MARCH 2025

Projected Impact and Growth of a Fully Unleashed Bioeconomy

The Value of Food, Agriculture, and Manufacturing Biotechnology

KEARNEY

A Message from Sylvia Wulf

The world is changing rapidly, and we need new solutions to tackle the societal challenges we face. Biotechnology is at the forefront of discovering, developing, and delivering a host of innovations that will propel our economy forward at all levels—boosting agricultural yields, unleashing our energy abundance, and securing our food and health systems.

But just how much is at stake if we do not fully unleash the power of biotechnology in food, agriculture, and manufacturing? This comprehensive report delivers the first data-driven assessment of the sector's economic impacts, finding that:

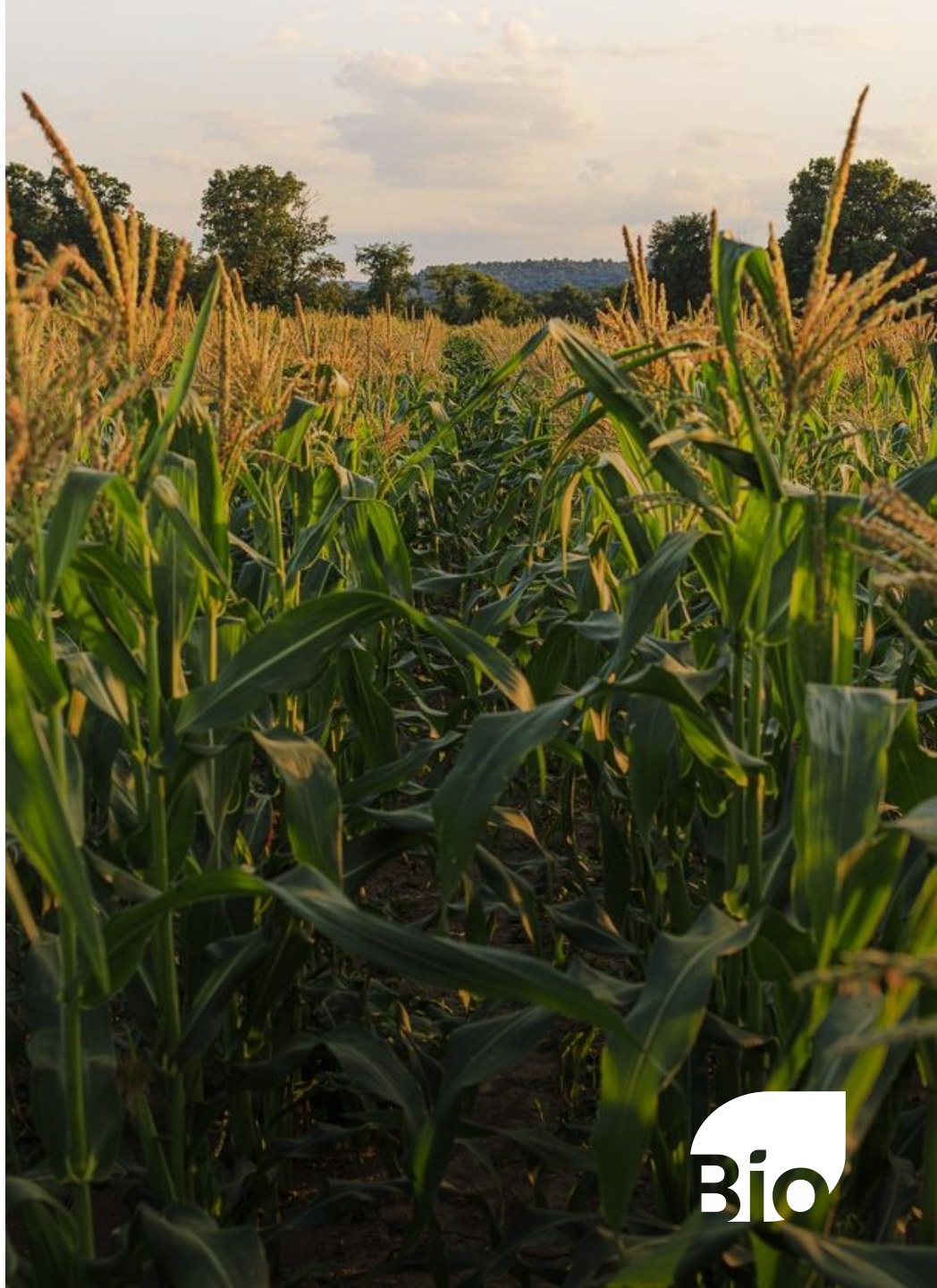
- The direct economic impact of the U.S. bioeconomy in food, agriculture, and manufacturing totals $210 billion, coupled with an indirect impact of $620 billion—for a combined impact of $830 billion.
- This sector of the bioeconomy alone supports roughly 430,000 jobs.

These figures underscore biotechnology's potential for spurring economic growth while simultaneously enhancing our food, energy, and national security. The success of America's economy increasingly hinges on our ability to innovate and develop cutting-edge solutions that benefit American farmers, manufacturers, energy producers, retailers, and consumers alike.

BIO is proud to commission this first-of-its-kind analysis and advance modernized regulatory frameworks that will help unleash the full potential of this critically important industry.

Sylvia Wulf

Agriculture & Environment Center of Excellence, Biotechnology Innovation Organization (BIO)



To understand how the U.S. can lead the future of the new ‘bioeconomy,’ a clear articulation of the sector’s economic impact was evaluated

Kearney dove into three key segments within the bioeconomy to assess the U.S. market impact

Primary objectives

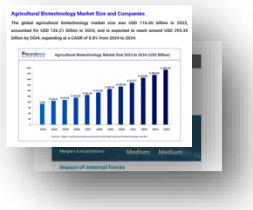
- Quantify and articulate bioeconomy’s direct economic impact
- Enable evidence-based advocacy through robust analysis

Scope elements

- Geographic focus: U.S.-centric with global context
- Sectors: Bioeconomy subsectors excluding the healthcare sector
- Stakeholders: BIO coalition members + committees

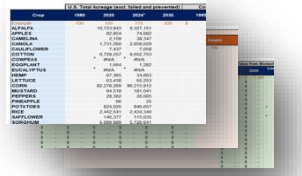
Project methodology

1 **Third-party reports on segment-specific industries were analyzed**
Outcome: development of specific subsegment market assessment models



2 **Developed market sizing models were validated by industry experts**
Outcome: model adjustments are made and validated to fit industry standards

3 **Market sizing models were further vetted by BIO members using a triangulation approach for data validation**
Outcome: finalized bioeconomy market assessment



4 **Creation of final report**

Source: Kearney

The direct economic impact of the U.S. bioeconomy is ~$210B (base case, excluding healthcare); conservative indirect benefit multiples drive total impact over ~$830B

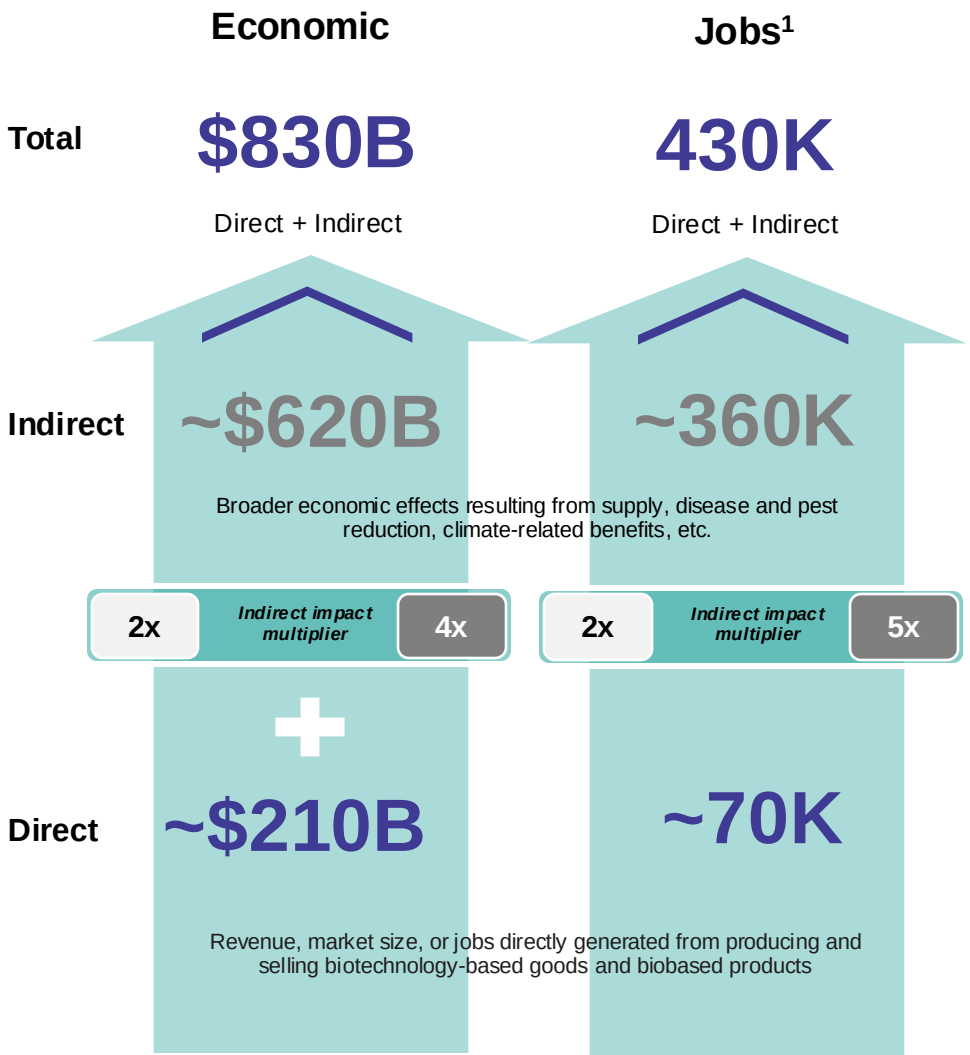
Bioeconomy

For the purposes of this report, the bioeconomy includes:

Biobased products composed, in whole or in significant part, of biological products, including renewable domestic agricultural materials, renewable chemicals, and forestry materials; or an intermediate ingredient or feedstock.

Biotechnology used in the application of biological systems, organisms, or derivatives to develop technologies and products that enhance industrial, agricultural, and environmental processes.

Baseline impact (2023)



Growth drivers

- Streamline and stabilize U.S. regulatory approval processes
- Harmonize regulatory frameworks across global trade partners
- Open trade opportunities to maximize market access
- De-politicized global regulatory systems to enable competition and protect IP
- Improve access to capital
- Increase education across the value chain to ensure adoption and acceptance and extend the impact of the bioeconomy

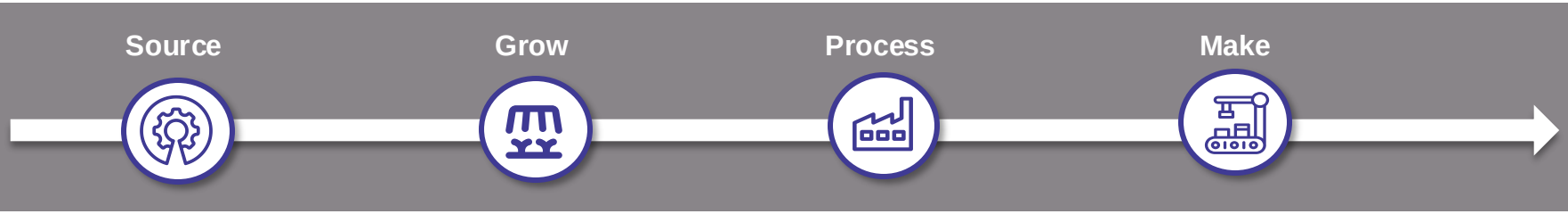
1. TEConomy / BIO 2024 U.S. Bioscience Economy report; Kearney analysis

Industrial biobased products contribute over 80% of total direct impact; plant and animal segments contribute to the other 20%

~$210B

Baseline 2023 direct market size of the U.S. bioeconomy *(excludes healthcare)*

Segments and subsegments were defined to ensure a comprehensive view across the value chain while avoiding the double counting of plant and animal inputs used in industrial biobased products



Plant (~$20B)

- Advanced breeding tools
- Biotech traits
- Crop inputs

Animal (~$15B)

- Advanced breeding tools
- Animal biopharma
- Animal nutrition

Industrial biobased products (~$170B)

- Materials and polymers
- Industrial chemicals
- Biofuels
- Food ingredients and additives

In-scope industries

The value at stake for the U.S. through 2030 and beyond is significant

Cumulative direct economic value
(2025–2030, $B USD)

There are multiple growth scenarios for the U.S. bioeconomy relative to the global bioeconomy; the difference in relative growth rates will impact the value that is or is not realized in the U.S. (value at stake[1]).

