

Bio-based Polymers, Monomers and Intermediates: Market Analysis, Global Capacities, Production and Strategic Outlook 2026–2036

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Abstracts

The global market for bio-based polymers, monomers and chemical intermediates is undergoing the most significant structural transformation in its history. Production is growing at more than four times the rate of the overall polymer market, driven by a combination of tightening single-use plastic regulation, corporate sustainability mandates, and a generation of fermentation and catalytic process technologies that are finally achieving cost parity with fossil-based alternatives across an expanding range of polymer categories. The sector spans biodegradable and non-biodegradable bio-based polymers, natural bio-based polymers, bio-based monomers and the chemical building blocks that underpin them — a value chain that now touches virtually every major industrial sector from packaging and fibres through automotive, construction and electronics.

The market reached a structural inflection point in 2025. For the first time since tracking began, Asia is not the leading region for new production capacity additions. North America and Europe are now driving capacity growth at double the global average rate, redefining the investment geography of the sector in a shift expected to consolidate through 2036 as large-scale bio-PP, PHA and bio-PE projects come online in both regions. Asia retains the largest absolute installed base, led by PHA, PLA and polyamide production, but its share is expected to stabilise as Western investment accelerates — a development with material implications for feedstock supply chains, technology licensing strategies and pricing dynamics across the sector.

The market is structured across three commercial polymer pathways. Drop-in bio-based polymers including bio-PE, bio-PP and bio-PET are chemically identical to fossil equivalents and compete on price parity alone. Smart drop-in polymers including bio-

based epoxy resins and polyamides offer built-in process or sustainability advantages that partially de-link their economics from oil price cycles. Dedicated bio-based polymers including PLA, PHA, PEF, cellulose acetate and starch-based compounds compete on unique material properties unavailable from fossil alternatives, commanding premium pricing justified by performance, biodegradability or regulatory compliance. The fastest-growing individual polymer categories include bio-PP, PEF and PHA, each driven by distinct demand signals in packaging, beverages and marine-degradable applications respectively.

Feedstock innovation is broadening the sector's resource base and improving its sustainability credentials. Non-edible oil crops, agricultural waste streams, forestry residues and — increasingly — third-generation biological sources are entering commercial-scale bio-polymer production. In January 2026, Samsung Electronics announced the global commercial launch of the Samsung Color E-Paper display, incorporating phytoplankton-based bio-resin in a mass-market electronics product. As the holder of more than a third of global digital signage shipments, Samsung's adoption of a microalgal bio-resin marks the first confirmed commercial-scale use of a third-generation algal feedstock in consumer electronics by a major global brand. The announcement validates phytoplankton-derived resins for demanding precision electronics applications and opens a demand pathway for bio-based resin producers entirely outside the packaging and automotive segments that have historically driven bio-polymer adoption.

Demand signals from global brand leaders are increasingly defining the sector's trajectory as much as regulatory pressure or feedstock economics. Corporate procurement mandates, sustainability reporting requirements under frameworks including the EU's CSRD and the global Green Claims Directive, and growing consumer awareness of microplastic pollution are combining to make bio-based polymer specification a mainstream procurement decision across fast-moving consumer goods, hygiene, automotive and electronics. The biomass feedstock requirement for the entire global bio-based polymer industry represents only 0.016% of global agricultural land, effectively neutralising the food-versus-fuel land competition concern that has historically constrained investment and policy support for the sector, and creating conditions for continued acceleration of capacity investment, technology development and commercial adoption through 2036.

Bio-based Polymers, Monomers and Intermediates: Market Analysis, Global Capacities, Production and Strategic Outlook 2026–2036 is the most comprehensive market intelligence report available on the global bio-based polymer and chemical building

block sector. Published by Future Markets, Inc., the report provides quantitative capacity and production data, 2036 forecasts, technology assessments, regulatory analysis and company profiles across the full value chain from bio-based feedstocks through chemical intermediates and monomers to finished polymers and their end-use markets.

The report covers 17 bio-based polymer categories including cellulose acetate, epoxy resins, polyurethanes, PLA, PHA, bio-PE, bio-PP, bio-PET, PTT, PEF, PA, PBAT, PBS, APC, casein polymers, SCPC and EPDM, as well as newly introduced coverage of PTF, bio-PBT, PFA, bio-PVC, bio-PMMA and bio-SBR — polymers previously absent from commercial market intelligence but now confirmed in nova-Institute's definitive 2026 annual assessment as commercially tracked output materials. For each polymer, the report provides market analysis, production pathway description, applications overview, producer and capacity tables, and annual production capacity series from 2019 to 2036.

The building blocks and intermediates section covers over 30 individual bio-based chemical building blocks from ethylene, propylene and bio-based naphtha through lactic acid, succinic acid, 1,4-butanediol, ECH and FDCA to specialty monomers including DN5, DDDA, sebacic acid and levoglucosenone. Each building block is covered with overview, applications table, global producer information and annual production series from 2018 to 2036. A new aggregate bio-based building block market overview tracks total sector capacity from 2011 to 2036.

The feedstocks section covers plant-based, waste-based, microbial, mineral and gaseous biomass sources, with production data for starch, glucose, glycerol, sugars, cellulose, fatty acids, agricultural waste, food waste, forestry waste, biogas and syngas. The regulations section has been updated to include the revised EU Bioeconomy Strategy published in November 2025 — the most significant European policy statement on bio-based materials in over a decade — alongside the US, European and Asia-Pacific regulatory frameworks. The report's market segment analysis covers nine end-use categories from fibres and packaging through automotive, electronics and agriculture, with corrected 2025 data confirming fibres as the leading application segment at 28% of total bio-based polymer production. Over 580 company profiles are included covering producers, technology developers, feedstock suppliers and downstream brand owners across North America, Europe, Asia-Pacific and Latin America.

Report contents include

Comprehensive coverage of all commercially produced bio-based polymers

including cellulose acetate, epoxy resins, polyurethanes, PLA, PHA, bio-PE, bio-PP, bio-PET, PTT, PEF, bio-PA, PBAT, PBS, APC, casein polymers, starch-based compounds and EPDM, with dedicated sections covering PTF, bio-PBT, polyfurfuryl alcohol, bio-PVC, bio-PMMA and bio-SBR

Full technology descriptions, production pathway analysis, applications overviews, producer and capacity tables, and annual production capacity series from 2019 to 2036 for each polymer category

Drop-in, smart drop-in and dedicated bio-based polymer classification framework with per-polymer assignment and analysis of competitive dynamics and pricing implications for each pathway

The biodegradability and bio-based independence principle — a definitive explanation of why bio-based content and biodegradability are independent properties, with commercial and regulatory implications for each

Global bio-based polymer feedstock and land use analysis covering biomass inputs by feedstock type across glycerol, sugars, starch, non-edible oils, cellulose and edible oils, with land use assessment for the entire sector

Coverage of over 30 bio-based chemical building block and monomer categories from ethylene, propylene and bio-based naphtha through lactic acid, succinic acid, 1,4-butanediol and epichlorohydrin to specialty monomers including DN5, DDDA, sebacic acid and levoglucosenone, each with overview, applications table, global producer information and annual production series from 2018 to 2036

New dedicated section on bio-based naphtha as an upstream enabler for bio-based polyolefins via the HVO/HEFA route, covering producers, applications, supply chain structure and production series to 2036

New dedicated section on sorbitol as a standalone building block in the isosorbide and polyurethane polyol supply chain

Aggregate bio-based building block market overview covering total sector capacity from 2011 to 2036 with identification of primary growth drivers

Feedstock sections covering plant-based, waste-based, microbial, mineral and

gaseous biomass sources including starch, sugar crops, lignocellulosic biomass, plant oils, food waste, agricultural waste, forestry waste, aquaculture waste, municipal solid waste, industrial waste oils, microalgae, macroalgae, mineral sources, biogas and syngas

Producer capacity tables for all major polymer categories including lactic acid, PLA, PTT, FDCA and PEF, bio-PA, PBAT, PBS, bio-PE, bio-PP and PHA

Confirmed planned capacity expansion tables for PLA showing announced additions through 2027

Full regional production and capacity breakdowns for North America, Europe, Asia-Pacific and Latin America, with 2025 data and 2036 forecasts by polymer type for each region

Analysis of the Asia inflection point — the first reporting period in which Asia is not the leading region for new bio-based polymer capacity additions — with implications for investment geography, technology licensing and pricing dynamics

End-use market analysis across nine application segments — fibres and textiles, flexible packaging, rigid packaging, functional applications, automotive and transport, consumer goods, building and construction, electronics and agriculture — with 2025 data and 2036 forecasts

Full end-use market production series 2019–2036 for each of the nine application segments, plus a summary table with segment rankings and regional breakdowns

Regional end-use market tables for North America, Europe, Asia-Pacific and Latin America, each showing production by segment from 2019 to 2036

Competitive analysis of bio-based PBAT and PBS versus fossil-based equivalents, including pricing and growth trajectory implications through 2036

Global bio-based polymers market revenue table 2020–2036 by polymer type across all major categories including epoxy resins, cellulose acetate and polyurethanes

Bioplastics regulations coverage spanning the United States, European Union, Asia-Pacific and emerging markets regulatory frameworks

EU Bioeconomy Strategy November 2025 — the most significant European policy statement on bio-based materials in over a decade — covering its five lead materials markets and implications for the Packaging and Packaging Waste Regulation, CSRD, CBAM and Green Claims Directive

