World Bioplastics

Industry Study with Forecasts for **2015 & 2020**

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Industry Study with Forecasts for ***2015 & 2020***

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OVERVIEW

NORTH AMERICA

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INDUSTRY STRUCTURE

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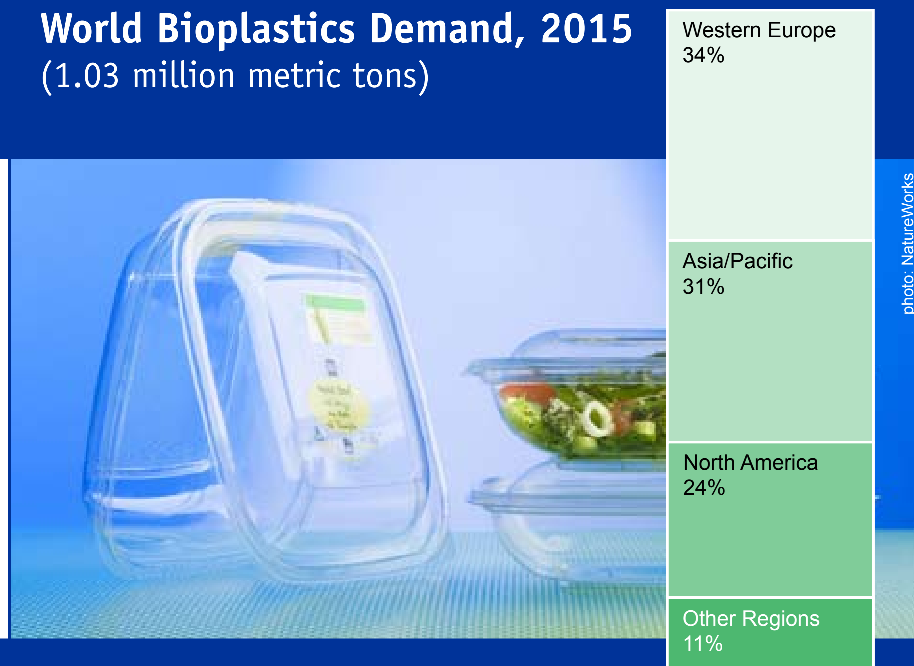
Gains will be fueled by consumer preferences for environmentally sustainable materials, improved performance of bioplastic resins, and the introduction of bio-based commodity plastics.

World demand to more than triple by 2015

Global demand for biodegradable and bio-based plastics will more than triple to over one million metric tons in 2015, valued at $2.9 billion. Gains will be fueled by a number of factors, including consumer preferences for environmentally sustainable materials, improved performance of bioplastic resins relative to traditional plastics, and the introduction of commodity plastics produced from bio-based sources. Ultimately, however, price considerations will be the primary determinant of bioplastic market success, and it is expected that rising petroleum costs will allow some bioplastic resins to match conventional plastics in price by the end of the decade.

World Bioplastics Demand, 2015
(1.03 million metric tons)



Starch-based resins, PLA to pace biodegradables

Biodegradable plastics accounted for 90 percent of the world bioplastics market in 2010. Excellent growth is forecast for the two leading biodegradable plastics, starch-based resins and polylactic acid (PLA), both of which will more than double in demand through 2015. More rapid growth is expected for PLA, which will benefit from advancements in compounding polymerization technology, as well as its relatively low cost compared to other bioplastics. The fastest gains for biodegradable plastics, however, will be seen for polyhydroxyalkanoate (PHA) resins, which are just entering the commercial market.

Non-biodegradable bio-based resins to lead gains

Despite the strong advances for biodegradables, non-biodegradable bio-based resins will be the primary driver of bioplastics demand through 2015 and beyond. Gains will be fueled by the availability of commercial quantities of bio-based polyethylene from Braskem's 200,000-metric-ton-per-year plant in Brazil, which opened in late 2010. Two other bio-based polyethylene plants -- as well as a bio-based polypropylene facility -- are also in the planning stages and are expected to open around 2015. Additionally, industrial production of fully bio-based polyethylene terephthalate (PET) is forecast to become a reality by the end of the decade. As a result, demand for non-biodegradable bioplastics will rise from 30,000 metric tons in 2010 to 1.3 million metric tons in 2020.