Beyond 2030, the U.S. can
unlock additional value

Unrealized potential opportunities include:

- Eradicating diseases and pests
- Accelerating commercialization of innovation
- Repatriating production for strategic growth
- Biosecurity / national defense

Value at stake

$400B

1. Cumulative value at stake is defined by the gap between base and high-case projections in the period of 2025–2030.

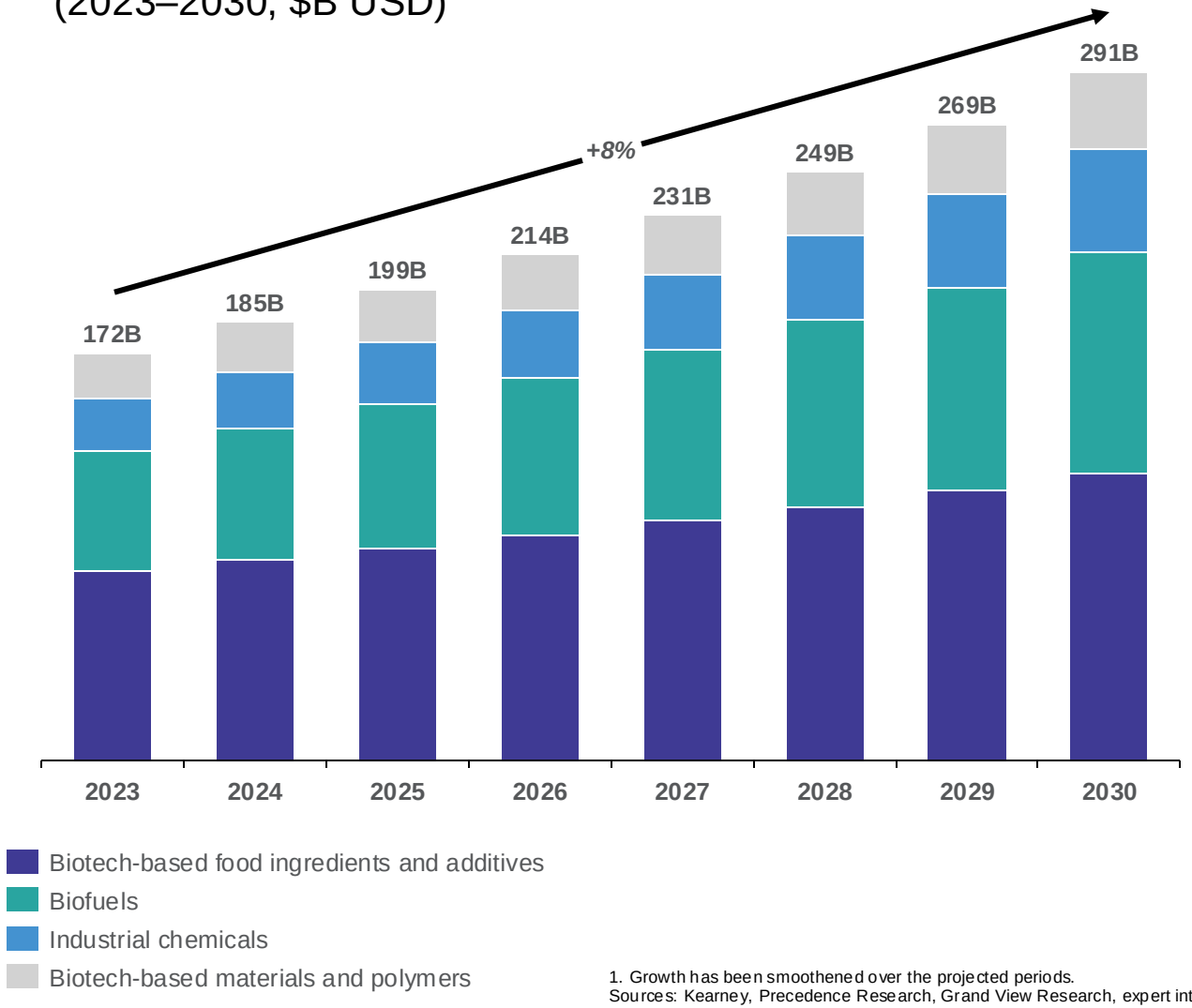
Industrial biobased products segment definition and methodology

Industrial biobased products

Subsegment	Subsegment definition	Subsegment inclusion	Methodology
Biobased materials and polymers	– Biotechnological processes and organisms like fungi, algae, and bacteria to produce sustainable materials and plastics from biological resources – Utilizes genetic engineering, and fermentation, among others	– Food packaging, construction coating, textiles, fibers, etc. – Biotech-based platform chemicals and enzymes used as precursors to items directly consumed by consumers	– Estimates based on production facilities in the U.S. multiplied by average price – Estimated CAGR from Kearney expert analysis, publications, and future capacity growth
Biobased industrial chemicals	– Chemicals like industrial enzymes in detergents and textile processes derived through biotechnological tools and processes such as fermentation, enzymatic reactions, or metabolic engineering	– Aromatic chemicals, bio solvents, detergents, specialty chemicals (surfactants, lubricants, etc.), platform chemicals, textile processing, pulp/paper, leather, and cosmetics	– Estimates based on production facilities in the U.S. multiplied by average chemical price – Estimated CAGR from Kearney expert analysis, publications, and future capacity growth
Biofuels	– Use of biological processes, organisms, or systems to produce renewable fuels from biological materials – Involves the application of genetic engineering, enzymology, and microbiology	– Ethanol, renewable diesel, biodiesel, sustainable aviation fuel (SAF)	– Average production capacity for each biofuel multiplied by average price per gallon – Estimated CAGR from Kearney expert analysis, publications, and past growth rates
Biobased food ingredients and additives	– Biotechnological processes including fermentation and genetic modification to create, enhance, or optimize food ingredients and additives that improve taste, texture, preservation, and nutritional value	– Alternative proteins, probiotics, prebiotics, texture modifiers, preservatives, sensory additives, sweeteners, nutrients, etc.	– Estimates extrapolated from third-party research report – Estimated CAGR from Kearney expert analysis, publications, and future capacity growth

Industrial biobased products

Base case: industrial biobased products market size (U.S.)[1]
(2023–2030, $B USD)



Key drivers

- USDA's BioPreferred program encourages the purchase of biobased products through labeling and federal procurement preferences
- Consumer awareness/demand for environmentally friendly products
- Technology innovations have enhanced feedstock conversion and increased production capacity, leading to improved economies of scale and lower unit production costs

Growth barriers

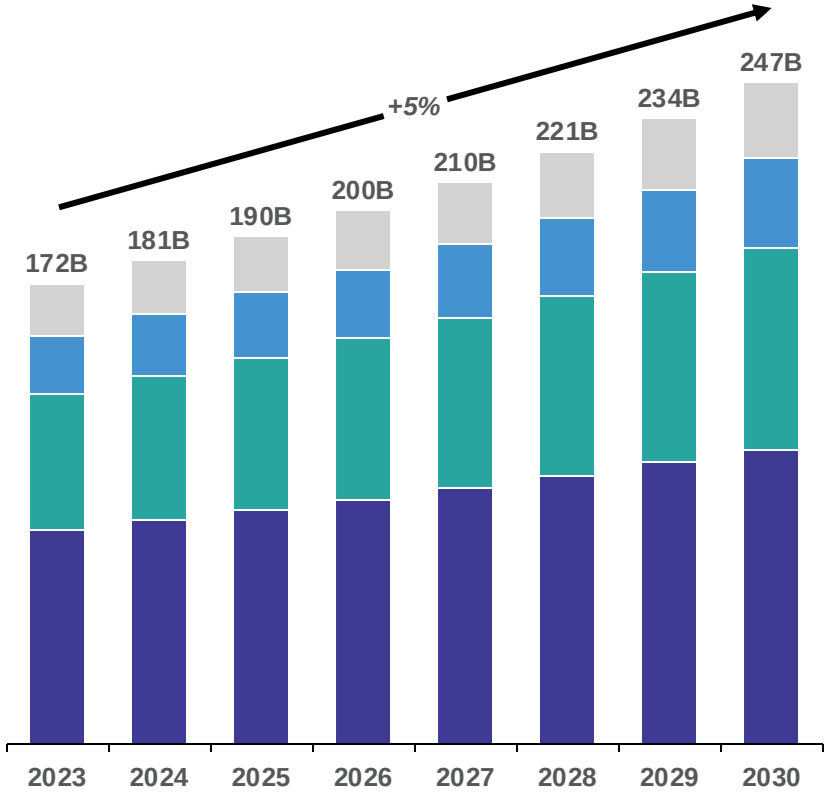
- Biobased supply chains are becoming more integrated with materials and chemicals produced in Asia closer to end-use production (e.g., biobased materials produced in Indonesia and moved to China for end-use production)
- Policy uncertainty regarding the Renewable Fuel Standard
- Challenges in upscaling production for manufacturers of emerging materials

1. Growth has been smoothened over the projected periods.
Sources: Kearney, Precedence Research, Grand View Research, expert interviews

Industrial biobased products segment high / low growth projections

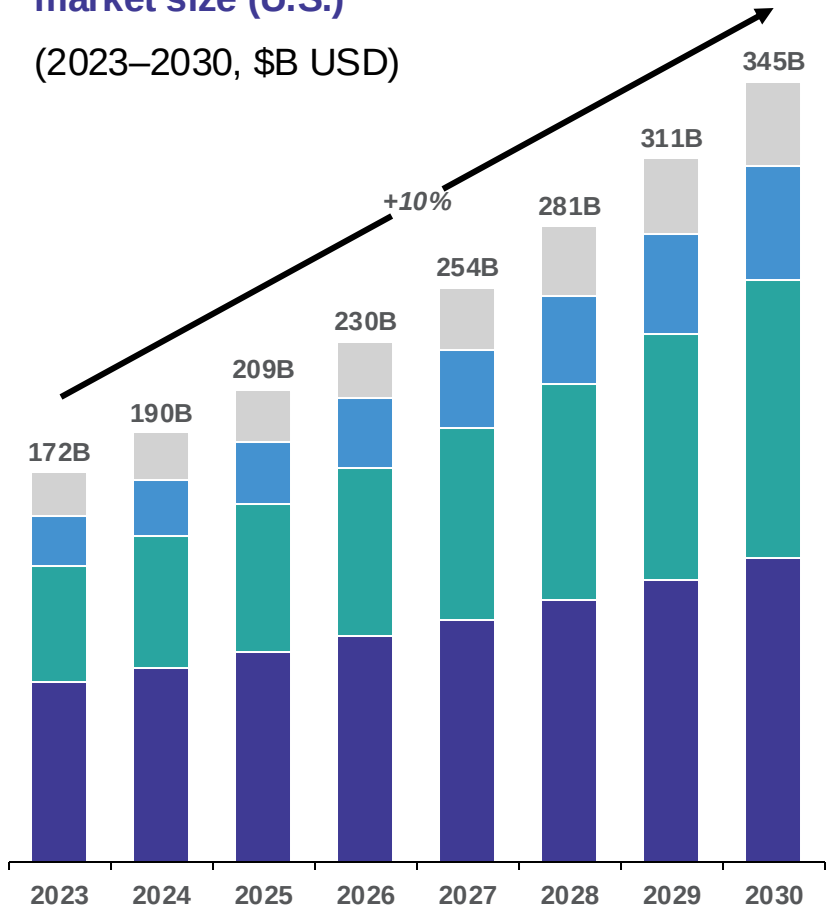
Low case: industrial biobased products market size (U.S.)[1]

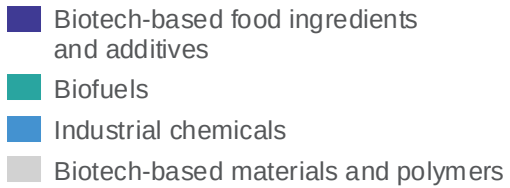
(2023–2030, $B USD)