Extended producer responsibility frameworks across all major markets with analysis of how EPR scheme design affects bio-based polymer market access and pricing

Life cycle assessment and carbon footprint data covering cradle-to-gate and cradle-to-grave analyses for six major bio-based polymer types and multiple production scenarios, with comparison to fossil-based equivalents

Land use change analysis covering direct and indirect impacts, temporal boundary considerations and the confirmed agricultural footprint of the global bio-based polymer sector

Chemical recycling integration pathways for bio-PET, PLA, PHA, bio-PE and PEF, including technology readiness, cost trajectories and commercial timelines

Algal, fungal and mycelium-based materials section including the January 2026 Samsung Electronics Color E-Paper announcement confirming phytoplankton-based bio-resin in a mass-market electronics product — the first commercial-scale third-generation algal resin application in consumer electronics

Natural fibres section covering cotton, jute, hemp, flax, ramie, kenaf, sisal, abaca, coir, banana, pineapple, rice, corn, bamboo and wool with manufacturing methods, matrix materials, application data and production series 2018–2036

Bio-composite materials analysis including natural fibre reinforced bio-polymer performance data, sustainability credentials and application markets in automotive, construction and marine sectors

Chain of custody frameworks for bio-based content attribution including mass balance, segregation and book-and-claim approaches, with certification scheme analysis covering ISCC PLUS, REDcert? and equivalent standards

Chemical tracers and markers for bio-based content verification covering radiocarbon measurement methodology and emerging spectroscopic approaches

Scope comparison analysis explaining why bio-based polymer production figures differ between Plastics Europe, European Bioplastics and nova-Institute tracking frameworks, with reconciliation of the three datasets

Bio-based content analysis across the full polymer market including structural polymers, functional polymers, rubber and fibres

Green premium analysis covering consumer willingness to pay, corporate procurement premium tolerance by sector and the trajectory of bio-based cost premiums toward parity with fossil-based alternatives

Compostability standards analysis covering ASTM D6400, EN 13432, ASTM D5511 and ISO 14855 with distinction between industrial composting, home composting and landfill biodegradation requirements and their commercial implications

Over 590 company profiles covering producers, technology developers, feedstock suppliers, building block manufacturers and downstream brand owners across North America, Europe, Asia-Pacific and Latin America, with address, products, technology description, production capacity and market position for each

Bioplastics producers tables for North America, Europe, Asia-Pacific and Latin America listing company names, locations, polymer types and capacity data

The report profiles over 590 companies across the global bio-based polymer and monomer value chain, including: 3DBioFibR, 3M, 9Fiber, ADBioplastics, Adriano di Marti / Desserto, Advanced Biochemical Thailand, Aeropowder, Aemetis, AEP Polymers, AGRANA Staerke, AgroRenew, Ahlstrom-Munksjö, Algaeing, Algenesis, Algal Bio, Algenol, Algenie, Alginor, Algix, AmicaTerra, AmphiStar, AMSilk, Ananas Anam, An Ph?t Bioplastics, Anellotech, Andritz, Anqing He Xing Chemical, Ankor Bioplastics, ANPOLY, Applied Bioplastics, Aquafil, Aquapak Polymers, Archer Daniels Midland, Arctic Biomaterials, Ardra Bio, Arekapak, Arkema, Arlanxeo, Arrow Greentech,

Attis Innovations, Arzeda, Asahi Kasei, AVA Biochem, Avantium, Avani Eco, Avient, Axcelon Biopolymers, Ayas Renewables, Azolla, Balrampur Chini Mills, BacAlt Biosciences, Bambooder Biobased Fibers, BASF, Bast Fiber Technologies, BBKA Biochemical and GALACTIC Lactic Acid, Bcomp, Better Fibre Technologies, Betulium, Beyond Leather Materials, Bioextrax, Bio Fab NZ, BIO-FED, Biofibre, Biofine Technology, Bio2Materials, Biokemik, Bioleather, BIOLO, BioLogiQ, Biomass Resin Holdings, Biome Bioplastics, BioSolutions, Biosyntia, BIOTEC, Biofiber Tech Sweden, Bioform Technologies, BIO-LUTIONS, Biophilica, Bioplastech, Bioplastix, Biopolax, Biotecam, Biotic Circular Technologies, Biotrem, Biovox, Bioweg, bitBiome, BlockTexx, Bloom Biorenewables, BluCon Biotech, Blue BioFuels, Blue Ocean Closures, Bluepha Beijing Lanjing Microbiology Technology, Bolt Threads, Borealis, Borregaard Chemcell, Bosk Bioproducts, Bowil Biotech, B-PREG, Braskem, Bucha Bio, Buyo Bioplastic, Burgo Group, B'ZEOS, C16 Biosciences, Carbiolice, Carbios, Carbon Crusher, Carbonwave, Cardia Bioplastics, Cardolite, CARAPAC, Carapace Biopolymers, Cargill, Cass Materials, Catalyxx, Cathay Industrial Biotech, Celanese, Cellicon, Cellucomp, Celluforce, CELLON, Cellugy, Cellutech (Stora Enso), ChainCraft, CH-Bioforce, ChakraTech, Checkerspot, Chempolis, Chestnut Bio Polymers, Chitelix, Chongqing Bofei Biochemical Products, Chuetsu Pulp and Paper, CIMV, Circa Group, Circular Systems, CJ Biomaterials, CO2BioClean, Coastgrass, COFCO, Coffeeco Upcycle, Corn Next, Corumat, Clariant, CreaFill Fibers, Cristal Union, Cruz Foam, CuanTec, Daesang, Daicel, Daicel Polymer, DaikyoNishikawa, Daio Paper, Daishowa Paper Products, DAK Americas, Danimer Scientific, DENSO, Diamond Green Diesel, DIC Corporation, DIC Products, Dispersa, DKS, DMC Biotechnologies, Domsj? Fabriker, Domtar Paper, Dongnam Realize, Dongying Hebang Chemical, Dow, Royal DSM, DuFor Resins, DuPont, DuPont Tate and Lyle Bio Products, Eastman Chemical, ecoGenie biotech, Ecopel, Ecoshell, Ecovia Renewables, Ecovance, Ecovative Design, EcoPha, Eden Materials, EggPlant, Ehime Paper Manufacturing, Elea & Lili, Emirates Biotech, EMS-Grivory, Enerkem, Enkev, Eni, Enviral, EnginZyme, Enzymit, Eranova, Esbottle, EveryCarbon, Evolved By Nature, Evonik Industries, Evrnu, Expedition Zero, FabricNano, Fairbrics, Faircraft, Far Eastern New Century, Fermentalg, Fiberlean Technologies, Fiberight, Fillerbank, Fiquetex, FKUR Kunststoff, FlexSea, Flocus, Floreon, Foamplant and more...

Contents

1 EXECUTIVE SUMMARY

- 1.1 What are bioplastics?
- 1.2 Global Plastics Market and Supply
- 1.3 Recycling Polymers
- 1.4 Bio-based and Biodegradable vs. Non-biodegradable Polymers
- 1.5 Bio-based Content Across the Full Polymer Market
- 1.6 Regional Distribution
- 1.7 Bio-based Building Blocks Market Overview
- 1.8 Next Generation Bio-based Polymers
- 1.9 Integration with Chemical Recycling
- 1.10 Novel Feedstock Sources
- 1.11 Turning Waste into Bioplastics
- 1.12 Bio-based Polymer Production Shares and Bio-based Content: 2025
- 1.13 Global Bioplastics Capacity
 - 1.13.1 Production capacities 2025
 - 1.13.2 Production capacities forecast 2025-2036
 - 1.13.3 Production capacities by region 2024-2036
- 1.14 Global Market Forecasts
- 1.15 Environmental Impact and Sustainability
 - 1.15.1 Plastics carbon footprint
 - 1.15.2 Bioplastics carbon footprint
 - 1.15.3 Life Cycle Assessment of Bioplastics
 - 1.15.4 Use of renewables in production
 - 1.15.5 Land Use and Feedstock Sustainability
 - 1.15.6 Carbon Footprint Comparison with Fossil-based Alternatives
- 1.16 Bio-composites
 - 1.16.1 Sustainable packaging
 - 1.16.2 Enhanced biodegradation of bio-based polymers
 - 1.16.3 Bio-composite manufacturing
 - 1.16.4 Sustainability and Environmental Performance of Bio-based Polymers

2 INTRODUCTION

- 2.1 The Biodegradability and Bio-based Independence Principle
- 2.2 Types of bioplastics
 - 2.2.1 Introduction

