



Bioproducts

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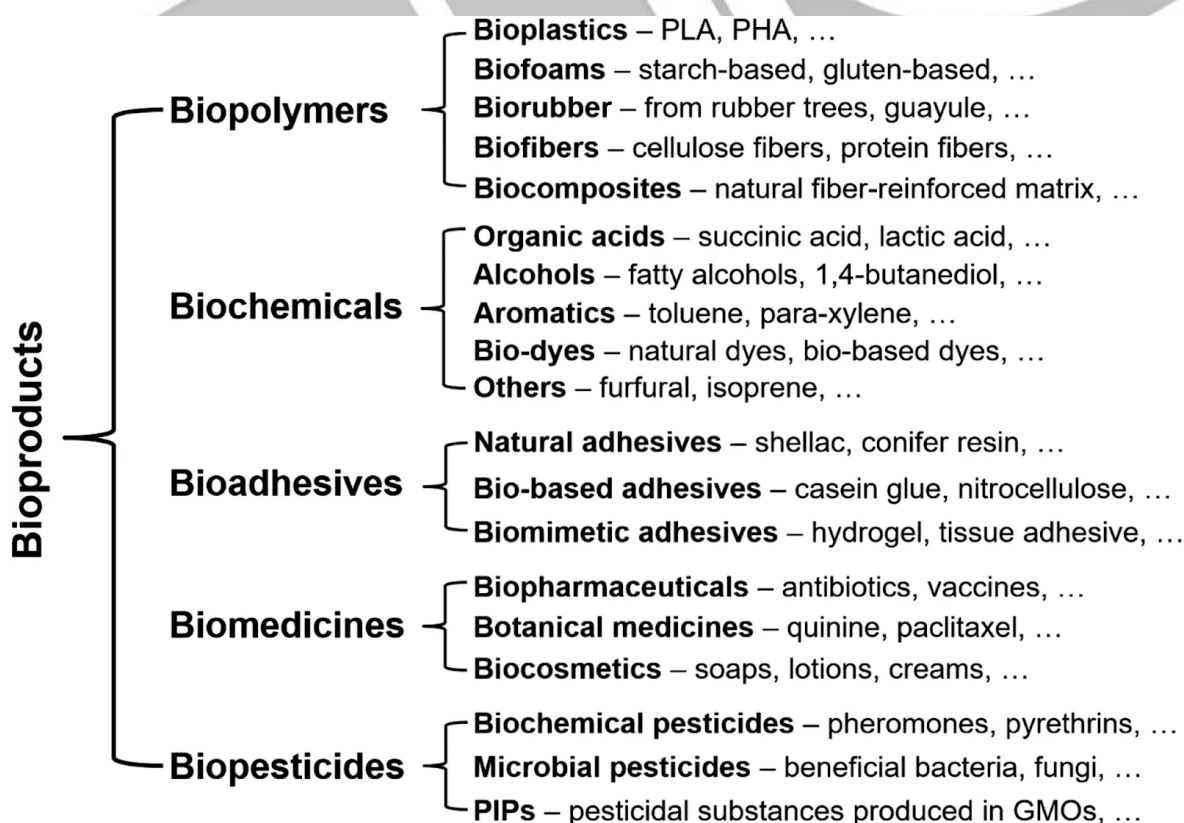
Why in News?

The **Department of Biotechnology (DBT)**, under its [BioE3 Policy](#), is setting up **16 biomanufacturing hubs** across India to **boost domestic production** of **bioproducts** such as **APIs, biofuel enzymes, reagents for biofertilizers**.

- These hubs, also known as **National Bio-Enablers or Mulankur**, are specialized facilities supporting **indigenous production of bioproducts** and fostering innovation across sectors like **health, agriculture, energy, environment**, and AI-driven biomanufacturing.