High case: industrial biobased products market size (U.S.)[1]

(2023–2030, $B USD)

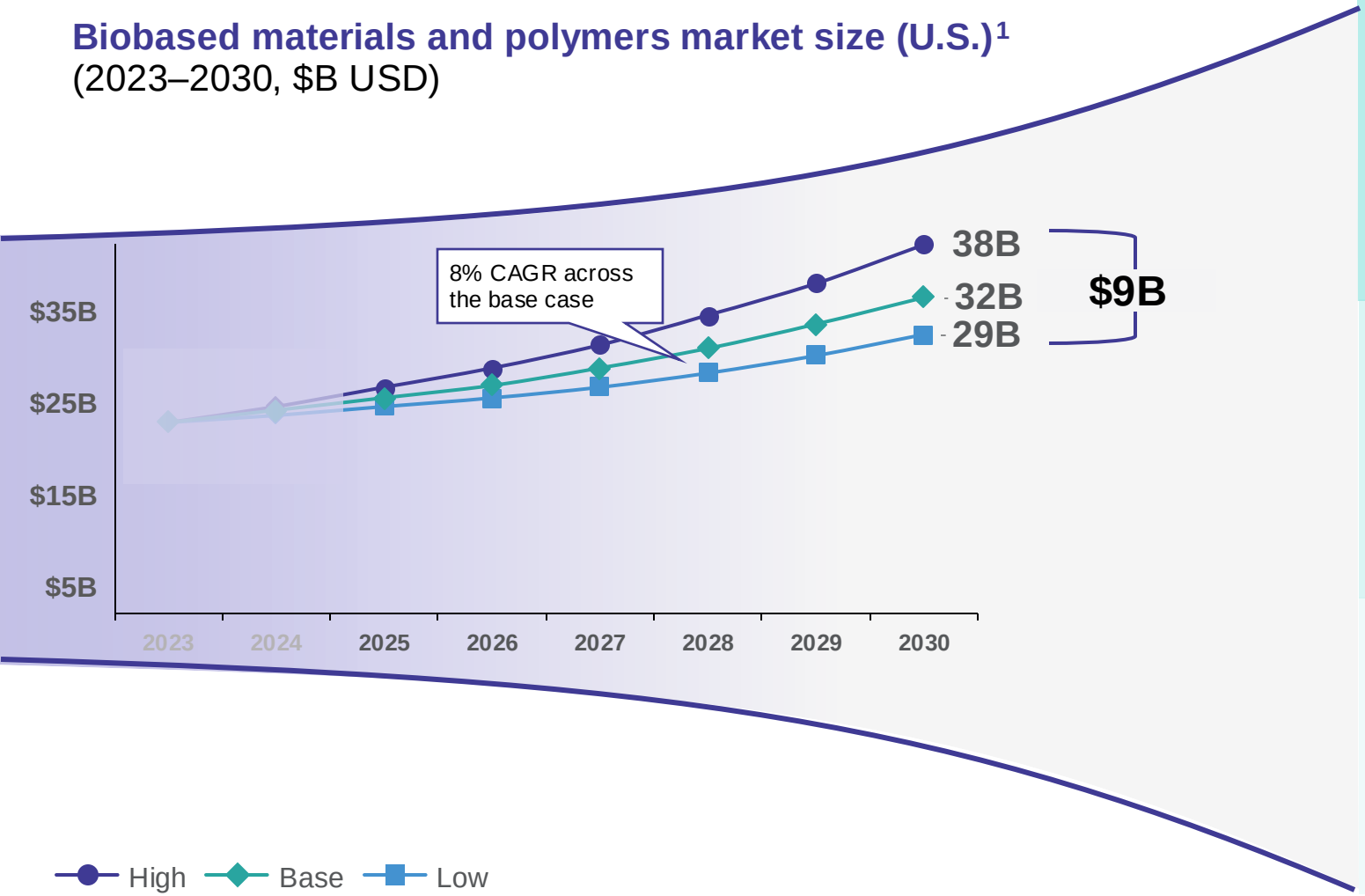




1. Growth has been smoothened over the projected periods.
Sources: Kearney, Precedence Research, Grand View Research, expert interviews

Biobased materials and polymers

Biobased materials and polymers market size (U.S.)[1]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $30B

Driving factors
- Government policy and consumer awareness of plastics and ecofriendly properties (biodegradable, renewable, non-toxic, no microplastics)
- Emerging bioidentical polymers that deliver equivalent performance
- Emerging technology to second- and third-generation feedstocks

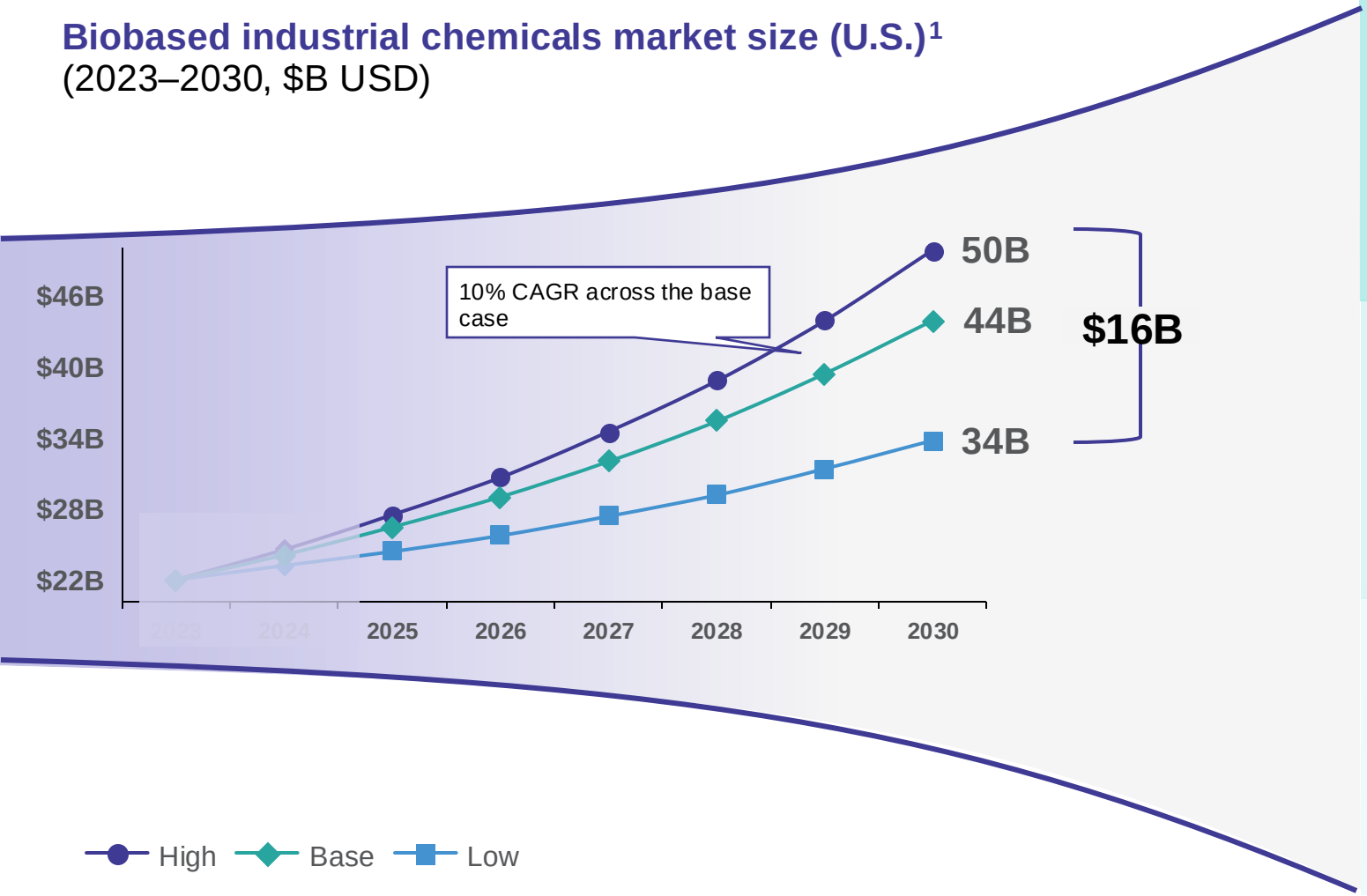
Challenges and barriers
- Price competitiveness of bioplastics over conventional plastics presents adoption barriers
- No universal carbon tax credit for lower GHG vs. fossil fuel incumbents
- Majority of products requiring these polymers are manufactured in Asia, giving the region a logistical advantage

Global trends
- Governments worldwide are implementing stricter regulations to reduce plastic pollutions and promote sustainable alternatives
- There is a significant shift toward second- and third-generation feedstocks for bioplastic production

1. Growth has been smoothened over the projected periods.
Sources: Kearney, Kearney expert analysis, Plastics Industry Org, National Library of Medicine, Natural Article, Hamburg Institute

Biobased industrial chemicals

Biobased industrial chemicals market size (U.S.)[1]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $50B

Driving factors
- Proactive reductions in 1,4 dioxane levels driving surfactants
- In general, lower VOC emissions, toxicity, and renewable all driving to biobased alternatives
- Chemicals globally contribute about 10% GHG but also pollute our land, water, and air quality

Challenges and barriers
- Many technologies are sitting on the sidelines because there is no carbon tax credit resulting in higher cost to scale
- Feedstock delta between petroleum and first-generation. Moving to lower cost non-food feedstocks which are more complex

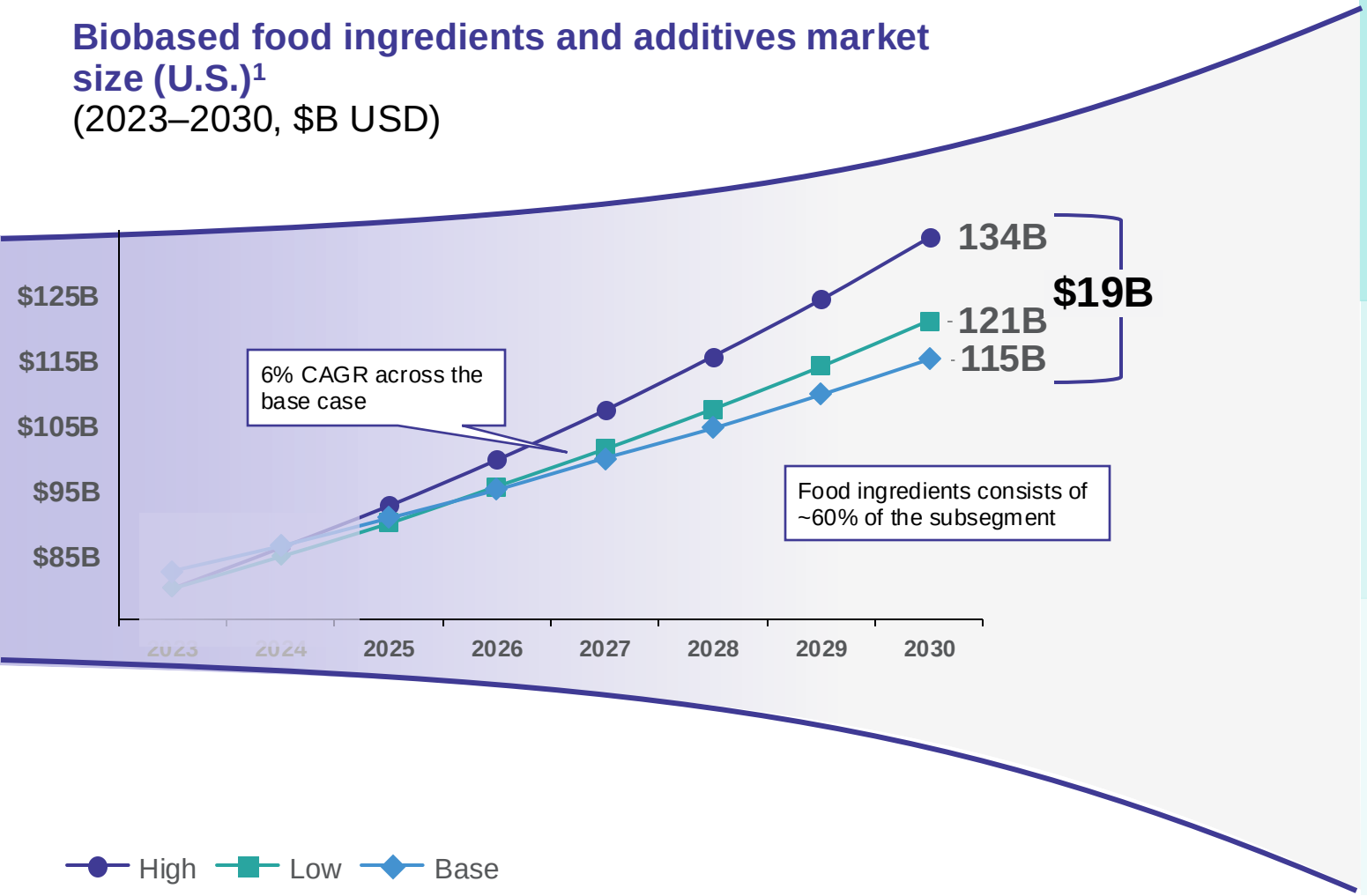
Global trends
- International Monetary Fund estimates that the fossil fuel industry is supported by $7T in subsidies
- Asia-Pacific is expected to be the dominant region in this market
- Varying policy frameworks; EU more restrictive on incumbent chemical use