2.2.2 Polymer Types

2.2.2.1 Transition from fossil-based to bio-based polymers

2.2.2.2 Monosaccharides

2.2.2.3 Vegetable Oils

2.2.3 Bio-based monomers

2.2.3.1 Portfolio of available monomers

2.2.3.2 Emerging Monomer Technologies

2.2.4 The Green Premium

2.2.5 Market Pathway Classification: Drop-in, Smart Drop-in and Dedicated Bio-based Polymers

2.3 Feedstocks

2.3.1 Types

2.3.2 Prices

2.3.3 Alternative feedstocks for bioplastics

2.3.4 Food security, land use, and water resources

2.4 Chain of custody

2.5 Chemical tracers and markers

2.6 Bioplastics regulations

2.6.1 Overview

2.6.2 Extended producer responsibility (EPR)

2.6.3 United States

2.6.4 Europe

2.6.4.1 EU Bioeconomy Strategy November 2025

2.6.5 Asia-Pacific

3 BIO-BASED FEEDSTOCKS AND INTERMEDIATES MARKET

3.1 BIOREFINERIES

3.2 BIO-BASED FEEDSTOCK AND LAND USE

3.3 PLANT-BASED

3.3.1 STARCH

3.3.1.1 Overview

3.3.1.2 Sources

3.3.1.3 Global production

3.3.1.4 Lysine

3.3.1.4.1 Source

3.3.1.4.2 Applications

3.3.1.4.3 Global production

3.3.1.5 Glucose

- 3.3.1.5.1 HMDA
 - 3.3.1.5.1.1 Overview
 - 3.3.1.5.1.2 Sources
 - 3.3.1.5.1.3 Applications
 - 3.3.1.5.1.4 Global production
- 3.3.1.5.2 1,5-pentamethylenediamine (DA5)
 - 3.3.1.5.2.1 Overview
 - 3.3.1.5.2.2 Sources
 - 3.3.1.5.2.3 Applications
 - 3.3.1.5.2.4 Global production
- 3.3.1.5.3 Sorbitol
 - 3.3.1.5.3.1 Overview
 - 3.3.1.5.3.2 Applications
 - 3.3.1.5.3.3 Global Production
 - 3.3.1.5.3.4 Isosorbide
 - 3.3.1.5.3.4.1 Overview
 - 3.3.1.5.3.4.2 Sources
 - 3.3.1.5.3.4.3 Applications
 - 3.3.1.5.3.4.4 Global production
- 3.3.1.5.4 Lactic acid
 - 3.3.1.5.4.1 Overview
 - 3.3.1.5.4.2 D-lactic acid
 - 3.3.1.5.4.3 L-lactic acid
 - 3.3.1.5.4.4 Lactide
- 3.3.1.5.5 Itaconic acid
 - 3.3.1.5.5.1 Overview
 - 3.3.1.5.5.2 Sources
 - 3.3.1.5.5.3 Applications
 - 3.3.1.5.5.4 Global production
- 3.3.1.5.6 3-HP
 - 3.3.1.5.6.1 Overview
 - 3.3.1.5.6.2 Sources
 - 3.3.1.5.6.3 Applications
 - 3.3.1.5.6.4 Global production
 - 3.3.1.5.6.5 Acrylic acid
 - 3.3.1.5.6.5.1 Overview
 - 3.3.1.5.6.5.2 Applications
 - 3.3.1.5.6.5.3 Global production
 - 3.3.1.5.6.6 1,3-Propanediol (1,3-PDO)

- 3.3.1.5.6.6.1 Overview
- 3.3.1.5.6.6.2 Applications
- 3.3.1.5.6.6.3 Global production
- 3.3.1.5.7 Succinic Acid
- 3.3.1.5.7.1 Overview
- 3.3.1.5.7.2 Sources
- 3.3.1.5.7.3 Applications
- 3.3.1.5.7.4 Global production
- 3.3.1.5.7.5 1,4-Butanediol (1,4-BDO)
- 3.3.1.5.7.5.1 Overview
- 3.3.1.5.7.5.2 Applications
- 3.3.1.5.7.5.3 Global production
- 3.3.1.5.7.6 Tetrahydrofuran (THF)
- 3.3.1.5.7.6.1 Overview
- 3.3.1.5.7.6.2 Applications
- 3.3.1.5.7.6.3 Global production
- 3.3.1.5.8 Adipic acid
- 3.3.1.5.8.1 Overview
- 3.3.1.5.8.2 Applications
- 3.3.1.5.8.3 Caprolactame
- 3.3.1.5.8.3.1 Overview
- 3.3.1.5.8.3.2 Applications
- 3.3.1.5.8.3.3 Global production
- 3.3.1.5.9 Isobutanol
- 3.3.1.5.9.1 Overview
- 3.3.1.5.9.2 Sources
- 3.3.1.5.9.3 Applications
- 3.3.1.5.9.4 Global production
- 3.3.1.5.9.5 p-Xylene
- 3.3.1.5.9.5.1 Overview
- 3.3.1.5.9.5.2 Sources
- 3.3.1.5.9.5.3 Applications
- 3.3.1.5.9.5.4 Global production
- 3.3.1.5.9.6 Terephthalic acid
- 3.3.1.5.9.6.1 Overview
- 3.3.1.5.10 1,3 Propanediol
- 3.3.1.5.10.1 Overview
- 3.3.1.5.10.2 Sources
- 3.3.1.5.10.3 Applications

- 3.3.1.5.10.4 Global production
- 3.3.1.5.11 Monoethylene glycol (MEG)
 - 3.3.1.5.11.1 Overview
 - 3.3.1.5.11.2 Sources
 - 3.3.1.5.11.3 Applications
 - 3.3.1.5.11.4 Global production
- 3.3.1.5.12 Ethanol
 - 3.3.1.5.12.1 Overview
 - 3.3.1.5.12.2 Sources
 - 3.3.1.5.12.3 Applications
 - 3.3.1.5.12.4 Global production
 - 3.3.1.5.12.5 Ethylene
 - 3.3.1.5.12.5.1 Overview
 - 3.3.1.5.12.5.2 Applications
 - 3.3.1.5.12.5.3 Global production
 - 3.3.1.5.12.5.4 Propylene
 - 3.3.1.5.12.5.5 Vinyl chloride
 - 3.3.1.5.12.6 Methly methacrylate
- 3.3.2 SUGAR CROPS
 - 3.3.2.1 Saccharose
 - 3.3.2.1.1 Aniline
 - 3.3.2.1.1.1 Overview
 - 3.3.2.1.1.2 Applications
 - 3.3.2.1.1.3 Global production
 - 3.3.2.1.2 Fructose
 - 3.3.2.1.2.1 Overview
 - 3.3.2.1.2.2 Applications
 - 3.3.2.1.2.3 Global production
 - 3.3.2.1.2.4 5-Hydroxymethylfurfural (5-HMF)
 - 3.3.2.1.2.4.1 Overview
 - 3.3.2.1.2.4.2 Applications
 - 3.3.2.1.2.4.3 Global production
 - 3.3.2.1.2.5 5-Chloromethylfurfural (5-CMF)
 - 3.3.2.1.2.5.1 Overview
 - 3.3.2.1.2.5.2 Applications
 - 3.3.2.1.2.5.3 Global production
 - 3.3.2.1.2.6 Levulinic Acid
 - 3.3.2.1.2.6.1 Overview
 - 3.3.2.1.2.6.2 Applications

- 3.3.2.1.2.6.3 Global production
- 3.3.2.1.2.7 FDME
 - 3.3.2.1.2.7.1 Overview
 - 3.3.2.1.2.7.2 Applications
 - 3.3.2.1.2.7.3 Global production
- 3.3.2.1.2.8 2,5-FDCA
 - 3.3.2.1.2.8.1 Overview
 - 3.3.2.1.2.8.2 Applications
 - 3.3.2.1.2.8.3 Global production
- 3.3.3 LIGNOCELLULOSIC BIOMASS**
 - 3.3.3.1 Levoglucosenone
 - 3.3.3.1.1 Overview
 - 3.3.3.1.2 Applications
 - 3.3.3.1.3 Global production
 - 3.3.3.2 Hemicellulose
 - 3.3.3.2.1 Overview
 - 3.3.3.2.2 Biochemicals from hemicellulose
 - 3.3.3.2.3 Global production
 - 3.3.3.2.4 Furfural
 - 3.3.3.2.4.1 Overview
 - 3.3.3.2.4.2 Applications
 - 3.3.3.2.4.3 Global production
 - 3.3.3.2.4.4 Furfuyl alcohol
 - 3.3.3.2.4.4.1 Overview
 - 3.3.3.2.4.4.2 Applications
 - 3.3.3.2.4.4.3 Global production
 - 3.3.3.3 Lignin
- 3.3.4 PLANT OILS**
 - 3.3.4.1 Overview
 - 3.3.4.2 Glycerol
 - 3.3.4.2.1 Overview
 - 3.3.4.2.2 Applications
 - 3.3.4.2.3 Global production
 - 3.3.4.2.4 MPG
 - 3.3.4.2.4.1 Overview
 - 3.3.4.2.4.2 Applications
 - 3.3.4.2.4.3 Global production
 - 3.3.4.2.5 ECH
 - 3.3.4.2.5.1 Overview