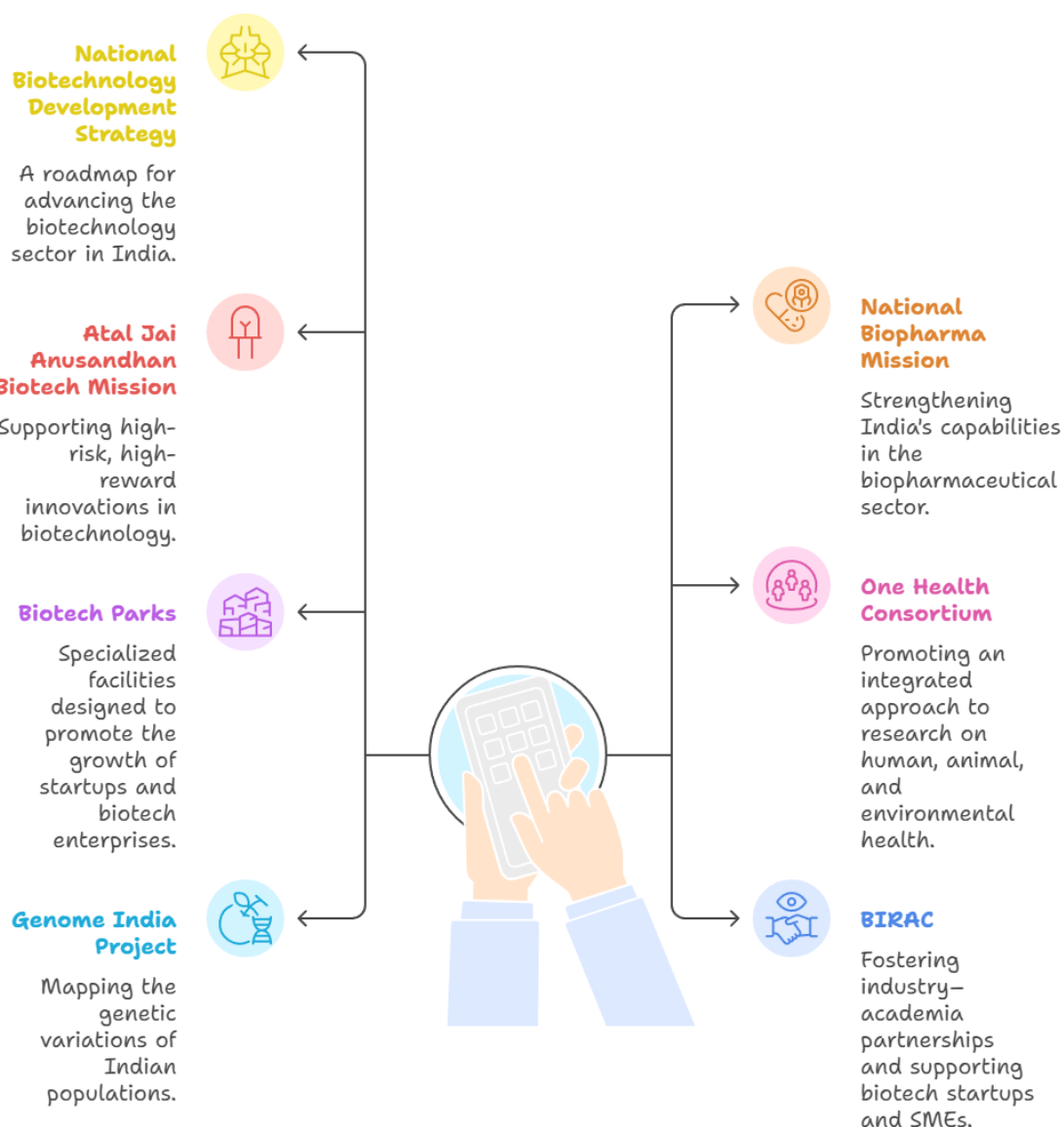
What are Bioproducts?

- **About:** Bioproducts are **fuels, materials, and chemicals** derived from **renewable biomass** such as **crops, trees, algae, and agricultural waste**.
 - Eg: **Biofuels** (ethanol, biogas), **bioplastics**, **bio-based cosmetics**, and **plant-derived medicines**.
- **Types of Bioproducts:**



- **Production Methods:** Generated using **fermentation, pyrolysis, enzymatic conversion, or chemical synthesis**.
 - They are made from **soybeans, sugarcane, algae, mycelium**, etc., and often use **agri-forestry residues**, reducing stress on food crops. Eg: **Sunflower residue** converted into **biofuel**.
- **Significance:**
 - **Reduce fossil fuel dependence** and help mitigate **air pollution, deforestation, and biodiversity loss**.
 - Promote **climate-resilient development** through **biotechnological innovation**.
 - Extend beyond laboratories to support **sustainability** via **biodegradable packaging** and **eco-friendly products**, while also generating **rural employment** and fostering **green jobs**.
- **Biodegradability:** Not all bioproducts are biodegradable, it varies by use (e.g., **bio-based paint is not biodegradable**).

Government Initiatives in Biotechnology



Did You Know?

- Despite being the world's **3rd largest pharmaceutical producer (volume)** and the **largest supplier of generic drugs**, India relies heavily on imports for **key bioproducts**.
- Nearly 70% of **active pharmaceutical ingredients (APIs)** are sourced from China, with India being 100% dependent on China for 45 out of 58 critical APIs.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Other than resistance to pests, what are the prospects for which genetically engineered plants have been created? (2012)

1. To enable them to withstand drought
2. To increase the nutritive value of the produce
3. To enable them to grow and do photosynthesis in spaceships and space stations
4. To increase their shelf life

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 3 and 4 only
- (c) 1, 2 and 4 only
- (d) 1, 2, 3 and 4

Ans: (c)

PDF Reference URL: <https://www.drishtiias.com/printpdf/bioproducts>