1. Growth has been smoothened over the projected periods.
Sources: Kearney expert analysis, Chemical and Engineering News

Biobased food ingredients and additives market

Biobased food ingredients and additives market size (U.S.)[1]

(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $80B

Driving factors

- Consumer demand for transparency in labels, natural preservatives, and fewer chemicals
- Growing demand for convenience food including seeking longer shelf-life, enhanced taste, visual attributes
- Expanding size of key end-use sectors including beverages, convenience foods, and bakeries

Challenges and barriers

- Strict U.S. federal and regulatory compliance has increased market complexity
- Lengthened supply chains coupled with demand for higher quality have increased cost and reduced supply of raw materials
- Links between ultra processed food consumption and obesity

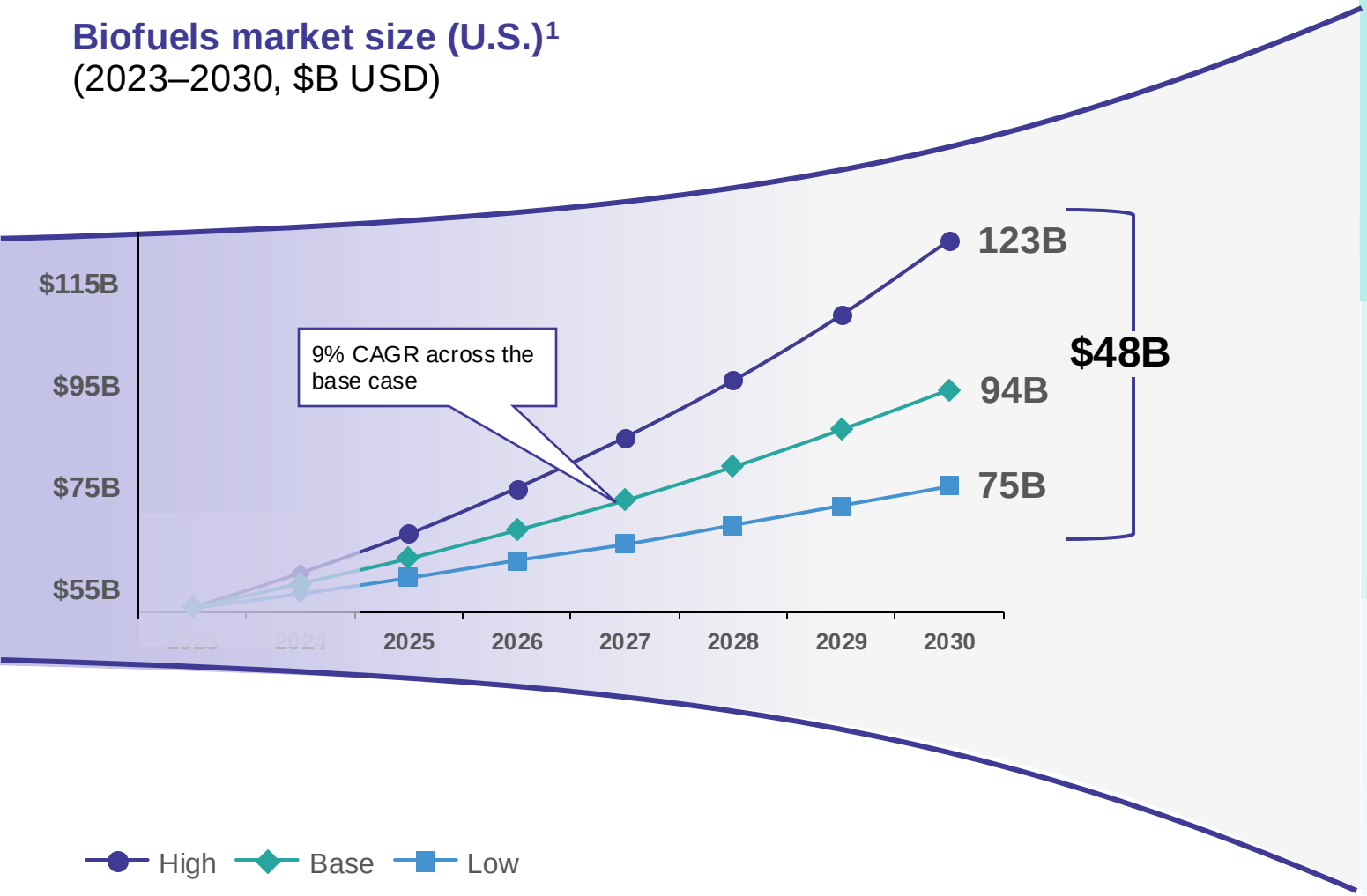
Global trends

- Increasing consumer awareness and demand for natural, clean labels, and organic products
- Regulatory pressures to remove synthetic ingredients and food dyes

1. Growth has been smoothened over the projected periods.
Sources: Kearney expert analysis, Precedence Research

Biofuels

Biofuels market size (U.S.)[1]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $160B

Driving factors
- Higher biofuel mandates around the world and stronger ethanol exports
- Trump 2.0 push for E15 over E10
- Growing demand for renewable fuels and increasing focus of GHG emissions are influencing adoption
- Inflation Reduction Act Tax Credit

Challenges and barriers
- Uncertain government mandates and policies including the future of the Inflation Reduction Act (IRA) is causing concern for developers and investors as potential modifications to tax credit policies and transferability could significantly impact project financing and market stability
- Alternative uses like electric and hybrid models

Global trends
- Government support and mandates continue to play a crucial role in market growth, with policies like the US Renewable Fuel Standard and the EU's Renewable Energy Directive
- Emerging applications, such as sustainable aviation fuel, could become a rapidly expanding use case

1. Growth has been smoothened over the projected periods.
Sources: Kearney expert analysis, U.S. Energy Information Administration

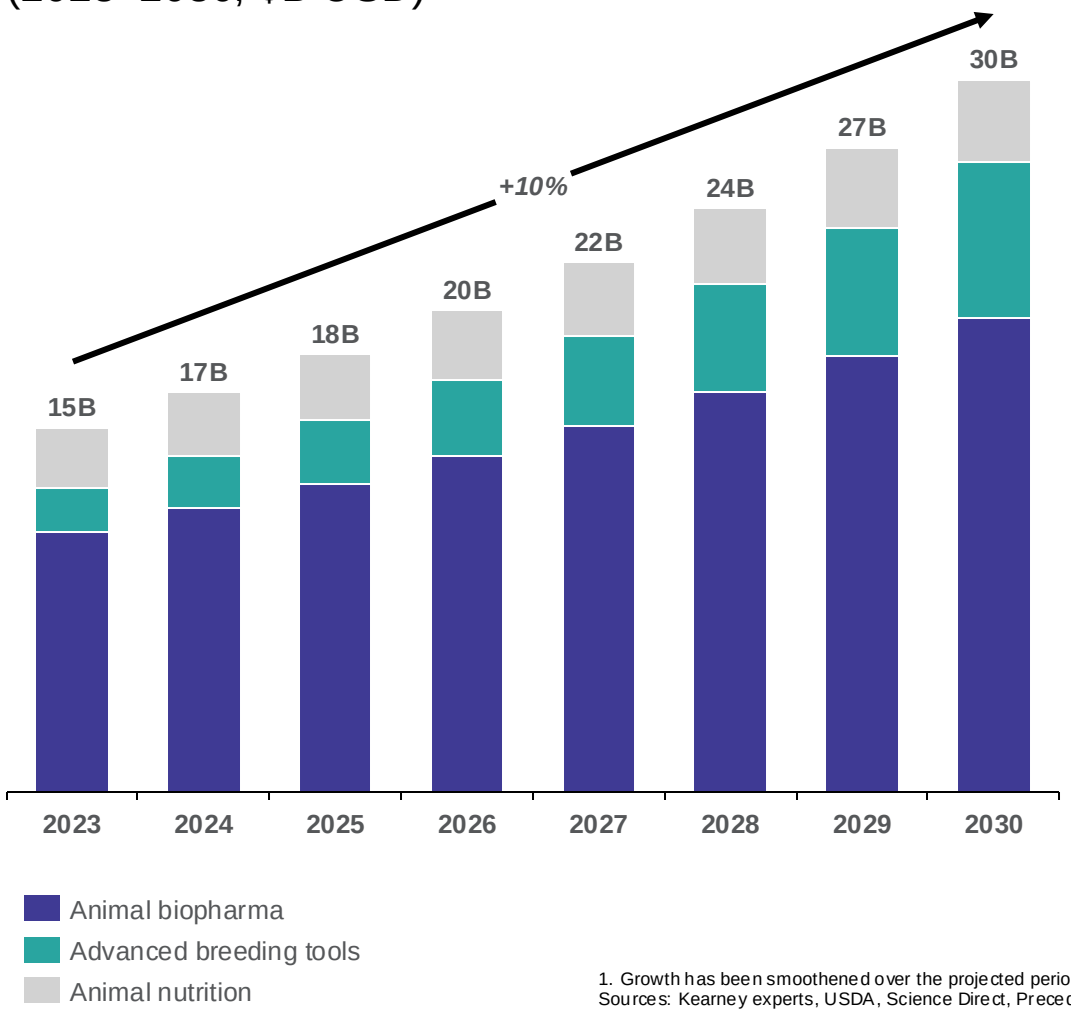
Animal segment definition and methodology

Animal

Subsegment	Subsegment definition	Subsegment inclusion	Methodology
Animal biopharma	– Use of biotechnology to improve animal health and produce medical therapies	– Disease diagnostics, vaccines – Pre and post biotics	– Estimates extrapolated from third-party research report – CAGR and market sizing values estimated through Kearney expert analysis and past growth
Animal nutrition	– Use of biotechnology organisms, systems, and processes to improve the nutritional value of animal feed and the health of animals	– Eubiotics – Enzymes (including phytases and xylanases) – Medicated feed additives	– Estimates extrapolated from third-party research report – CAGR and market sizing values estimated through Kearney expert analysis and past growth
Advanced breeding tools	– Includes gene editing for animals as current value today is low as well as advanced breeding tools, genomic selection, and IVF.	– Marker-assisted selection – IVF	– Estimates extrapolated from third-party research report – CAGR and market sizing values estimated through Kearney expert analysis and past growth

The biotech animal segment is increasing at a 10% CAGR, driven by advances in animal biopharma

Base case: animal market size (U.S.)[1]
(2023–2030, $B USD)



Key drivers

- Segment is rapidly growing, fueled by an increase in companion animals and pet humanization
- Rise in demand for preventative treatment and disease management options for pets and livestock
- Advanced breeding tools to drive genetic improvement and can lead to expansion beyond initial species into all significant systems
- Gene editing for disease resistance, resilience, and functional traits