- 3.3.4.2.5.2 Applications
- 3.3.4.2.5.3 Global production
- 3.3.4.3 Fatty acids
 - 3.3.4.3.1 Overview
 - 3.3.4.3.2 Applications
 - 3.3.4.3.3 Global production
- 3.3.4.4 Castor oil
 - 3.3.4.4.1 Overview
 - 3.3.4.4.2 Sebacic acid
 - 3.3.4.4.2.1 Overview
 - 3.3.4.4.2.2 Applications
 - 3.3.4.4.2.3 Global production
 - 3.3.4.4.3 11-Aminoundecanoic acid (11-AA)
 - 3.3.4.4.3.1 Overview
 - 3.3.4.4.3.2 Applications
 - 3.3.4.4.3.3 Global production
- 3.3.4.5 Dodecanedioic acid (DDDA)
 - 3.3.4.5.1 Overview
 - 3.3.4.5.2 Applications
 - 3.3.4.5.3 Global production
- 3.3.4.6 Pentamethylene diisocyanate
 - 3.3.4.6.1 Overview
 - 3.3.4.6.2 Applications
 - 3.3.4.6.3 Global production
- 3.3.5 NON-EDIBLE MILK
 - 3.3.5.1 Casein
 - 3.3.5.1.1 Overview
 - 3.3.5.1.2 Applications
 - 3.3.5.1.3 Global production
- 3.3.6 BIO-BASED NAPHTHA
 - 3.3.6.1 Overview
 - 3.3.6.2 Applications
 - 3.3.6.3 Global Production
- 3.4 WASTE
 - 3.4.1 Food waste
 - 3.4.1.1 Overview
 - 3.4.1.2 Products and applications
 - 3.4.1.3 Global production
 - 3.4.2 Agricultural waste

- 3.4.2.1 Overview
- 3.4.2.2 Products and applications
- 3.4.2.3 Global production
- 3.4.3 Forestry waste
 - 3.4.3.1 Overview
 - 3.4.3.2 Products and applications
 - 3.4.3.3 Global production
- 3.4.4 Aquaculture/fishing waste
 - 3.4.4.1 Overview
 - 3.4.4.2 Products and applications
 - 3.4.4.3 Global production
- 3.4.5 Municipal solid waste
 - 3.4.5.1 Overview
 - 3.4.5.2 Products and applications
 - 3.4.5.3 Global production
- 3.4.6 Industrial waste
 - 3.4.6.1 Overview
 - 3.4.6.2 Waste oils
 - 3.4.6.3 Overview
 - 3.4.6.4 Products and applications
 - 3.4.6.5 Global production
- 3.5 MICROBIAL & MINERAL SOURCES
 - 3.5.1 Microalgae
 - 3.5.1.1 Overview
 - 3.5.1.2 Products and applications
 - 3.5.1.3 Global production
 - 3.5.2 Macroalgae
 - 3.5.2.1 Overview
 - 3.5.2.2 Products and applications
 - 3.5.2.3 Global production
 - 3.5.3 Mineral sources
 - 3.5.3.1 Overview
 - 3.5.3.2 Products and applications
- 3.6 GASEOUS
 - 3.6.1 Biogas
 - 3.6.1.1 Overview
 - 3.6.1.2 Products and applications
 - 3.6.1.3 Global production
 - 3.6.2 Syngas

- 3.6.2.1 Overview
- 3.6.2.2 Products and applications
- 3.6.2.3 Global production
- 3.6.3 Off gases - fermentation CO₂, CO
 - 3.6.3.1 Overview
 - 3.6.3.2 Products and applications

4 BIO-BASED POLYMERS

4.1 BIO-BASED OR RENEWABLE PLASTICS

- 4.1.1 Drop-in bio-based plastics
- 4.1.2 Novel bio-based plastics

4.2 BIODEGRADABLE AND COMPOSTABLE PLASTICS

- 4.2.1 Biodegradability
- 4.2.2 Compostability

4.3 TYPES

4.4 KEY MARKET PLAYERS

4.5 SYNTHETIC BIO-BASED POLYMERS

- 4.5.1 Aliphatic polycarbonates (APC) – cyclic and linear
 - 4.5.1.1 Market analysis
 - 4.5.1.2 Production
 - 4.5.1.3 Applications
 - 4.5.1.4 Producers

4.5.2 Polylactic acid (Bio-PLA)

- 4.5.2.1 What is polylactic acid?
- 4.5.2.2 Market analysis
- 4.5.2.3 Applications
- 4.5.2.4 Production
- 4.5.2.5 Biomanufacturing of lactic acid (C₃H₆O₃)
- 4.5.2.6 Bacterial fermentation
 - 4.5.2.6.1 Lactic acid
 - 4.5.2.6.2 Selection of optimal bacterial strains
 - 4.5.2.6.3 Downstream processing of fermentation broth into PLA-grade lactic acid
- 4.5.2.7 PLA hydrolysis
- 4.5.2.8 Ocean degradation
- 4.5.2.9 PLA end-of-life
- 4.5.2.10 Producers and production capacities, current and planned
 - 4.5.2.10.1 Lactic acid producers and production capacities
 - 4.5.2.10.2 PLA producers and production capacities

- 4.5.2.10.3 Polylactic acid (Bio-PLA) production 2019-2036 (1,000 tonnes)
- 4.5.3 Polyethylene terephthalate (Bio-PET)
 - 4.5.3.1 Market analysis
 - 4.5.3.2 Bio-based MEG and PET
 - 4.5.3.2.1 Monomer production
 - 4.5.3.2.2 Applications
 - 4.5.3.3 Producers and production capacities
 - 4.5.3.4 Polyethylene terephthalate (Bio-PET) production 2019-2036 (1,000 tonnes)
- 4.5.4 Polytrimethylene terephthalate (Bio-PTT)
 - 4.5.4.1 Market analysis
 - 4.5.4.2 Producers and production capacities
 - 4.5.4.3 Polytrimethylene terephthalate (PTT) production 2019-2036 (1,000 tonnes)
- 4.5.5 Polyethylene furanoate (Bio-PEF)
 - 4.5.5.1 Market analysis
 - 4.5.5.2 Comparative properties to PET
 - 4.5.5.3 Commercial status
 - 4.5.5.4 Producers and production capacities
 - 4.5.5.4.1 FDCA and PEF producers and production capacities
 - 4.5.5.4.2 Polyethylene furanoate (Bio-PEF) production 2019-2036 (1,000 tonnes).
- 4.5.6 Polyamides (Bio-PA)
 - 4.5.6.1 Market analysis
 - 4.5.6.2 Producers and production capacities
 - 4.5.6.3 Polyamides (Bio-PA) production 2019-2036 (1,000 tonnes)
- 4.5.7 Poly(butylene adipate-co-terephthalate) (Bio-PBAT)
 - 4.5.7.1 Market analysis
 - 4.5.7.2 Producers and production capacities
 - 4.5.7.3 Poly(butylene adipate-co-terephthalate) (Bio-PBAT) production 2019-2036 (1,000 tonnes)
- 4.5.8 Polybutylene succinate (PBS) and copolymers
 - 4.5.8.1 Market analysis
 - 4.5.8.2 Producers and production capacities
 - 4.5.8.3 Polybutylene succinate (PBS) production 2019-2036 (1,000 tonnes)
- 4.5.9 Polyethylene (Bio-PE)
 - 4.5.9.1 Market analysis
 - 4.5.9.2 Producers and production capacities
 - 4.5.9.3 Polyethylene (Bio-PE) production 2019-2036 (1,000 tonnes).
- 4.5.10 Polypropylene (Bio-PP)
 - 4.5.10.1 Market analysis
 - 4.5.10.2 Producers and production capacities

- 4.5.10.3 Polypropylene (Bio-PP) production 2019-2036 (1,000 tonnes)
- 4.5.11 Superabsorbent polymers
 - 4.5.11.1 Market analysis
 - 4.5.11.2 Production
 - 4.5.11.3 Applications
 - 4.5.11.4 Producers
- 4.5.12 Polytrimethylene Furandicarboxylate (PTF)
 - 4.5.12.1 Market Analysis
 - 4.5.12.2 Production
 - 4.5.12.3 Applications
 - 4.5.12.4 Producers and Production Capacities
 - 4.5.12.5 PTF Production Capacity 2019–2036 (1,000 tonnes)
- 4.5.13 Bio-based Polybutylene Terephthalate (Bio-PBT)
 - 4.5.13.1 Market Analysis
 - 4.5.13.2 Production
 - 4.5.13.3 Applications
 - 4.5.13.4 Producers and Production Capacities
 - 4.5.13.5 Bio-PBT Production Capacity 2019–2036 (1,000 tonnes)
- 4.5.14 Polyfurfuryl Alcohol (PFA)
 - 4.5.14.1 Market Analysis
 - 4.5.14.2 Production
 - 4.5.14.3 Applications
 - 4.5.14.4 Producers and Production Capacities
 - 4.5.14.5 PFA Production Capacity 2019–2036 (1,000 tonnes)
- 4.5.15 Bio-based Polyvinyl Chloride (Bio-PVC)
 - 4.5.15.1 Market Analysis
 - 4.5.15.2 Production
 - 4.5.15.3 Applications
 - 4.5.15.4 Producers and Production Capacities
 - 4.5.15.5 Bio-PVC Production Capacity 2019–2036 (1,000 tonnes)
- 4.5.16 Bio-based Polymethyl Methacrylate (Bio-PMMA)
 - 4.5.16.1 Market Analysis
 - 4.5.16.2 Production
 - 4.5.16.3 Applications
 - 4.5.16.4 Producers and Production Capacities
 - 4.5.16.5 Bio-PMMA Production Capacity 2019–2036 (1,000 tonnes)
- 4.5.17 Bio-based Styrene-Butadiene Rubber (Bio-SBR)
 - 4.5.17.1 Market Analysis
 - 4.5.17.2 Production

