages of Bioplastics:** For sugar companies, bioplastics offer a new revenue stream beyond **traditional sugar production and ethanol**. The bioplastics project is expected to generate Rs 1,700 crore to Rs 1,800 crore annually.
  - The production of Bioplastics absorbs [carbon dioxide \(CO<sub>2</sub>\)](#) and contributes to a **neutral or potentially negative carbon balance**, helping reduce the [carbon footprint](#) compared to fossil-based plastics.
  - Unlike traditional plastics, bioplastics do not contain harmful chemicals such as [phthalates](#), which are known to be hazardous to human health.
  - Bioplastics are as **strong and durable as traditional plastics**, making them ideal for use in a variety of applications such as [food packaging, agricultural films, and medical supplies](#).
  - The use of renewable resources for bioplastic production helps reduce reliance on **non-renewable materials like petroleum**.
- **Challenges:** While bioplastics offer many advantages, the **technology is still developing**, and the **cost of production can be higher than that of traditional plastic**.
  - The supply of raw materials, such as **agricultural waste, may also be limited in some regions**.
  - Concerns exist over **India's sugar industry meeting rising sugarcane demand**, as bioplastic production competes with **sugar and ethanol needs**. With a projected **4 million tonne decrease in sugar production in 2024-25**, balancing these demands will be a challenge.
- **Future Outlook for Bioplastics:** Continued innovation in bioplastic production processes and materials will help reduce costs and improve scalability.
  - Securing a steady supply of raw materials, such as **agricultural waste and sugarcane**, will be crucial for meeting growing demand.
  - Consumer demand for **sustainable products and packaging** will drive the adoption of

bioplastics, especially in environmentally conscious markets.

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## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

**Q. Why is there a great concern about the 'microbeads' that are released into environment? (2019)**

- (a) They are considered harmful to marine ecosystems.
- (b) They are considered to cause skin cancer in children.
- (c) They are small enough to be absorbed by crop plants in irrigated fields.
- (d) They are often found to be used as food adulterants.

**Ans: (a)**