Growth barriers

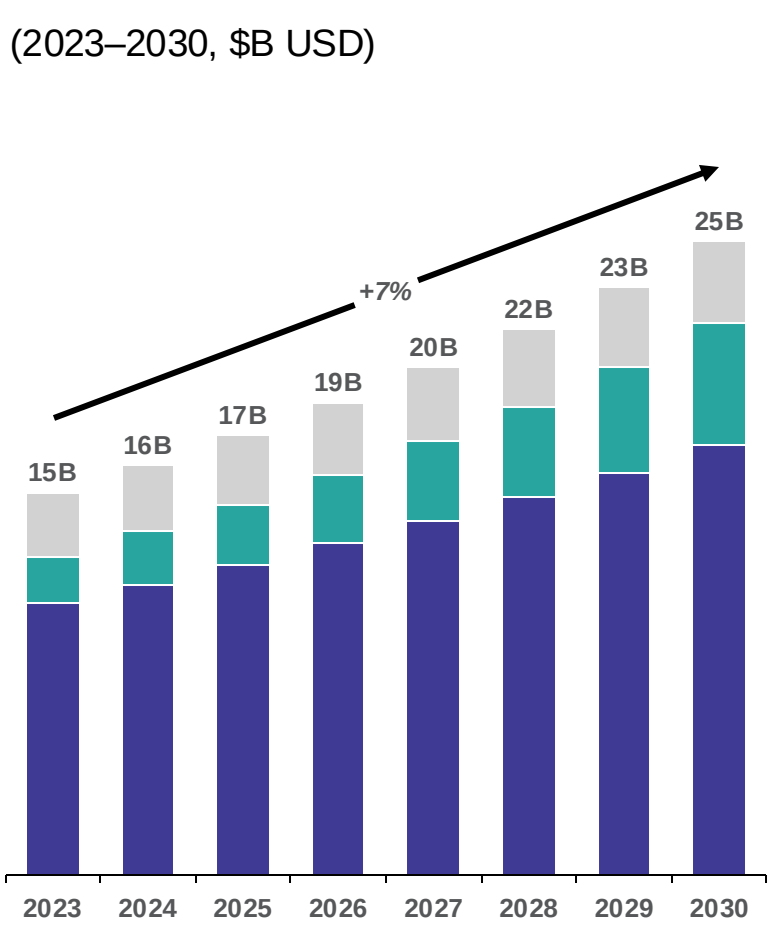
- A functional and efficient regulatory system is needed, as the current distinction between genetically engineered plants and animals is unsubstantiated: animals are classified as drugs by the FDA's Center for Veterinary Medicine (CVM), while plants are typically considered Generally Recognized As Safe (GRAS)
- The next wave of biotech feed additives may be hindered by the stringent FDA-CVM regulatory framework

1. Growth has been smoothened over the projected periods.
Sources: Kearney experts, USDA, Science Direct, Precedence Research

Animal segment high / low growth projections

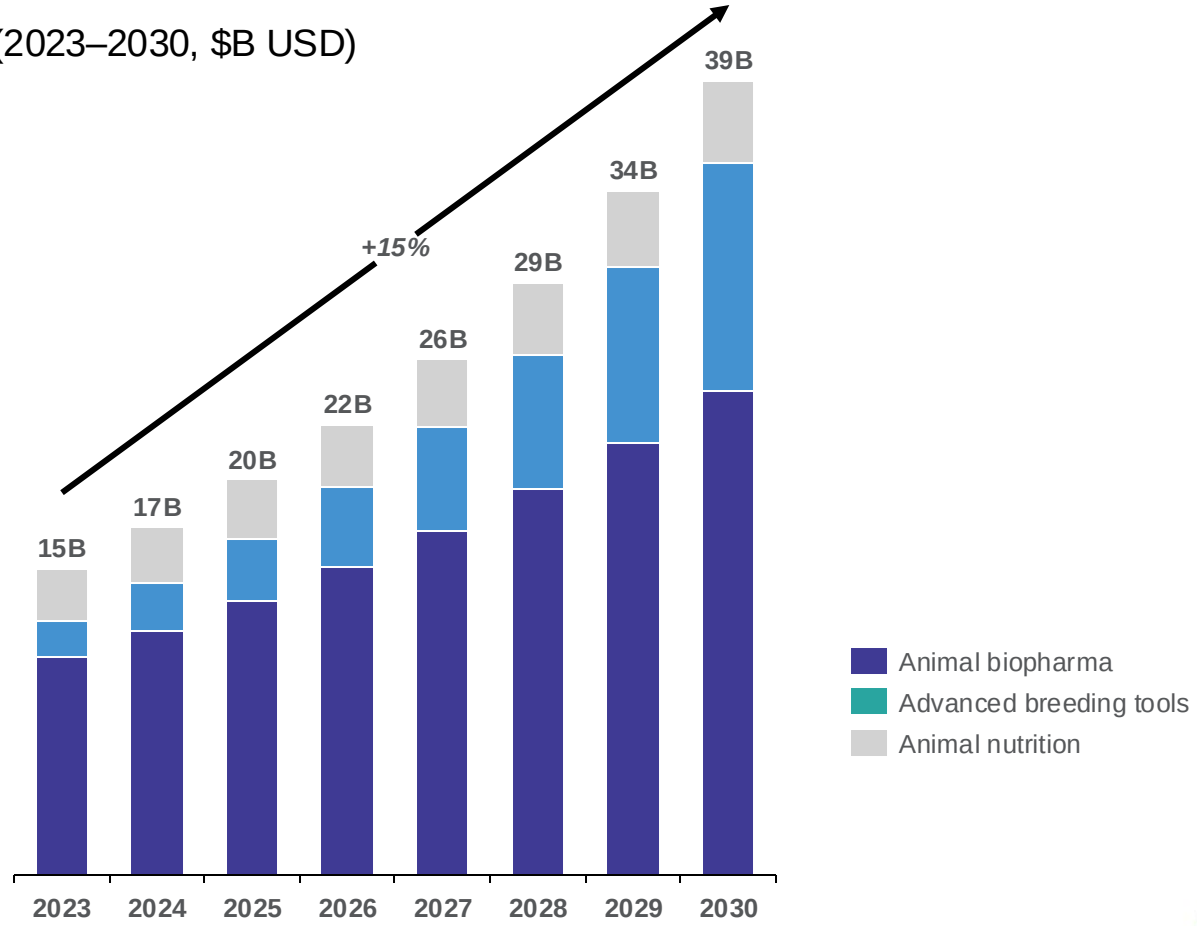
Low case: animal market size (U.S.)[1]

(2023–2030, $B USD)



High case: animal market size (U.S.)[1]

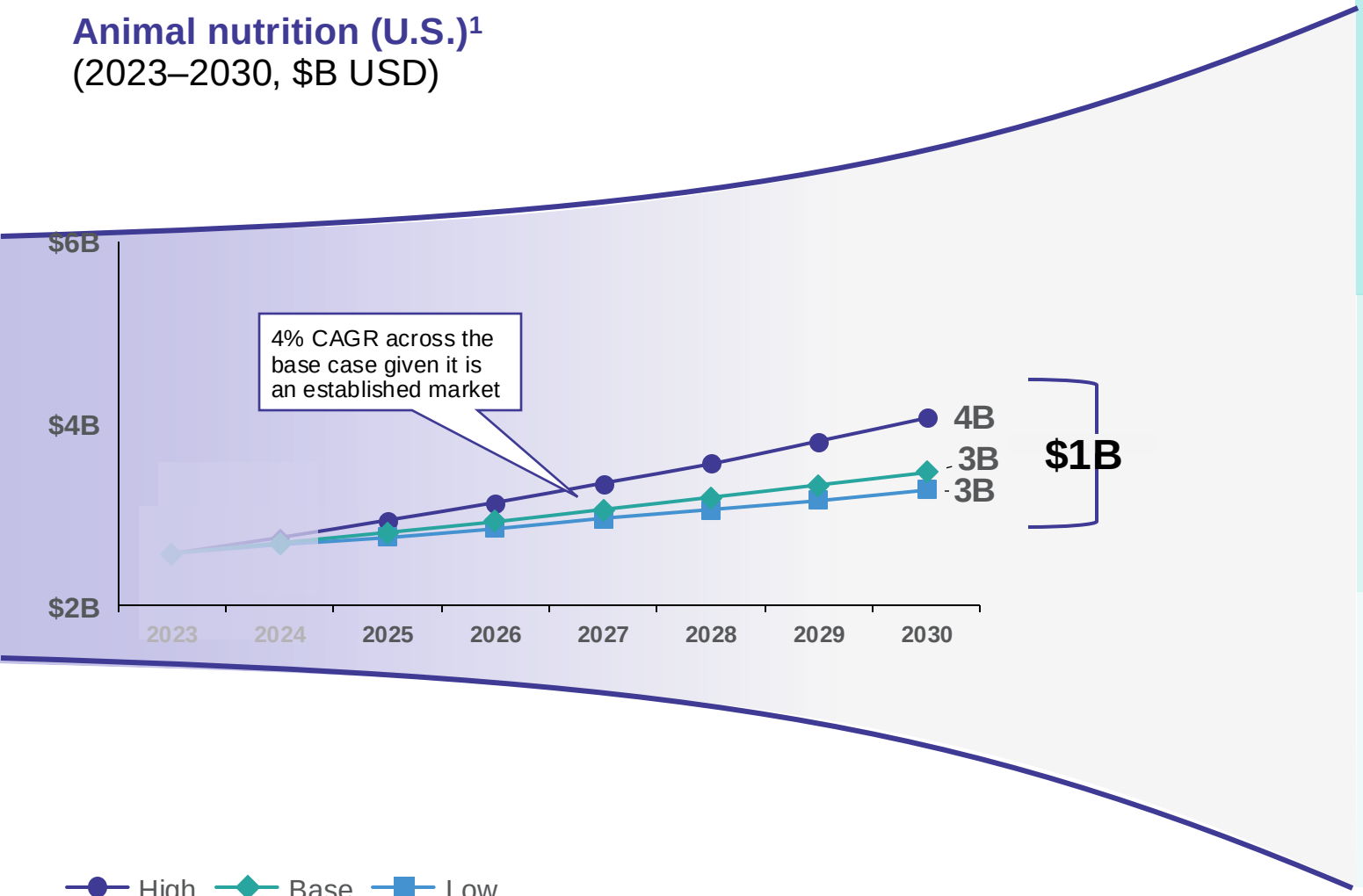
(2023–2030, $B USD)



1. Growth has been smoothened over the projected periods.
Sources: Kearney experts, USDA, Science Direct, Precedence Research

Animal nutrition

Animal nutrition (U.S.)[1]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $3B

Driving factors
- Demand for pet food ingredients is growing, fueled by increasing pet humanization trend
- Advancements and integration of technology in ingredient sourcing like precision formulation
- Increasing health and robustness enhancement from nutritional additives and biotech enzymes for feed utilization

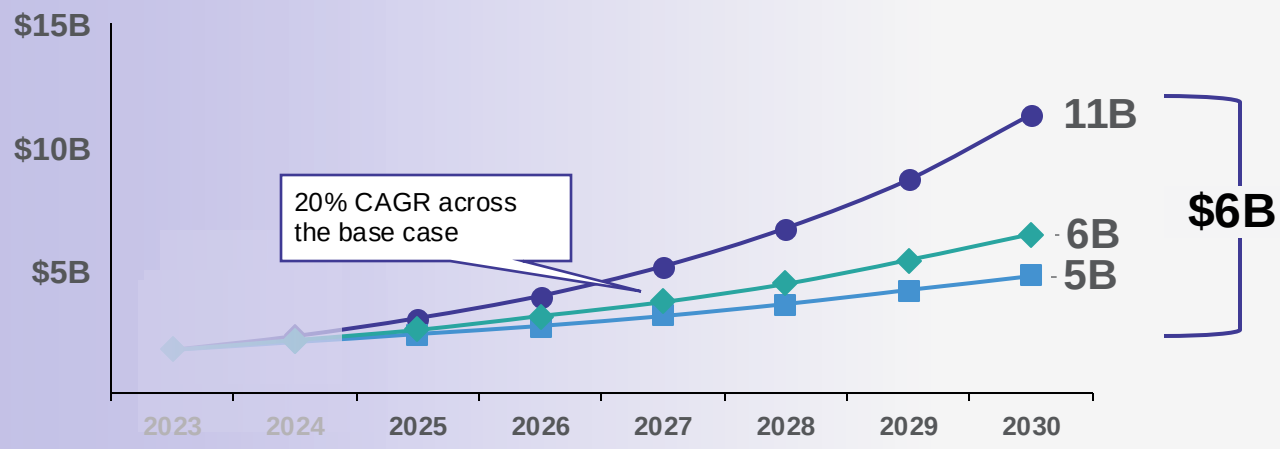
Challenges and barriers
- Strict U.S. regulatory processes lag Brazil, Chile, and many European countries
- Rising cost of raw materials like corn and soybeans are subject to price volatility from climate change, resource competition, and geopolitical tensions