4.5.17.3 Applications

4.5.17.4 Producers and Production Capacities

4.5.17.5 Bio-SBR Production Capacity 2019–2036 (1,000 tonnes)

4.6 NATURAL BIO-BASED POLYMERS

4.6.1 Polyhydroxyalkanoates (PHA)

4.6.1.1 Technology description

4.6.1.2 Types

4.6.1.2.1 PHB

4.6.1.2.2 PHBV

4.6.1.3 Synthesis and production processes

4.6.1.4 Market analysis

4.6.1.5 Commercially available PHAs

4.6.1.6 Markets for PHAs

4.6.1.6.1 Packaging

4.6.1.6.2 Cosmetics

4.6.1.6.2.1 PHA microspheres

4.6.1.6.3 Medical

4.6.1.6.3.1 Tissue engineering

4.6.1.6.3.2 Drug delivery

4.6.1.6.4 Agriculture

4.6.1.6.4.1 Mulch film

4.6.1.6.4.2 Grow bags

4.6.1.7 Producers and production capacities

4.6.1.8 PHA production capacities 2019-2036 (1,000 tonnes)

4.6.2 Cellulose

4.6.2.1 Cellulose acetate (CA)

4.6.2.1.1 Market analysis

4.6.2.1.2 Production

4.6.2.1.3 Applications

4.6.2.1.4 Producers

4.6.2.2 Microfibrillated cellulose (MFC)

4.6.2.2.1 Market analysis

4.6.2.2.2 Producers and production capacities

4.6.2.3 Nanocellulose

4.6.2.4 Casein polymers

4.6.2.4.1 Market analysis

4.6.2.5 Commercial status

4.6.2.5.1 Production

4.6.2.5.2 Applications

4.6.2.6 Algal, Fungal and Mycelium-based Materials: Emerging Outlook

4.7 NATURAL FIBERS

4.7.1 Manufacturing method, matrix materials and applications of natural fibers

4.7.2 Advantages of natural fibers

4.7.3 Commercially available next-gen natural fiber products

4.7.4 Market drivers for next-gen natural fibers

4.7.5 Challenges

4.7.6 Plants (cellulose, lignocellulose)

4.7.6.1 Seed fibers

4.7.6.1.1 Cotton

4.7.6.1.1.1 Production volumes 2018-2036

4.7.6.1.2 Kapok

4.7.6.1.2.1 Production volumes 2018-2036

4.7.6.1.3 Luffa

4.7.6.2 Bast fibers

4.7.6.2.1 Jute

4.7.6.2.2 Production volumes 2018-2036

4.7.6.2.2.1 Hemp

4.7.6.2.2.2 Production volumes 2018-2036

4.7.6.2.3 Flax

4.7.6.2.3.1 Production volumes 2018-2036

4.7.6.2.4 Ramie

4.7.6.2.4.1 Production volumes 2018-2036

4.7.6.2.5 Kenaf

4.7.6.2.5.1 Production volumes 2018-2036

4.7.6.3 Leaf fibers

4.7.6.3.1 Sisal

4.7.6.3.1.1 Production volumes 2018-2036

4.7.6.3.2 Abaca

4.7.6.3.2.1 Production volumes 2018-2036

4.7.6.4 Fruit fibers

4.7.6.4.1 Coir

4.7.6.4.1.1 Production volumes 2018-2036

4.7.6.4.2 Banana

4.7.6.4.2.1 Production volumes 2018-2036

4.7.6.4.3 Pineapple

4.7.6.5 Stalk fibers from agricultural residues

4.7.6.5.1 Rice fiber

4.7.6.5.2 Corn

- 4.7.6.6 Cane, grasses and reed
 - 4.7.6.6.1 Switch grass
 - 4.7.6.6.2 Sugarcane (agricultural residues)
 - 4.7.6.6.3 Bamboo
 - 4.7.6.6.3.1 Production volumes 2018-2036
 - 4.7.6.6.4 Fresh grass (green biorefinery)
- 4.7.7 Animal (fibrous protein)
 - 4.7.7.1 Wool
 - 4.7.7.1.1 Alternative wool materials
 - 4.7.7.1.2 Producers
 - 4.7.7.2 Silk fiber
 - 4.7.7.2.1 Alternative silk materials
 - 4.7.7.2.1.1 Producers
 - 4.7.7.3 Leather
 - 4.7.7.3.1 Alternative leather materials
 - 4.7.7.3.1.1 Producers
 - 4.7.7.4 Fur
 - 4.7.7.4.1 Producers
 - 4.7.7.5 Down
 - 4.7.7.5.1 Alternative down materials
 - 4.7.7.5.1.1 Producers
- 4.7.8 Markets for natural fibers
 - 4.7.8.1 Composites
 - 4.7.8.2 Applications
 - 4.7.8.3 Natural fiber injection moulding compounds
 - 4.7.8.3.1 Properties
 - 4.7.8.3.2 Applications
 - 4.7.8.4 Non-woven natural fiber mat composites
 - 4.7.8.4.1 Automotive
 - 4.7.8.4.2 Applications
 - 4.7.8.5 Aligned natural fiber-reinforced composites
 - 4.7.8.6 Natural fiber biobased polymer compounds
 - 4.7.8.7 Natural fiber biobased polymer non-woven mats
 - 4.7.8.7.1 Flax
 - 4.7.8.7.2 Kenaf
 - 4.7.8.8 Natural fiber thermoset bioresin composites
 - 4.7.8.9 Aerospace
 - 4.7.8.9.1 Market overview
 - 4.7.8.10 Automotive

- 4.7.8.10.1 Market overview
- 4.7.8.10.2 Applications of natural fibers
- 4.7.8.11 Building/construction
 - 4.7.8.11.1 Market overview
 - 4.7.8.11.2 Applications of natural fibers
- 4.7.8.12 Sports and leisure
 - 4.7.8.12.1 Market overview
- 4.7.8.13 Textiles
 - 4.7.8.13.1 Market overview
 - 4.7.8.13.2 Consumer apparel
 - 4.7.8.13.3 Geotextiles
- 4.7.8.14 Packaging
 - 4.7.8.14.1 Market overview
- 4.7.9 Global production of natural fibers
- 4.8 LIGNIN
 - 4.8.1 Lignin as a Bio-based Polymer Feedstock

5 MARKETS FOR BIOPLASTICS

- 5.1 Packaging (Flexible and Rigid)
 - 5.1.1 Processes for bioplastics in packaging
 - 5.1.2 Applications
 - 5.1.3 Flexible packaging
 - 5.1.3.1 Production volumes 2019-2036
 - 5.1.4 Rigid packaging
 - 5.1.4.1 Production volumes 2019-2036
- 5.2 Consumer Goods
 - 5.2.1 Applications
 - 5.2.2 Production volumes 2019-2036
- 5.3 Automotive
 - 5.3.1 Applications
 - 5.3.2 Production volumes 2019-2036
- 5.4 Building and Construction
 - 5.4.1 Applications
 - 5.4.2 Production volumes 2019-2036
- 5.5 Textiles and Fibers
 - 5.5.1 Apparel
 - 5.5.2 Footwear
 - 5.5.3 Medical textiles

5.5.4 Production volumes 2019-2036

5.6 Electronics

5.6.1 Applications

5.6.2 Production volumes 2019-2036

5.7 Agriculture and Horticulture

5.7.1 Production volumes 2019-2036

5.8 Production of Biopolymers, by region

5.8.1 North America

5.8.2 Europe

5.8.3 Asia-Pacific

5.8.4 Latin America

6 COMPANY PROFILES (595 COMPANY PROFILES)

7 APPENDIX

7.1 Research Methodology

8 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1. Global Plastics Production (1950-2025).
- Table 2. Bio-based and Biodegradable vs. Non-biodegradable Polymers (2025).
- Table 3. Regional Biopolymer Distribution and Projections (2025–2036)
- Table 4. Regional Production Capacity Projections (1,000 tonnes).
- Table 5. Bio-based Building Blocks Market Overview
- Table 6. Global Bio-based Building Block Production Capacities 2011–2036 (million tonnes total, all building blocks)
- Table 7. Next Generation Bio-based Polymers.
- Table 8. Bio-based Polymers and Chemical Recycling (2024-2036).
- Table 9. Novel Feedstock Sources
- Table 10. Bio-based Polymer Production Shares and Bio-based Content: 2025
- Table 11. Global Bio-based Polymer Production Capacities and Production 2025
- Table 12. Bio-based Polymer Global Installed Capacity Forecast 2025–2036 by Type (1,000 tonnes)
- Table 13. Bioplastics Production Capacities by Region 2024-2036 (1,000 tonnes).
- Table 14. Global Bio-based Polymers Market by Type 2020–2036 (Revenues \$M)
- Table 15. Life Cycle Assessment of Bio-based Polymers.
- Table 16. Carbon Footprint Comparison with Fossil-based Alternative
- Table 17. Available Bio-based Monomers.
- Table 18. Bioplastic feedstocks,
- Table 19. Bioplastics regulations around the world.
- Table 20. Plant-based feedstocks and biochemicals produced.
- Table 21. Waste-based feedstocks and biochemicals produced.
- Table 22. Microbial and mineral-based feedstocks and biochemicals produced.
- Table 23. Common starch sources that can be used as feedstocks for producing biochemicals.
- Table 24. Global Production of Starch for Bio-based Chemicals and Intermediates, 2018–2036 (million metric tonnes)
- Table 25. Common lysine sources that can be used as feedstocks for producing biochemicals.
- Table 26. Applications of lysine as a feedstock for biochemicals.
- Table 27. Global Production of Bio-based Lysine, 2018–2036 (metric tonnes)
- Table 28. Global Glucose Production for Bio-based Chemicals and Intermediates, 2018–2036 (million metric tonnes)
- Table 29. HDMA sources that can be used as feedstocks for producing biochemicals.