Asia/Pacific region to see fastest growth in demand

Western Europe was the leading consumer of bioplastics in 2010. However, more rapid advances through 2015 will be seen for the Asia/Pacific region, driven by robust growth in Japan and China. Bioplastics demand in other world regions will rise at a tremendous pace from a relatively small 2010 base, led by Central and South America, which is expected to be a major consumer of bio-based polyethylene.

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Sample Text, Table & Chart

ASIA/PACIFIC

China: Products

SAMPLE TEXT

percent per y average. Th an in industr f the key fac pr pita income, co willing to pay a premium for bio-based and biodegradable m concerted government action encouraging the use of bioplast traditional resins. Over the longer term, however, as bioplast to gain market acceptance and prices become more competiti growth in China will begin to outpace that in other countries. China will be the fastest-growing market for bioplastics during the 2015-2020 period, with demand reaching 330,000 metric tons.

Gains in bioplastics demand will benefit from rising incomes among China's urban consumers, concerns about solid waste disposal and pollution issues, and nascent government efforts to promote environmental sustainability, including bio-based and biodegradable products. Additionally, a number of bioplastic-containing products are manufactured in China and then exported to the US or Western Europe. For example, US-based Design Ideas markets a line of plastic bath products made from polyhydroxybutyrate valerate (PHBV), which are molded in China and use resin from a Chinese firm. BIOSERIE PLA-based electronics cases from Dandelion Research (Hong Kong) are also produced in China before being marketed around the world. In examples such a demand for bioplastic-containing products in other parts of t will drive demand for bioplastic resins in China.

Starch-based resins and PLA are the leading products in combining to account for 64 percent of total 2010 demand. ucts such as polyesters, cellophane and PHAs are also signif is expected to see strong growth in demand through 2015, as

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TABLE VI-6

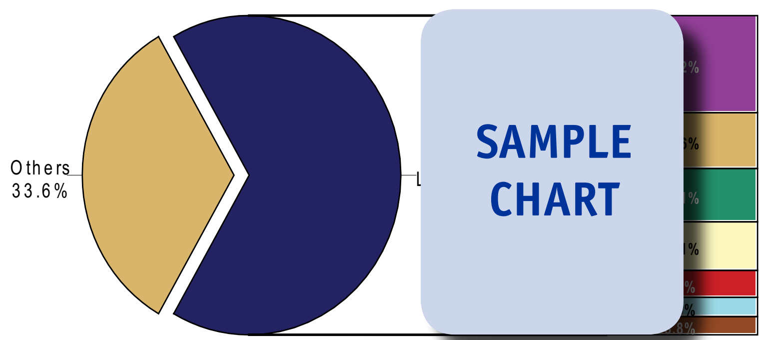
CHINA -- BIOPLASTICS SUPPLY & DEMAND
(thousand metric tons)

Item	2000	2005	2010	2015	2020
Population (million persons)					
$ GDP/capita					
Gross Domestic Product (bil 2009$)					
Manufacturing Value Added (bil 2009$)					
Agricultural Value Added (bil 2009$)					
Packaging Demand (bil $)					
Plastic Resin Demand					
Plastic Resin Production					
Bioplastics Production					
- net exports					
Bioplastics Demand					

SAMPLE TABLE

CHART VIII-1

WORLD BIOPLASTICS MARKET SHARE
($988 million, 2010)



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Sample Profile, Table & Forecast

TABLE VI-7

CHINA -- BIOPLASTICS DEMAND BY PRODUCT
(thousand metric tons)

Item	2000	2005	2010	2015	2020
Plastic Resin Demand	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
kg bioplastic/ton plastic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Bioplastics Demand	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Biodegradable:	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Starch-Based Resins	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Polylactic Acid	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Other Biodegradable	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Non-Biodegradable:	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Bio-Based Polyamide	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Bio-Based Polyethylene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Other Non-Biodegradable	[illegible]	[illegible]	[illegible]	[illegible]	53