Global trends
- North America has the second lowest CAGR (4.5%) following the Middle East
- Asia-Pacific has the largest CAGR (5.8%) resulting from a growing population and urbanization and is projected to dominate market share by 2030 (up to 42%)

1. Growth has been smoothened over the projected periods.
Sources: Kearney experts, Precedence Research

Advanced breeding tools

Advanced breeding tools market size (U.S.)[1]
(2023–2030, $B USD)



High Base Low

Aggregate difference between low- and high-case from 2025–2030 is $20B

Driving factors
- Proven success in livestock genetic product development is likely to increase adoption broadly
- Reduced prices for market entry leading to marginal economic animals getting genotyped (sheep)
- High quality data (phenotypes) lead to widespread adoption

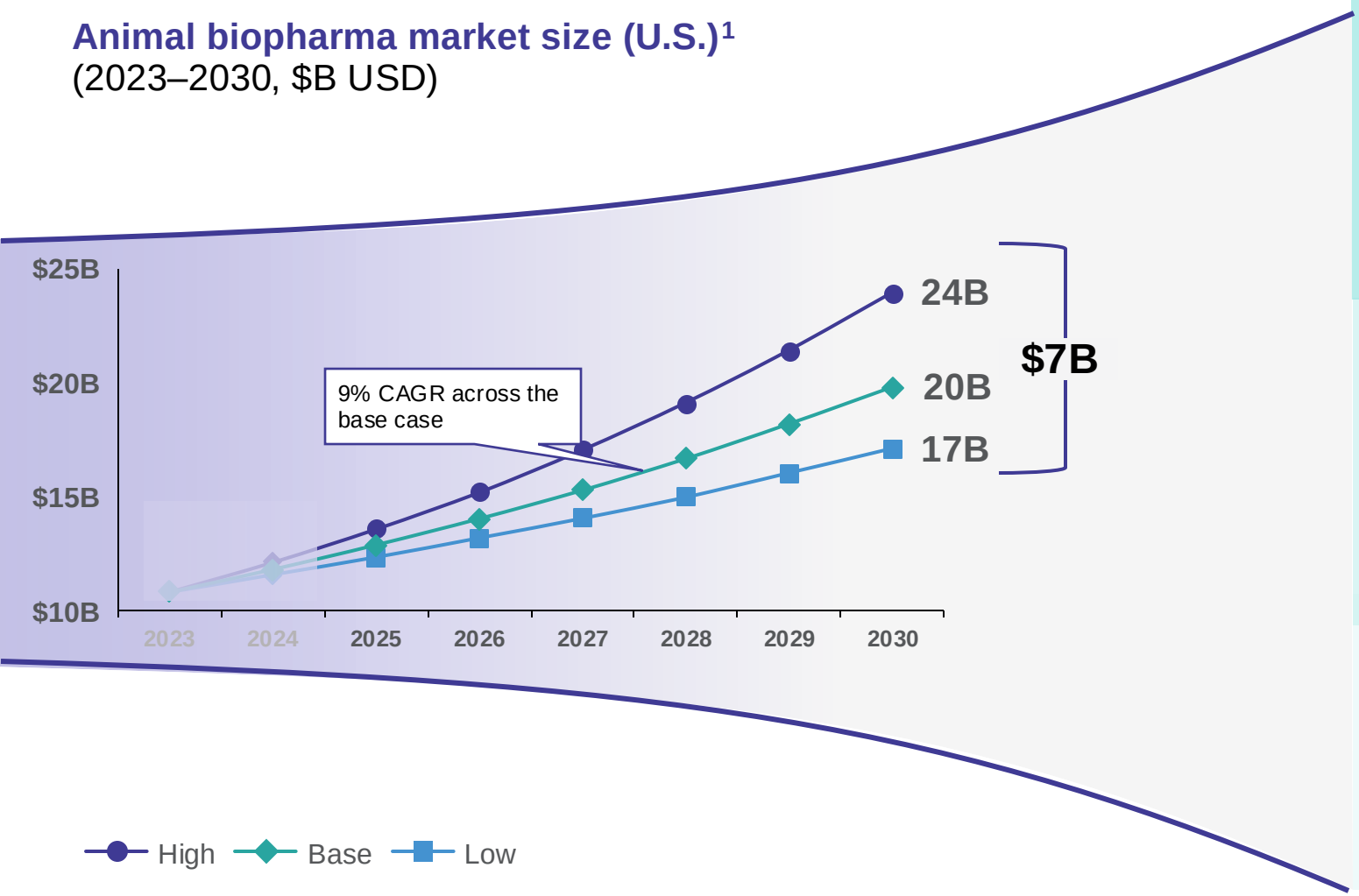
Challenges and barriers
- Challenging regulatory environment inhibiting gene editing technologies and preventing new products' market entry (e.g., disease resistance traits)
- Limited U.S. investment in areas including advanced reproductive techniques

Global trends
- The U.S. is at risk of trailing behind Latin America and China in livestock gene editing due to FDA-CVM processes
- North America will likely continue to lead Europe as it can, in theory, approve a genetically engineered animal

1. Growth has been smoothened over the projected periods.
Sources: Kearney experts, USDA

Animal biopharma

Animal biopharma market size (U.S.)[1]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $20B

Driving factors
- Increasing demand for early disease detection in companion animals
- Shifting zoonotic diseases create continuous demand for new diagnostics
- Focus on livestock health and productivity through disease management and preventative care to meet growing population

Challenges and barriers
- Lack of consumer knowledge increasing skepticism and hindering adoption
- Non-tariff trade barriers preventing access to international markets
- Strong consumer and CPG pressure against disease treatments like antibiotics - antibiotic elimination feasible in short-cycle systems but impractical in long-lived systems; leaves critical middle ground where opportunity and necessity exist

Global trends
- To drive down animal disease, globally consumer preferences favor avoidance and prevention options to reactive treatment options
- Consumer spending on companion animals continues to grow

1. Growth has been smoothened over the projected periods.
Sources: Kearney Biologicals Report, National Center for Biotechnology Information, Straits Research, expert interviews

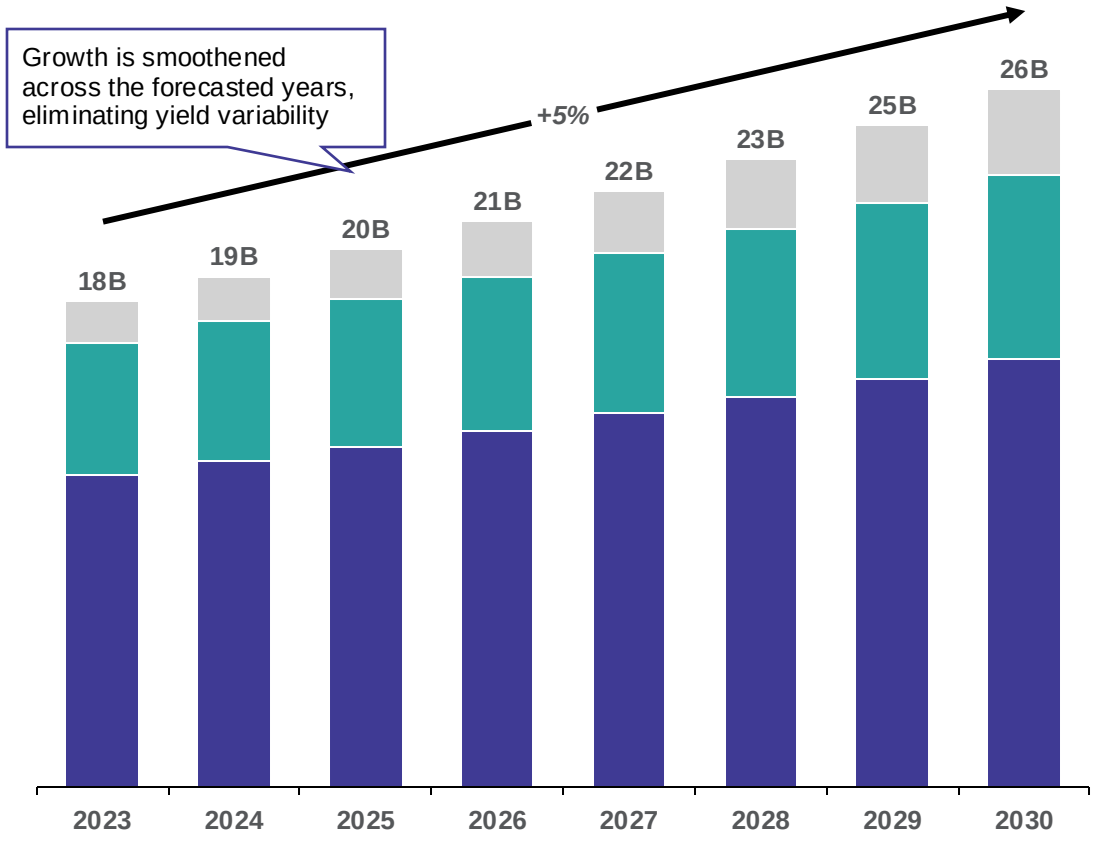
Plant segment definition and methodology

Plant

Subsegment	Subsegment definition	Subsegment inclusion	Methodology
Advanced breeding tools	– Modern plant biotechnology employs advanced breeding tools like marker-assisted selection, genomic selection, mutagenesis, trait integration tools, and speed breeding	– CRISPR – Cas-9	– 2023 crop acreage and prices and historical yield from 1980–2023 used to triangulate market size and growth – Advanced breeding tools market size allocation determined by Kearney experts, in part based on 1980 to 2023 productivity gains
Crop inputs	– Biological agents that increase crop quality and yield, mitigate abiotic and biotic stresses, enhance soil health, and reduce the environmental impact of agriculture	– Biofertilizers, bio stimulants, bio fungicides, bionematicides, bioherbicides, and bioinsecticides	– Market sizing estimates and growth rates were determined through Kearney's 2024 Biologicals multi-client study
Biotech traits	– Traits developed using genetic engineering to introduce foreign genes – Non-transgenic traits, developed using gene editing technologies to make small SNA changes in native DNA sequences	– Drought-resistant varieties – Pest resistance – Herbicide tolerance	– 2023 crop acreage and prices and historical yield from 1980–2023 used to triangulate market size and growth – Biotech market size allocation determined by Kearney experts, in part based on 1980 to 2023 productivity gains

The biotech plant segment is growing, driven by transgenic and non-transgenic traits

Base case: plant market size (U.S.)[1,2]
(2023–2030, $B USD)



Key drivers

- Expansion of biotechnology beyond traditional row crops; modifying crops to suit changing agronomic conditions
- Increase in biotech-enabled tools focusing on enhanced traits and improved breeding
- Specialized applications for crops with modified quality traits

Growth barriers

- Time-consuming regulatory approval procedures, making the release of transgenic seeds difficult and extremely expensive
- Inconsistent regulations and guidelines for non-transgenic biotech traits and biofertilizers resulting in lengthened time to market and costs for technology commercialization
- Political trade barriers
- IP security

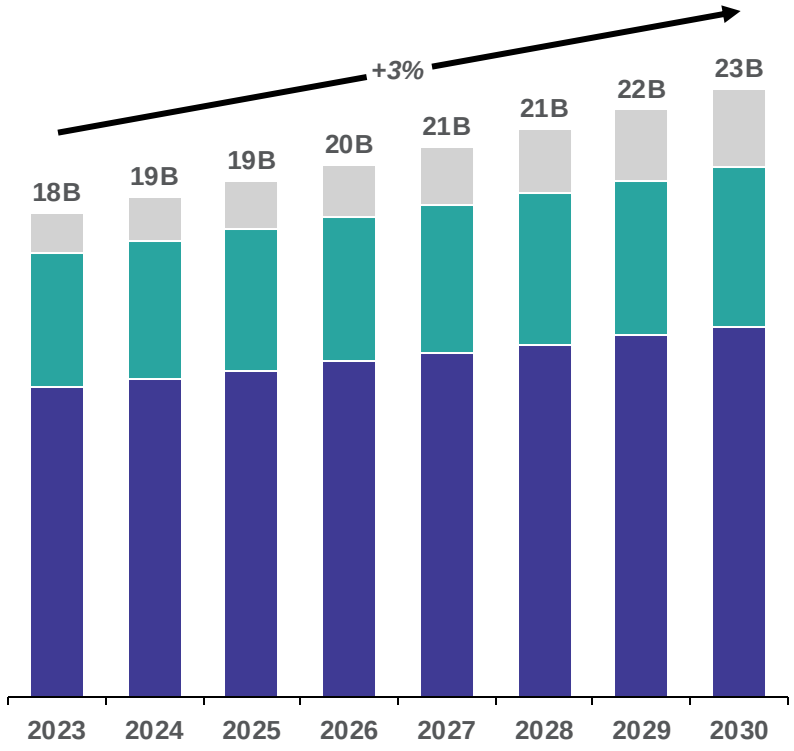
1. Calculated using 2023 U.S. harvested acreage and prices; assumes consistent YoY yield growth
2. Crops included are rice, canola, corn, soybeans, sunflower, wheat, alfalfa, mustard, cotton, potatoes, peppers, apples, cauliflowers, sorghum, sugarcane, pineapple, eucalyptus, cowpeas, hemp, eggplant, papaya, and camelina