- Table 30. Applications of bio-based HDMA.
- Table 31. Global Production Volumes of Bio-HMDA, 2018–2036 (metric tonnes)
- Table 32. Biobased feedstocks that can be used to produce 1,5-diaminopentane (DA5).
- Table 33. Applications of DA5.
- Table 34. Global Production of Bio-based DA5, 2018–2036 (metric tonnes)
- Table 35. Sorbitol Applications
- Table 36. Global Production (sorbitol directed to polymer/chemical applications, thousand tonnes)
- Table 37. Biobased feedstocks for isosorbide.
- Table 38. Applications of bio-based isosorbide.
- Table 39. Global production of bio-based isosorbide, 2018-2036 (metric tonnes).
- Table 40. L-lactic acid (L-LA) production, 2018-2036 (metric tonnes).
- Table 41. Lactide applications.
- Table 42. Global Lactide Production, 2018–2036 (metric tonnes)
- Table 43. Biobased feedstock sources for itaconic acid.
- Table 44. Applications of bio-based itaconic acid.
- Table 45. Global Production of Bio-itaconic Acid, 2018–2036 (metric tonnes)
- Table 46. Biobased feedstock sources for 3-HP.
- Table 47. Applications of 3-HP.
- Table 48. Global production of 3-HP, 2018-2036 (metric tonnes).
- Table 49. Applications of bio-based acrylic acid.
- Table 50. Global production of bio-based acrylic acid, 2018-2036 (metric tonnes).
- Table 51. Applications of bio-based 1,3-Propanediol (1,3-PDO).
- Table 52. Global Production of Bio-based 1,3-Propanediol (1,3-PDO), 2018–2036 (metric tonnes)
- Table 53. Biobased feedstock sources for Succinic acid.
- Table 54. Applications of succinic acid.
- Table 55. Global Production of Bio-based Succinic Acid, 2018–2036 (metric tonnes)
- Table 56. Applications of bio-based 1,4-Butanediol (BDO).
- Table 57. Global production of 1,4-Butanediol (BDO), 2018-2036 (metric tonnes).
- Table 58. Applications of bio-based Tetrahydrofuran (THF).
- Table 59. Global Production of Bio-based Tetrahydrofuran (THF), 2018–2036 (metric tonnes)
- Table 60. Applications of bio-based adipic acid.
- Table 61. Applications of bio-based caprolactam.
- Table 62. Global production of bio-based caprolactam, 2018-2036 (metric tonnes).
- Table 63. Biobased feedstock sources for isobutanol.
- Table 64. Applications of bio-based isobutanol.
- Table 65. Global Production of Bio-based Isobutanol, 2018–2036 (metric tonnes)

- Table 66. Biobased feedstock sources for p-Xylene.
- Table 67. Applications of bio-based p-Xylene.
- Table 68. Global Production of Bio-based p-Xylene, 2018–2036 (metric tonnes)
- Table 69. Applications of bio-based Terephthalic acid (TPA).
- Table 70. Global Production of Biobased Terephthalic Acid (TPA), 2018–2036 (metric tonnes)
- Table 71. Biobased feedstock sources for 1,3 Propanediol.
- Table 72. Applications of bio-based 1,3 Propanediol.
- Table 73. Global production of biobased 1,3 Propanediol, 2018-2036 (metric tonnes).
- Table 74. Biobased feedstock sources for MEG.
- Table 75. Applications of bio-based MEG.
- Table 76. Biobased MEG producers capacities.
- Table 77. Global Production of Biobased MEG, 2018–2036 (metric tonnes)
- Table 78. Biobased feedstock sources for ethanol.
- Table 79. Applications of bio-based ethanol.
- Table 80. Global Production of Biobased Ethanol, 2018–2036 (million metric tonnes)
- Table 81. Applications of bio-based ethylene.
- Table 82. Global Production of Biobased Ethylene, 2018–2036 (metric tonnes)
- Table 83. Applications of bio-based propylene.
- Table 84. Global Production of Biobased Propylene, 2018–2036 (metric tonnes)
- Table 85. Applications of bio-based vinyl chloride.
- Table 86. Global Production of Biobased Vinyl Chloride, 2018–2036 (metric tonnes)
- Table 87. Applications of bio-based Methyl methacrylate.
- Table 88. Global Production of Bio-based Methyl Methacrylate, 2018–2036 (metric tonnes)
- Table 89. Applications of bio-based aniline.
- Table 90. Global Production of Biobased Aniline, 2018–2036 (metric tonnes)
- Table 91. Applications of biobased fructose.
- Table 92. Applications of bio-based 5-Hydroxymethylfurfural (5-HMF).
- Table 93. Global Production of Biobased 5-Hydroxymethylfurfural (5-HMF), 2018–2036 (metric tonnes)
- Table 94. Applications of 5-(Chloromethyl)furfural (CMF).
- Table 95. Global Production of Biobased 5-Chloromethylfurfural (5-CMF), 2018–2036 (metric tonnes)
- Table 96. Applications of Levulinic acid.
- Table 97. Global production of biobased Levulinic acid, 2018-2036 (metric tonnes).
- Table 98. Markets and applications for bio-based FDME.
- Table 99. Global production of biobased FDME, 2018-2036 (metric tonnes).
- Table 100. Applications of FDCA.

- Table 101. Global Production of Biobased Furan-2,5-dicarboxylic Acid (FDCA), 2018–2036 (metric tonnes)
- Table 102. Markets and applications for bio-based levoglucosenone.
- Table 103. Global Production of Bio-based Levoglucosenone, 2018–2036 (metric tonnes)
- Table 104. Biochemicals derived from hemicellulose
- Table 105. Markets and applications for bio-based hemicellulose
- Table 106. Global Production of Hemicellulose, 2018–2036 (million metric tonnes)
- Table 107. Global Production of Biobased Furfural, 2018–2036 (metric tonnes)
- Table 108. Markets and applications for bio-based furfuryl alcohol.
- Table 109. Global Production of Biobased Furfuryl Alcohol, 2018–2036 (metric tonnes)
- Table 115. Global Production of Biobased Lignin, 2018–2036 (metric tonnes)
- Table 116. Markets and applications for bio-based glycerol.
- Table 117. Global Production of Biobased Glycerol, 2018–2036 (metric tonnes)
- Table 118. Markets and applications for Bio-based MPG.
- Table 119. Global Production of Bio-MPG, 2018–2036 (metric tonnes)
- Table 120. Markets and applications: Bio-based ECH.
- Table 121. Global production of biobased ECH, 2018-2036 (metric tonnes).
- Table 122. Global Production of Biobased Fatty Acids, 2018–2036 (million metric tonnes)
- Table 123. Global Production of Biobased Sebacic Acid, 2018–2036 (metric tonnes)
- Table 124. Global Production of Biobased 11-Aminoundecanoic Acid (11-AA), 2018–2036 (metric tonnes)
- Table 125. Global Production of Biobased Dodecanedioic Acid (DDDA), 2018–2036 (metric tonnes)
- Table 126. Global production of biobased Pentamethylene diisocyanate, 2018-2036 (metric tonnes).
- Table 127. Global Production of Biobased Casein, 2018–2036 (metric tonnes)
- Table 128. Bio-based naphtha applications.
- Table 129. Bio-based naphthaProduction Volume (thousand tonnes)
- Table 130. Global Production of Food Waste for Biochemicals, 2018–2036 (billion tonnes)
- Table 131. Global Production of Agricultural Waste for Biochemicals, 2018–2036 (billion tonnes)
- Table 132. Global Production of Forestry Waste for Biochemicals, 2018–2036 (billion tonnes)
- Table 133. Global Production of Aquaculture/Fishing Waste for Biochemicals, 2018–2036 (million metric tonnes)
- Table 134. Global Production of Municipal Solid Waste for Biochemicals, 2018–2036

(billion tonnes)

Table 135. Global Production of Waste Oils for Biochemicals, 2018–2036 (million metric tonnes)

Table 136. Global Microalgae Production, 2018–2036 (million metric tonnes)

Table 137. Global Macroalgae Production, 2018–2036 (million metric tonnes)

Table 138. Mineral source products and applications.

Table 139. Global Production of Biogas, 2018–2036 (billion m³)

Table 140. Global Production of Syngas, 2018–2036 (billion m³)

Table 141. Type of biodegradation.

Table 142. Advantages and disadvantages of biobased plastics compared to conventional plastics.

Table 143. Types of Bio-based and/or Biodegradable Plastics, applications.

Table 144. Key market players by Bio-based and/or Biodegradable Plastic types.

Table 145. Aliphatic polycarbonates (APC) – cyclic and linear production 2019-2036 (1,000 tonnes)

Table 146. Aliphatic polycarbonates (APC) – cyclic and linear Applications.

Table 147. Aliphatic polycarbonates (APC) producers.

Table 148. Polylactic acid (PLA) market analysis-manufacture, advantages, disadvantages and applications.

Table 149. Optimal Lactic Acid Bacteria Strains for Fermentation

Table 150. Lactic acid producers and production capacities.

Table 151. PLA producers and production capacities.