SAMPLE TABLE

COMPANY PROFILES

Biome Technologies plc
Starpol Technology Centre
North Road
Marchwood, S[illegible]
United Kingd[illegible]
44-2380-867[illegible]
http://www.b[illegible]

Revenues: $[illegible]
Geographic F[illegible] ed Kingdom 6%,
France 55%, [illegible] es 18%
Employment[illegible]

SAMPLE PROFILE

Key Products: potato starch-based resins and bioplastics

Biome Technologies, which operated as Stanelco plc until July 2010, is a manufacturer and marketer of biodegradable plastic products. The Company is active in the design and installation of specialist radio frequency furnaces, welders and induction equipment. Biome operates through two divisions: BioPlastics and Stanelco RF Technologies.

The Company participates in the world bioplastics industry through the BioPlastics division, which generated revenues of $17 million in 2010. The segment's operations comprise two businesses: Biotec GmbH & Company KG (Germany) and Biome Bioplastics Limited (United Kingdom).

Biotec GmbH is a 50/50 joint venture between Biome Technologies and Sphere SA (France). In 2010, the company had revenues of $12 million. Biotech develops, produces and licenses thermoplastic and biodegradable products. The company utilizes such raw materials as potato starch and copolyesters to make BIOPLAST bioplastic resins.

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"Bioplastics demand in China will more than triple to 97,000 metric tons in 2015. Nonpackaging markets for bioplastics accounted for the majority of demand in 2010, although slightly more rapid growth is forecast for packaging applications through 2015. In packaging, bioplastics in film applications -- which to date have been composed mostly of cellophane products -- will benefit from the rising availability of less expensive biodegradable plastic films and ..."
--Section VI, pg. 184

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Other Studies

World Thermoplastic Elastomers

Global demand for thermoplastic elastomers (TPEs) will rise 6.3 percent annually through 2015. Gains will be driven by rebounding motor vehicle production in the US and Western Europe. Advances will also be fueled by the rising use of TPEs in the developing countries, where these materials are continuing to penetrate new applications. This study analyzes the 4.1 million metric ton world TPE industry, with forecasts for 2015 and 2020 by market, product, world region and for 15 countries. The study also evaluates company market share and profiles industry players.

#2803 .... September 2011................ $6400

World Silicones

World demand for silicones will rise 6.2 percent annually through 2015. The Asia/Pacific region will remain the largest and fastest-growing market. Electrical and electronic products will continue to be the leading outlet, bolstered by high-growth applications such as components for LEDs and solar energy products. This study examines the $12.4 billion world market for silicones, with forecasts for 2015 and 2020 by market, product, world region and for 15 countries. The study also evaluates company market share and profiles industry participants.

#2779 .... July 2011.................... $5900

World Biofuels

Global biofuel demand will grow 10.3 percent annually through 2014. Bioethanol will see the greatest gains, driven by the large North American market as well as the faster growing markets in the Asia/Pacific region and Europe. The smaller biodiesel market will be the more rapidly growing segment. This study analyzes the 74.1 million metric ton global biofuel industry, with forecasts for 2014 and 2019 by product, world region and for 28 countries. It also evaluates company market share and profiles industry participants.

#2668 .... September 2010................ $5900

Degradable Plastics

US demand for degradable plastics is forecast to rise 16.6 percent annually through 2014, driven by interest in environmentally friendly products. Polylactic acid (PLA) and starch-based plastics will remain the dominant types and see strong growth. Polyhydroxyalkanoate (PHA) will be the fastest growing type, from a small base. This study analyzes the 151 million pound US degradable plastic industry, with forecasts for 2014 and 2019 by type, product and market. It also evaluates company market share and profiles industry players.

#2648 .... August 2010.................. $4800

Soy Chemicals

US soy chemical demand will grow 7.8 percent annually through 2013, driven by the continued penetration of biodiesel, and by the adoption of alternatives to traditional, petrochemical-based materials in manufacturing. Soy oil derivatives such as methyl soyate, polyols, soy-based foamed plastics, waxes and fatty acids hold particularly good prospects. This study analyzes the $1.9 billion US soy chemical industry, with forecasts for 2013 and 2018 by product and market. It also evaluates market share and profiles industry players.

#2538 .... September 2009................ $4700

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