Sources: Kearney experts, USDA, Science Direct

Plant segment high / low growth projections

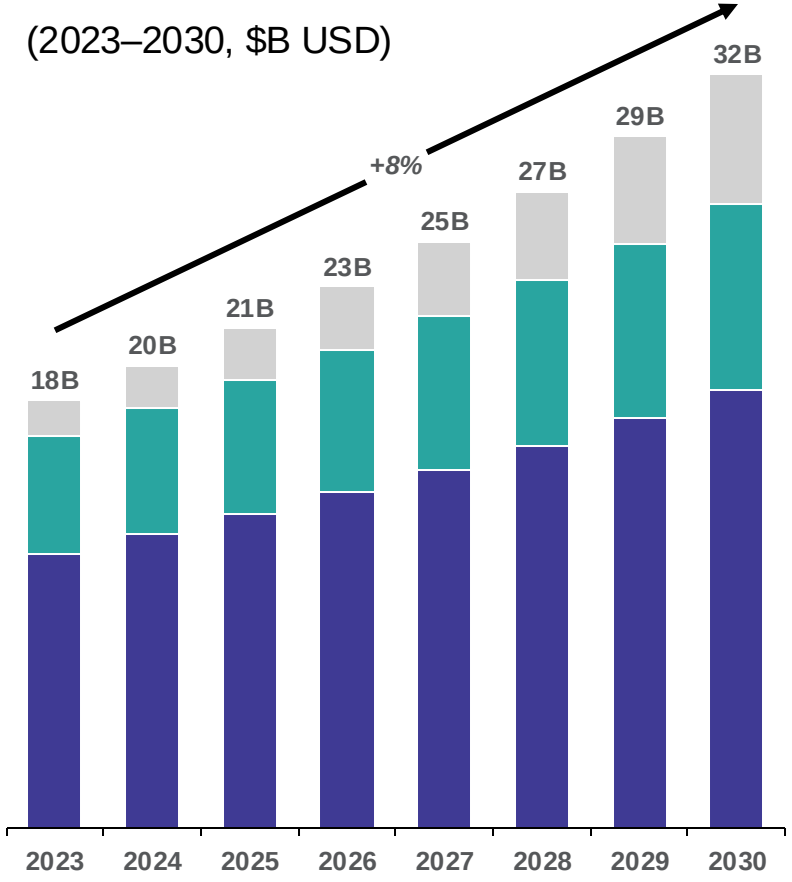
Low case: plant market size (U.S.)[1,2]

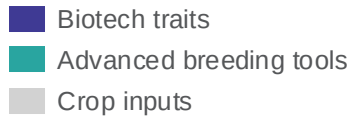
(2023–2030, $B USD)



High case: plant market size (U.S.)[1,2,3]

(2023–2030, $B USD)



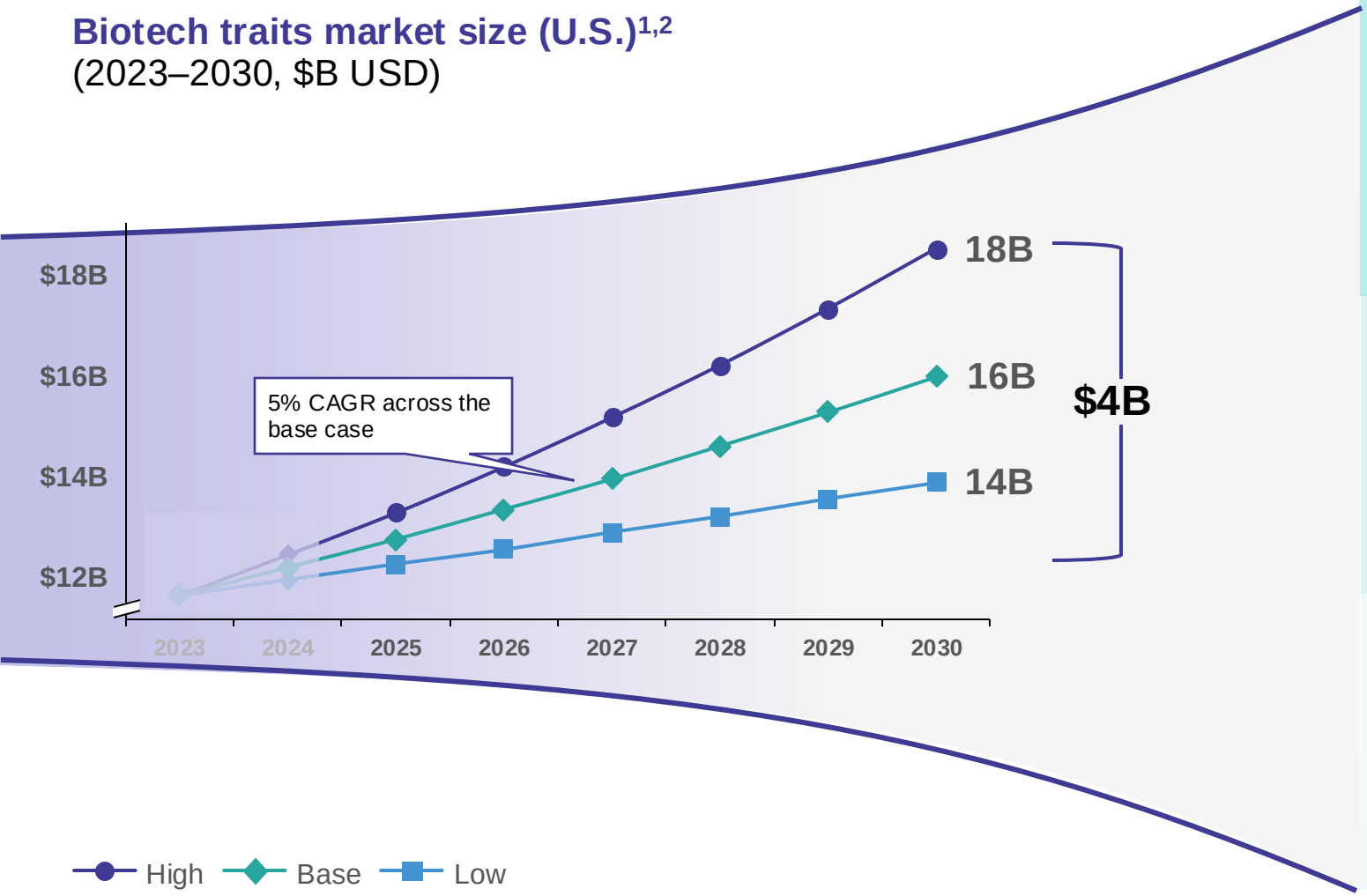


1. Calculated using 2023 U.S. harvested acreage and prices; assumes consistent YoY yield growth
2. Crops included are rice, canola, corn, soybeans, sunflower, wheat, alfalfa, mustard, cotton, potatoes, peppers, apples, cauliflowers, sorghum, sugarcane, pineapple, eucalyptus, cowpeas, hemp, eggplant, papaya, and camelina

Sources: Kearney experts, USDA, Science Direct

Biotech traits

Biotech traits market size (U.S.)[1,2]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $20B

Driving factors
- Rising demand for biotech seeds to improve agricultural productivity, pest and disease resistance, and tolerance to harsh environmental conditions
- Renewed investment in specialty markets and novel traits
- Ability to produce characteristics desirable to downstream processors and consumers

Challenges and barriers
- Inconsistent regulations and guidelines result in lengthened timelines to market and costs for technology commercialization
- Lack of harmonized global regulations and guidelines limit demand and increase volatility of export markets

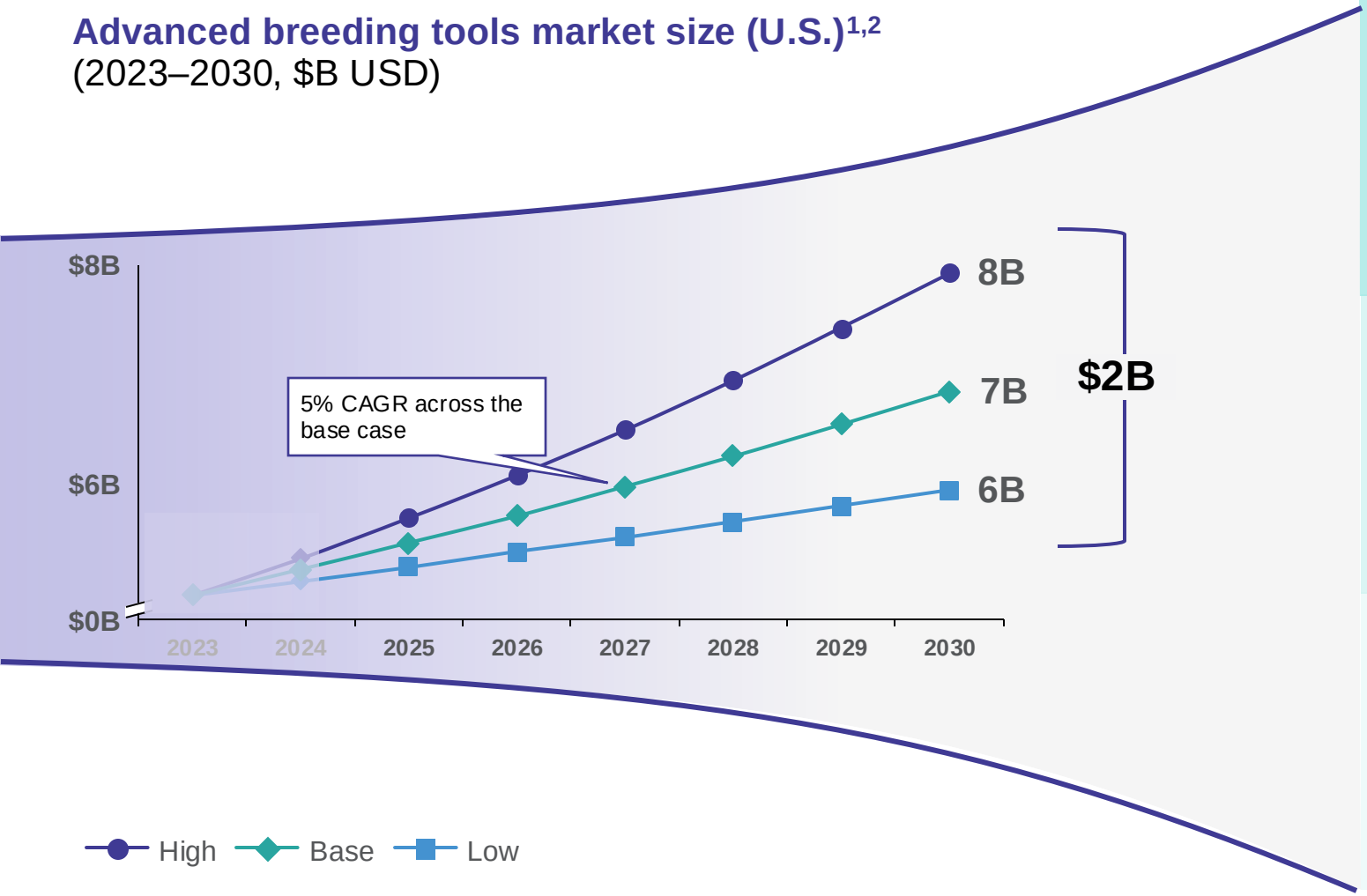
Global trends
- North America holds the largest share of the market given widespread use of biotech crops and large cultivated area
- Asia-Pacific is growing at the fastest rate with a favorable regulatory system and significant biotech crops; China experienced a recent spike in cultivation approvals (e.g., maize, soybeans)