Table 152. Planned PLA Capacity Expansions (2025 confirmed)

Table 153. PLA Production 2019–2036 (1,000 tonnes)

Table 154. Bio-based Polyethylene terephthalate (Bio-PET) market analysis-manufacture, advantages, disadvantages and applications.

Table 155. Bio-based Polyethylene terephthalate (PET) producers and production capacities.

Table 156. Polyethylene terephthalate (Bio-PET) production 2019-2036 (1,000 tonnes).

Table 157. Polytrimethylene terephthalate (PTT) market analysis-manufacture, advantages, disadvantages and applications.

Table 158. PTT Production Capacities (2025)

Table 159. Polytrimethylene terephthalate (PTT) production 2019-2036 (1,000 tonnes).

Table 160. Polyethylene furanoate (PEF) market analysis-manufacture, advantages, disadvantages and applications.

Table 161. PEF vs. PET.

Table 162. FDCA and PEF Producers (2025)

Table 163. Polyethylene furanoate (Bio-PEF) production 2019-2036 (1,000 tonnes).

Table 164. Bio-based polyamides (Bio-PA) market analysis - manufacture, advantages,

disadvantages and applications.

Table 165. Bio-PA Producers Production Capacities (2025)

Table 166. Polyamides (Bio-PA) production 2019-2036 (1,000 tonnes).

Table 167. Poly(butylene adipate-co-terephthalate) (PBAT) market analysis-manufacture, advantages, disadvantages and applications.

Table 168. PBAT Producers, Production Capacities and Brands (2025)

Table 169. Poly(butylene adipate-co-terephthalate) (Bio-PBAT) production 2019-2036 (1,000 tonnes).

Table 170. Bio-PBS market analysis-manufacture, advantages, disadvantages and applications.

Table 171. PBS Producers and Production Capacities (2025)

Table 172. Polybutylene succinate (PBS) production 2019-2036 (1,000 tonnes).

Table 173. Bio-based Polyethylene (Bio-PE) market analysis- manufacture, advantages, disadvantages and applications.

Table 174. Leading Bio-PE producers.

Table 175. Polyethylene (Bio-PE) production 2019-2036 (1,000 tonnes).

Table 176. Bio-PP market analysis- manufacture, advantages, disadvantages and applications.

Table 177. Bio-PP Producers and Capacities (2025)

Table 178. Polypropylene (Bio-PP) production capacities 2019-2036 (1,000 tonnes).

Table 179. Superabsorbent Polymers Production 2019–2036 (1,000 tonnes)

Table 180. Superabsorbent polymers Applications.

Table 181. Superabsorbent polymers producers.

Table 182. Polytrimethylene furandicarboxylate (PTF) Applications

Table 183. Polytrimethylene furandicarboxylate (PTF) Producers and Production Capacities

Table 184. PTF Production Capacity 2019–2036 (1,000 tonnes)

Table 185. Bio-based polybutylene terephthalate (bio-PBT) Applications

Table 186. Bio-based polybutylene terephthalate (bio-PBT) Producers and Production Capacities

Table 187. Bio-based polybutylene terephthalate (bio-PBT) Bio-PBT Production Capacity 2019–2036 (1,000 tonnes)

Table 188. Polyfurfuryl alcohol (PFA) Applications

Table 189. Polyfurfuryl alcohol (PFA) Producers and Production Capacities

Table 190. Polyfurfuryl alcohol (PFA) Production Capacity 2019–2036 (1,000 tonnes)

Table 191. Bio-based polyvinyl chloride (bio-PVC)

Table 192. Bio-based polyvinyl chloride (bio-PVC) Producers and Production Capacities

Table 193. Bio-PVC Production Capacity 2019–2036 (1,000 tonnes)

Table 194. Bio-PMMA Applications

- Table 195. Bio-PMMA Producers and Production Capacities
- Table 196. Bio-PMMA Bio-PMMA Production Capacity 2019–2036 (1,000 tonnes)
- Table 197. Bio-based Styrene-Butadiene Rubber (Bio-SBR) Applications
- Table 198. Bio-based Styrene-Butadiene Rubber (Bio-SBR)
- Table 199. Bio-based Styrene-Butadiene Rubber (Bio-SBR)
- Table 200. Types of PHAs and properties.
- Table 201. Comparison of the physical properties of different PHAs with conventional petroleum-based polymers.
- Table 202. Polyhydroxyalkanoate (PHA) extraction methods.
- Table 203. Polyhydroxyalkanoates (PHA) market analysis.
- Table 204. Commercially available PHAs.
- Table 205. Markets and applications for PHAs.
- Table 206. Applications, advantages and disadvantages of PHAs in packaging.
- Table 207. PHA Producers (2025)
- Table 208. PHA production capacities 2019-2036 (1,000 tonnes).
- Table 209. Cellulose acetate (CA) production 2019-2036 (1,000 tonnes)
- Table 210. Cellulose acetate (CA) applications.
- Table 211. Cellulose acetate (CA) producers.
- Table 212. Microfibrillated cellulose (MFC) market analysis-manufacture, advantages, disadvantages and applications.
- Table 213. Leading MFC producers and capacities.
- Table 214. Casein polymers production 2019-2036 (1,000 tonnes)
- Table 215. Casein polymers applications.
- Table 216. Types of next-gen natural fibers.
- Table 217. Application, manufacturing method, and matrix materials of natural fibers.
- Table 218. Typical properties of natural fibers.
- Table 219. Commercially available next-gen natural fiber products.
- Table 220. Market drivers for natural fibers.
- Table 221. Overview of cotton fibers-description, properties, drawbacks and applications.
- Table 222. Cotton production volume 2018-2036 (Million MT).
- Table 223. Overview of kapok fibers-description, properties, drawbacks and applications.
- Table 224. Kapok production volume 2018-2036 (MT).
- Table 225. Overview of luffa fibers-description, properties, drawbacks and applications.
- Table 226. Overview of jute fibers-description, properties, drawbacks and applications.
- Table 227. Jute production volume 2018-2036 (Million MT).
- Table 228. Overview of hemp fibers-description, properties, drawbacks and applications.

Table 229. Hemp fiber production volume 2018-2036 (MT).

Table 230. Overview of flax fibers-description, properties, drawbacks and applications.

Table 231. Flax fiber production volume 2018-2036 (MT).

Table 232. Overview of ramie fibers- description, properties, drawbacks and applications.

Table 233. Ramie fiber production volume 2018-2036 (MT).

Table 234. Overview of kenaf fibers-description, properties, drawbacks and applications.

Table 235. Kenaf fiber production volume 2018-2036 (MT).

Table 236. Overview of sisal leaf fibers-description, properties, drawbacks and applications.

Table 237. Sisal fiber production volume 2018-2036 (MT).

Table 238. Overview of abaca fibers-description, properties, drawbacks and applications.

Table 239. Abaca fiber production volume 2018-2036 (MT).

Table 240. Overview of coir fibers-description, properties, drawbacks and applications.

Table 241. Coir fiber production volume 2018-2036 (MILLION MT).

Table 242. Overview of banana fibers-description, properties, drawbacks and applications.

Table 243. Banana fiber production volume 2018-2036 (MT).

Table 244. Overview of pineapple fibers-description, properties, drawbacks and applications.

Table 245. Overview of rice fibers-description, properties, drawbacks and applications.

Table 246. Overview of corn fibers-description, properties, drawbacks and applications.

Table 247. Overview of switch grass fibers-description, properties and applications.

Table 248. Overview of sugarcane fibers-description, properties, drawbacks and application and market size.

Table 249. Overview of bamboo fibers-description, properties, drawbacks and applications.

Table 250. Bamboo fiber production volume 2018-2036 (MILLION MT).

Table 251. Overview of wool fibers-description, properties, drawbacks and applications.

Table 252. Alternative wool materials producers.

Table 253. Overview of silk fibers-description, properties, application and market size.

Table 254. Alternative silk materials producers.

Table 255. Alternative leather materials producers.

Table 256. Next-gen fur producers.

Table 257. Alternative down materials producers.

Table 258. Applications of natural fiber composites.

Table 259. Typical properties of short natural fiber-thermoplastic composites.

- Table 260. Properties of non-woven natural fiber mat composites.
- Table 261. Properties of aligned natural fiber composites.
- Table 262. Properties of natural fiber-bio-based polymer compounds.
- Table 263. Properties of natural fiber-bio-based polymer non-woven mats.
- Table 264. Natural fibers in the aerospace sector-market drivers, applications and challenges for NF use.
- Table 265. Natural fiber-reinforced polymer composite in the automotive market.
- Table 266. Natural fibers in the aerospace sector- market drivers, applications and challenges for NF use.
- Table 267. Applications of natural fibers in the automotive industry.
- Table 268. Natural fibers in the building/construction sector- market drivers, applications and challenges for NF use.
- Table 269. Applications of natural fibers in the building/construction sector.
- Table 270. Natural fibers in the sports and leisure sector-market drivers, applications and challenges for NF use.
- Table 271. Natural fibers in the textiles sector- market drivers, applications and challenges for NF use.
- Table 272. Natural fibers in the packaging sector-market drivers, applications and challenges for NF use.
- Table 273. Global fiber production (million MT) 2020-2036.
- Table 274. Global Production Capacities by End-Use Market 2019–2036 (1,000 tonnes total)
- Table 275. Processes for bioplastics in packaging.
- Table 276. Comparison of bioplastics' (PLA and PHAs) properties to other common polymers used in product packaging.
- Table 277. Typical applications for bioplastics in flexible packaging.
- Table 278. Bio-based Polymers for Flexible Packaging — Production 2019–2036 (1,000 tonnes)
- Table 279. Typical applications for bioplastics in rigid packaging.
- Table 280. Bio-based Polymers for Rigid Packaging — Production 2019–2036 (1,000 tonnes)
- Table 281. Global production for bio-based polymers in consumer goods 2019-2036, in 1,000 tonnes.
- Table 282. Bio-based Polymers in Automotive and Transport 2019–2036 (1,000 tonnes)
- Table 283. Bio-based Polymers in Building and Construction 2019–2036 (1,000 tonnes)
- Table 284. Bio-based Polymers in Textiles and Fibres 2019–2036 (1,000 tonnes)
- Table 285. Global production volumes for bio-based polymers in electronics 2019-2036, in 1,000 tonnes.
- Table 286. Bio-based Polymers in Agriculture and Horticulture 2019–2036 (1,000

tonnes)

Table 287. Biobased and sustainable plastics producers in North America.

