

# The Global Market for Bio-based and Sustainable Packaging 2023-2033

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## Abstracts

Environmental and consumer concerns have resulted in the development of bio-based and sustainable materials as alternatives to petrochemicals for packaging applications. Bio-based packaging materials are made from renewable and biodegradable raw materials, and provide novel eco-friendly alternatives to petrochemical-based plastics, especially for single-use plastic goods.

Bio-based and sustainable packaging is a major global trend, with numerous start-ups and large companies developing alternatives to single-use plastic packaging. The global plastics sector currently produces >250 million tons annually, and they are used extensively in packaging due to their low cost and weight. Over 99% of this is derived from fossil fuels, and most of it is not biodegradable. Currently, the packaging materials are largely based on glass, aluminium and tin, and fossil derived synthetic plastics. These materials possess high strength and barrier properties. However, they are unsustainable, some are fragile such as glass, and their weight adds to energy costs for shipping. Discarded plastic bags and containers have also raised issues relating to environmental pollution due to their non-biodegradable nature. Biodegradable takeaway food containers and single-use plastic bags are being used as a substitute, but only degrade completely when subjected to a harsh thermal treatment above 50 °C.

Innovative packaging materials composed of blends or pure bio-based materials are expected to improve the sustainability of these products. Using renewable resources for the development of bio-based packaging material produces a smaller carbon footprint, reduces environmental impact, increases acceptance by consumers, maintains barrier properties and shelf-life of the packaged good, and allows for a sustainable end of life.

Report contents include:

An overview of global market outlook for bio-based and sustainable packaging.

Materials utilized in bio-based and sustainable packaging including Synthetic bio-based packaging materials, Natural bio-based packaging materials, Natural fibers, Lignin, bio-based coatings and films, bio-based antimicrobial agents, bio-based packaging sensors etc.

Analysis of advanced chemical recycling for packaging.

Analysis of packaging materials from CO<sub>2</sub> capture.

Analyses of global market trends, with data from 2021, 2022, and projections of compound annual growth rates (CAGRs) through 2033.

Identification of market trends, issues and forecast impacting the global bio-based and sustainable packaging market and quantification of the market based on type, application, and region.

Recent advancements and innovations in the bio-based and sustainable packaging market.

Comprehensive profiles of 200 companies in the market. Companies profiled include Alterpacks, Anellotech, Inc., Arekapak GmbH, Arkema S.A., Avantium, BIOLO, Biovox, BlockTexx Pty Ltd., Carbiolice, Cellugy, DuFor Resins B.V., Earthodic, Esbottle Oy, Fiberwood Oy, Full Cycle Bioplastics LLC, Futamura Chemical Co, Ltd., Futurity Bio-Ventures Ltd., Genecis Bioindustries, Huhtamaki, Kaneka Corporation, Kelpi Industries, Lactips S.A., Loliware, Marea, Mitsubishi Chemical Corporation, MakeGrowLab, New Zealand Natural Fibres, Oimo, Plafco Fibertech Oy, Shellworks, Sufresca, Sulapac, Teal Bioworks, TerraVerdae Bioworks Inc. and Tianjin GreenBio Materials.

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Figure 90. Cutlery samples (spoon, knife, fork) made of nano cellulose and biodegradable plastic composite materials.

Figure 91. CNF gel.

Figure 92. Block nanocellulose material.

Figure 93. CNF products developed by Hokuetsu.

Figure 94. Kami Shoji CNF products.

Figure 95. IPA synthesis method.

Figure 96. Compostable water pod.

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Figure 104. CNF/nanosilver powder.

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Figure 106. UPM biorefinery process.

Figure 107. Vegea production process.

Figure 108. Worn Again products.

Figure 109. S-CNF in powder form.

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