1. 1. Growth has been smoothened over the projected periods and does not account for fluctuations in yield and commodity pricing.
2. Crops included are rice, canola, corn, soybeans, sunflower, wheat, alfalfa, mustard, cotton, potatoes, peppers, apples, cauliflowers, sorghum, sugarcane, pineapple, eucalyptus, cowpeas, hemp, eggplant, papaya, and camelina

Sources: Kearney experts, USDA, Cornell University

Advanced breeding tools

Advanced breeding tools market size (U.S.)[1,2]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $10B

Driving factors
- Significant growth opportunities relative to yield and quality poised to surge market growth nearing 2030
- Opportunities for AI to accelerate breeding
- Advanced breeding tools have potential to greatly accelerate productivity, gains, and value

Challenges and barriers
- Evolving pest spectrum and severe events necessitate resilient and reliable production
- The benefits of breeding with biotech traits are enabled by a simplified regulatory system
- Breeding in many crops is currently imprecise and progress slow

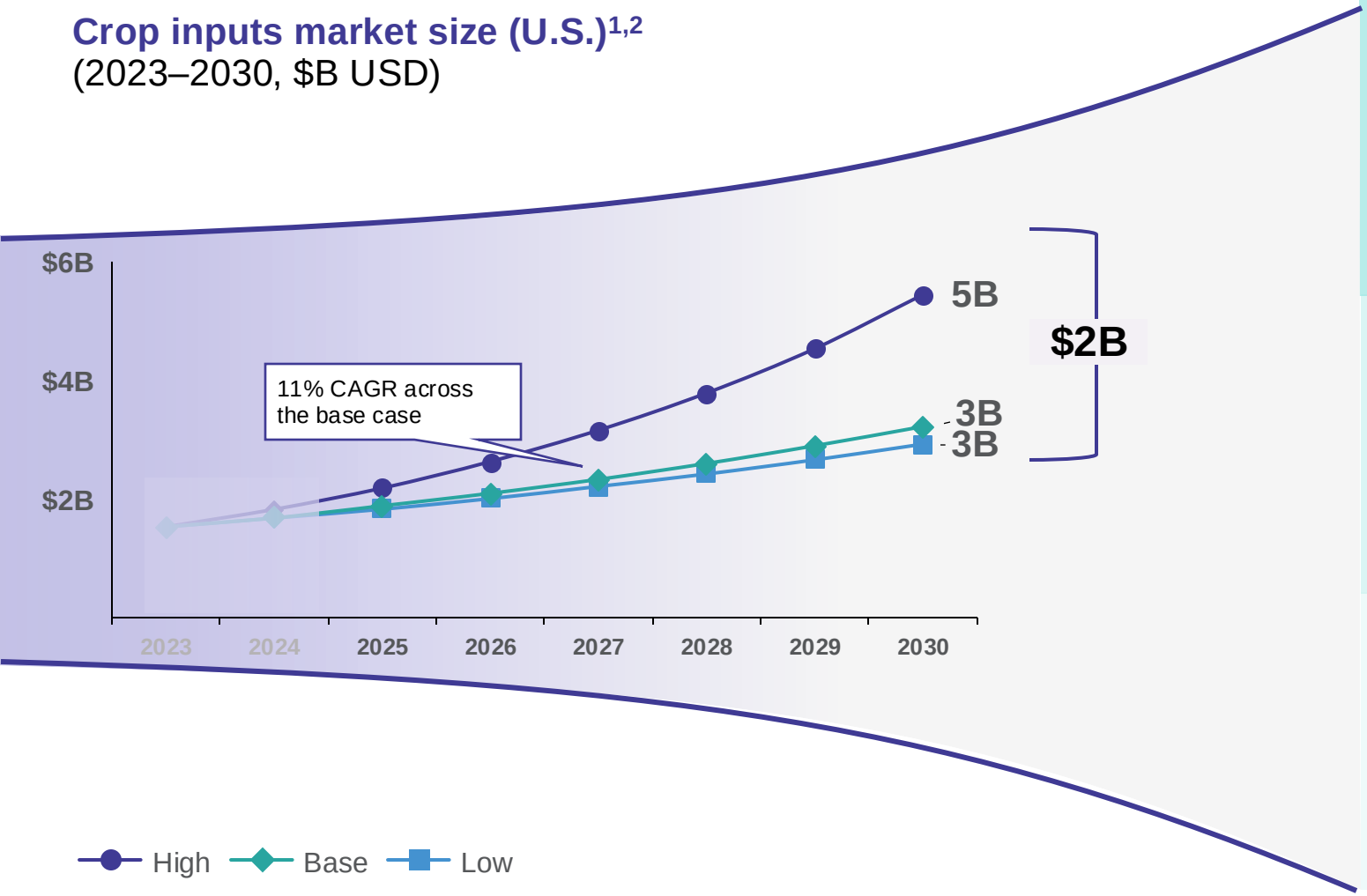
Global trends
- EU/Asia imposing rules/regulations on U.S. breeding
- Global population growth driving need to increase crop yields and improve reliability of production while using fewer acres/inputs

1. Growth has been smoothened over the projected periods and does not account for fluctuations in yield and commodity pricing.
2. Crops included are rice, canola, corn, soybeans, sunflower, wheat, alfalfa, mustard, cotton, potatoes, peppers, apples, cauliflowers, sorghum, sugarcane, pineapple, eucalyptus, cowpeas, hemp, eggplant, papaya, and camelina

Sources: Kearney experts, USDA, Cornell University

Crop inputs

Crop inputs market size (U.S.)[1,2]
(2023–2030, $B USD)



Aggregate difference between low- and high-case from 2025–2030 is $10B

Driving factors
- Increasing demand for sustainable food production has driven surge in use and commercialization of biological crop inputs
- Growth in organic food industry has influenced preference for chemical-free food products

Challenges and barriers
- Historical skepticism of growers toward biofertilizers given inconsistent performance
- Shelf-life, storage issues, and likelihood of contamination provide obstacles in usage

Global trends
- China followed by Brazil have well-defined criteria on the use of crop inputs regarding labeling and quality control enabling easier market expansion
- Asia-Pacific and Africa are the largest fertilizer-consuming regions, however the U.S. dominates the market

1. Crop inputs include biofertilizers, bio-stimulants, bio-fungicides, bionematicides, bioherbicides, and bioinsecticides
2. Growth has been smoothened over the projected periods and does not account for fluctuations in yield and commodity pricing.

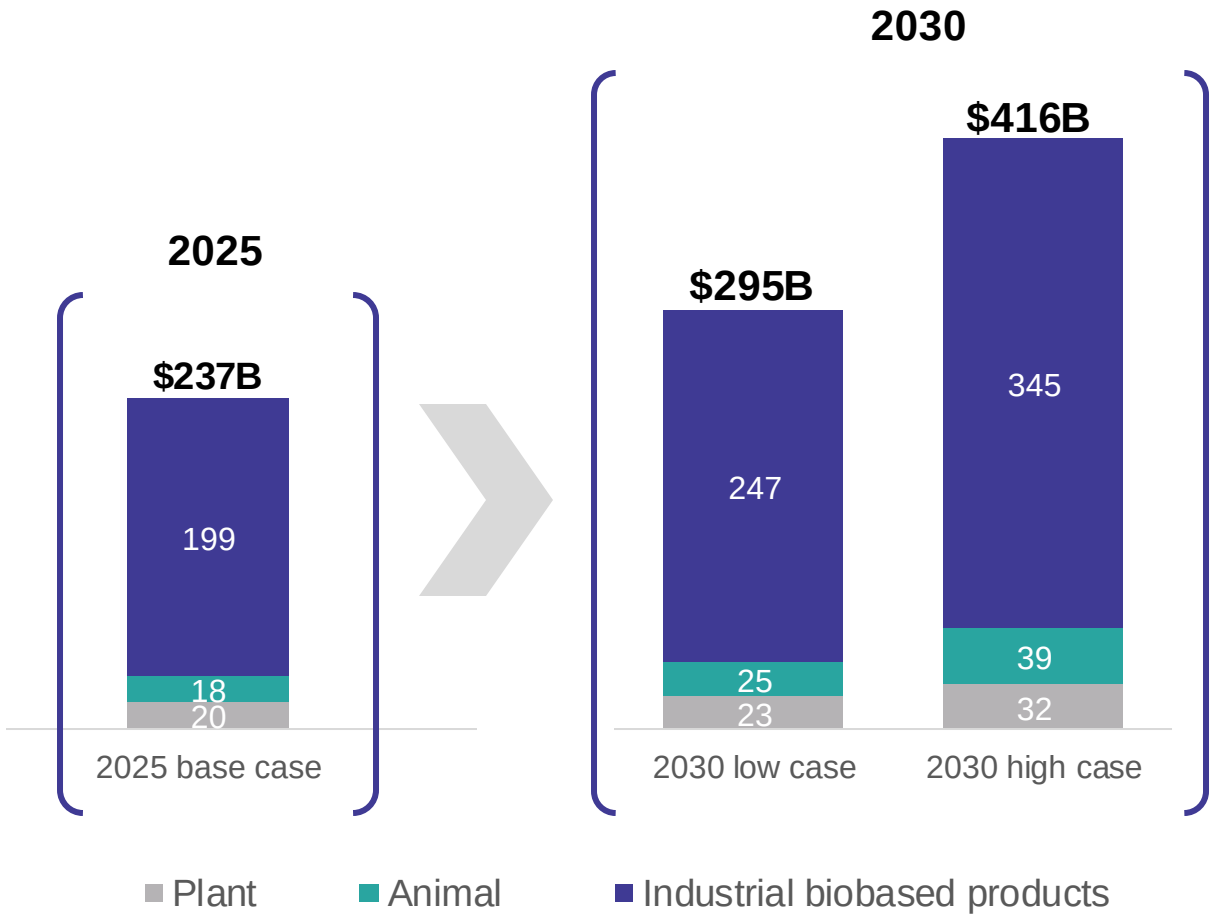
Sources: Kearney Biologicals Report, National Center for Biotechnology Information, Straits Research, expert interviews

This groundbreaking report represents the first quantification of the food, agriculture, and manufacturing biotechnology on the U.S. economy

Future direct economic value (2025–2030, $B USD)

The base case estimate for 2025 current value of food, agriculture, and manufacturing biotech in the U.S. is $237B.

The low case estimate for 2030 value of food, agriculture, and manufacturing biotech in the U.S is $295B, and the high case estimate is $416B.



Unlocking the full economic potential of food, agriculture, and manufacturing biotechnology requires robust policy support to drive innovation and value creation.

Thank you

KEARNEY

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Appendix

Index of sources (1/2)

The report was built referencing a number of primary and secondary research sources including industry experts and BIO members

Expert / source	Segment
Industry experts	
James Mann, Ph.D., Kearney Partner	All
Jon Lightner, Ph.D., Industry Expert	Plant and animal
Barbara Mazur, Ph.D., Industry Expert	Plant
Todd Krone, Ph.D., CEO PowerPollen	Plant
Craig Williams, Industry Expert	Plant
Dan Leep, Industry Expert	Plant
Kris Pauna, Kearney Principal	Plant
Joel Harris CEO Genvax Technologies, Inc.	Animal
James Iademarco, Industry Expert	Industrial biobased products

Index of sources (2/2)

The report was built referencing a number of primary and secondary research sources including industry experts and BIO members

Expert / source	Segment
Third-party reports	
TEConomy / BIO 2024: The U.S. Bioscience Economy	All
Precedence Research: Global Agricultural Biotechnology Market Estimates & Forecasts (2021-2034)	All
Kearney: 2024 Biotech Traits Commercialized (BTC) Multi-client Study (June 2024)	Plant
Kearney: 2024 Global Agricultural Biologicals Report	Plant
Insight Partners: Animal Genetics Application Market Size in Genotyping Industry (2023-2031)	Animal
Mordor Intelligence: Global Veterinary Healthcare Market (2017-2022)	Animal
Precedence Research: Animal Nutrition Market Size, Share, and Trends (2023 -2034)	Animal
Plastics Industry Organization	Industrial biobased products
Precedence Research: Global Food Ingredients Market Estimates & Forecasts (2021-2034)	Industrial biobased products
Precedence Research: Global Food Additives Market Estimates & Forecasts (2021-2034)	Industrial biobased products
US Energy Information Administration	Industrial biobased products