Table 288. Bio-based Polymers in North America by Type 2019–2036 (1,000 tonnes)

Table 289. Biobased and sustainable plastics producers in Europe.

Table 290. Bio-based Polymers in Europe by Type 2019–2036 (1,000 tonnes)

Table 291. Production volumes for bio-based polymers in Asia-Pacific by type 2019-2036, in 1,000 tonnes

Table 292. Biobased and sustainable plastics producers in Latin America.

Table 293. Lactips plastic pellets.

Table 294. Oji Holdings CNF products.

List Of Figures

LIST OF FIGURES

- Figure 1. Schematic of biorefinery processes.
- Figure 2. Overview of Toray process.
- Figure 3. Global production of biobased fructose, 2018-2036 (metric tonnes).
- Figure 4. Samsung 13-inch Color E-Pape
- Figure 5. Coca-Cola PlantBottle®.
- Figure 6. Interrelationship between conventional, bio-based and biodegradable plastics.
- Figure 7. PHA family.
- Figure 8. Types of natural fibers.
- Figure 9. Absolut natural based fiber bottle cap.
- Figure 10. Adidas algae-ink tees.
- Figure 11. Carlsberg natural fiber beer bottle.
- Figure 12. Miratex watch bands.
- Figure 13. Adidas Made with Nature Ultraboost 22.
- Figure 14. PUMA RE:SUEDE sneaker
- Figure 15. Luffa cylindrica fiber.
- Figure 16. Pineapple fiber.
- Figure 17. A bag made with pineapple biomaterial.
- Figure 18. Conceptual landscape of next-gen leather materials.
- Figure 19. Hemp fibers combined with PP in car door panel.
- Figure 20. Car door produced from Hemp fiber.
- Figure 21. Mercedes-Benz components containing natural fibers.
- Figure 22. AlgiKicks sneaker, made with the Algiknit biopolymer gel.
- Figure 23. Coir mats for erosion control.
- Figure 24. Global fiber production in 2024, by fiber type, million MT and %.
- Figure 25. PHA bioplastics products.
- Figure 26. Biodegradable mulch films.
- Figure 28. Pluumo.
- Figure 29. ANDRITZ Lignin Recovery process.
- Figure 30. Anpoly cellulose nanofiber hydrogel.
- Figure 31. MEDICELLU™.
- Figure 32. Asahi Kasei CNF fabric sheet.
- Figure 33. Properties of Asahi Kasei cellulose nanofiber nonwoven fabric.
- Figure 34. CNF nonwoven fabric.
- Figure 35. Roof frame made of natural fiber.
- Figure 36. Beyond Leather Materials product.

- Figure 37. BIOLO e-commerce mailer bag made from PHA.
- Figure 38. Reusable and recyclable foodservice cups, lids, and straws from Joinease Hong Kong Ltd., made with plant-based NuPlastiQ BioPolymer from BioLogiQ, Inc.
- Figure 39. Fiber-based screw cap.
- Figure 40: Cellulforce production process.
- Figure 41: NCCTM Process.
- Figure 42: CNC produced at Tech Futures' pilot plant; cloudy suspension (1 wt.%), gel-like (10 wt.%), flake-like crystals, and very fine powder. Product advantages include:
- Figure 43. formicobio™ technology.
- Figure 44. nanoforest-S.
- Figure 45. nanoforest-PDP.
- Figure 46. nanoforest-MB.
- Figure 47. sunliquid® production process.
- Figure 48. CuanSave film.
- Figure 49. Celish.
- Figure 50. Trunk lid incorporating CNF.
- Figure 51. ELLEX products.
- Figure 52. CNF-reinforced PP compounds.
- Figure 53. Kirekira! toilet wipes.
- Figure 54. Color CNF.
- Figure 55. Rheocrysta spray.
- Figure 56. DKS CNF products.
- Figure 57. Domsj? process.
- Figure 58. Mushroom leather.
- Figure 59. CNF based on citrus peel.
- Figure 60. Citrus cellulose nanofiber.
- Figure 61. Filler Bank CNC products.
- Figure 62. Fibers on kapok tree and after processing.
- Figure 63. TMP-Bio Process.
- Figure 64. Flow chart of the lignocellulose biorefinery pilot plant in Leuna.
- Figure 65. Water-repellent cellulose.
- Figure 66. Cellulose Nanofiber (CNF) composite with polyethylene (PE).
- Figure 67. PHA production process.
- Figure 68. CNF products from Furukawa Electric.
- Figure 69. AVAPTM process.
- Figure 70. GreenPower+™ process.
- Figure 71. Cutlery samples (spoon, knife, fork) made of nano cellulose and biodegradable plastic composite materials.
- Figure 72. Non-aqueous CNF dispersion "Senaf" (Photo shows 5% of plasticizer).

- Figure 73. CNF gel.
- Figure 74. Block nanocellulose material.
- Figure 75. CNF products developed by Hokuetsu.
- Figure 76. Marine leather products.
- Figure 77. Inner Mettle Milk products.
- Figure 78. Kami Shoji CNF products.
- Figure 79. Dual Graft System.
- Figure 80. Engine cover utilizing Kao CNF composite resins.
- Figure 81. Acrylic resin blended with modified CNF (fluid) and its molded product (transparent film), and image obtained with AFM (CNF 10wt% blended).
- Figure 82. Kel Labs yarn.
- Figure 83. 0.3% aqueous dispersion of sulfated esterified CNF and dried transparent film (front side).
- Figure 84. Lignin gel.
- Figure 85. BioFlex process.
- Figure 86. Nike Algae Ink graphic tee.
- Figure 87. LX Process.
- Figure 88. Made of Air's HexChar panels.
- Figure 89. TransLeather.
- Figure 90. Chitin nanofiber product.
- Figure 91. Marusumi Paper cellulose nanofiber products.
- Figure 92. FibriMa cellulose nanofiber powder.
- Figure 93. METNIN™ Lignin refining technology.
- Figure 94. IPA synthesis method.
- Figure 95. MOGU-Wave panels.
- Figure 96. CNF slurries.
- Figure 97. Range of CNF products.
- Figure 98. Reishi.
- Figure 99. Compostable water pod.
- Figure 100. Leather made from leaves.
- Figure 101. Nike shoe with beLEAF™.
- Figure 102. CNF clear sheets.
- Figure 103. Oji Holdings CNF polycarbonate product.
- Figure 104. Enfinity cellulosic ethanol technology process.
- Figure 105. Precision Photosynthesis™ technology.
- Figure 106. Fabric consisting of 70 per cent wool and 30 per cent Qmilk.
- Figure 107. XCNF.
- Figure 108: Plantrose process.
- Figure 109. LOVR hemp leather.

- Figure 110. CNF insulation flat plates.
- Figure 111. Hansa lignin.
- Figure 112. Manufacturing process for STARCEL.
- Figure 113. Manufacturing process for STARCEL.
- Figure 114. 3D printed cellulose shoe.
- Figure 115. Lyocell process.
- Figure 116. North Face Spiber Moon Parka.
- Figure 117. PANGAIA LAB NXT GEN Hoodie.
- Figure 118. Spider silk production.
- Figure 119. Stora Enso lignin battery materials.
- Figure 120. 2 wt.% CNF suspension.
- Figure 121. BiNF-i-s Dry Powder.
- Figure 122. BiNF-i-s Dry Powder and Propylene (PP) Complex Pellet.
- Figure 123. Silk nanofiber (right) and cocoon of raw material.
- Figure 124. Sulapac cosmetics containers.
- Figure 125. Sulzer equipment for PLA polymerization processing.
- Figure 126. Solid Novolac Type lignin modified phenolic resins.
- Figure 127. Teijin bioplastic film for door handles.
- Figure 128. Corbion FDCA production process.
- Figure 129. Comparison of weight reduction effect using CNF.
- Figure 130. CNF resin products.
- Figure 131. UPM biorefinery process.
- Figure 132. Vegea production process.
- Figure 133. The Proesa® Process.
- Figure 134. Goldilocks process and applications.
- Figure 135. Visolis' Hybrid Bio-Thermocatalytic Process.
- Figure 136. HefCel-coated wood (left) and untreated wood (right) after 30 seconds flame test.
- Figure 137. Worn Again products.
- Figure 138. Zelfo Technology GmbH CNF production process.

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