

F R O S T & S U L L I V A N



# **FROST & SULLIVAN'S AGRICULTURE & NUTRITION RESEARCH SERVICES**

**CREATING SHARED VALUE VIA AN  
INTEGRATED PARTNERSHIP**

# Contents

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The Frost & Sullivan story:  
who we are, what we do



Consulting  
Capabilities

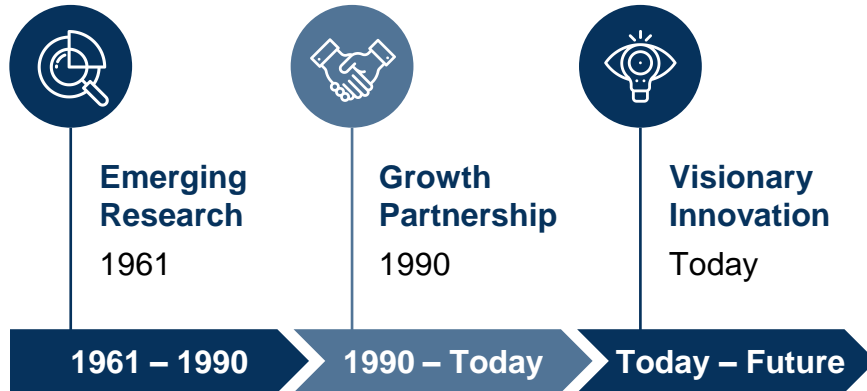


Research Deliverables  
& Case Studies



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# Frost & Sullivan: on the forefront of helping clients thrive and succeed in the future



- Pioneered emerging market & technology research
- Partnership relationship with clients, via analyst interactivity, consulting services and cross-industry events
- Visionary innovation support via megatrends research, development of the GIL global community

- Founded in 1961
- 1,600 staff, including over 1,000 full time consultants and analysts across 40+ offices in 25 emerging markets
- Clients worldwide, including emerging companies, the global 1000, and the investment community



**GROWTH PARTNERSHIP  
SERVICES**



**GROWTH  
CONSULTING**



**GROWTH  
IMPLEMENTATION**

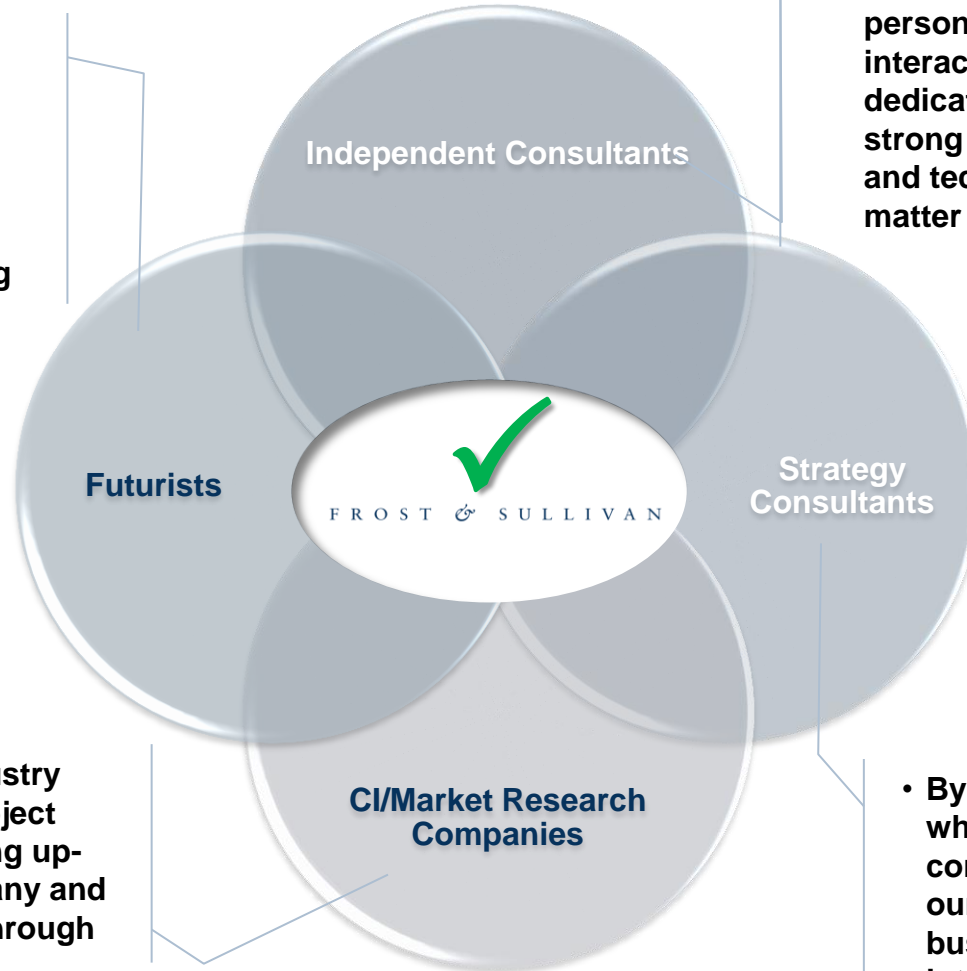
**Only company with footprint of 40+ offices to support research and consulting on global markets, 10 of which in Europe**

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# Growth Consulting: Why Partner with Frost & Sullivan

- Experienced ethnographers, economists, and social scientists continuously tracking Global Mega Trends
- Support business planning through Scenario Visioning



- Like independent consultants, we provide personal and continuous interaction with a dedicated consultants with strong market, company, and technology subject matter expertise

- Broad network of industry relationships with subject matter experts enabling up-to-date market, company and technology insights through primary research

- By answering the “so what?” our strategy consultants supports our clients translate business intelligence into action

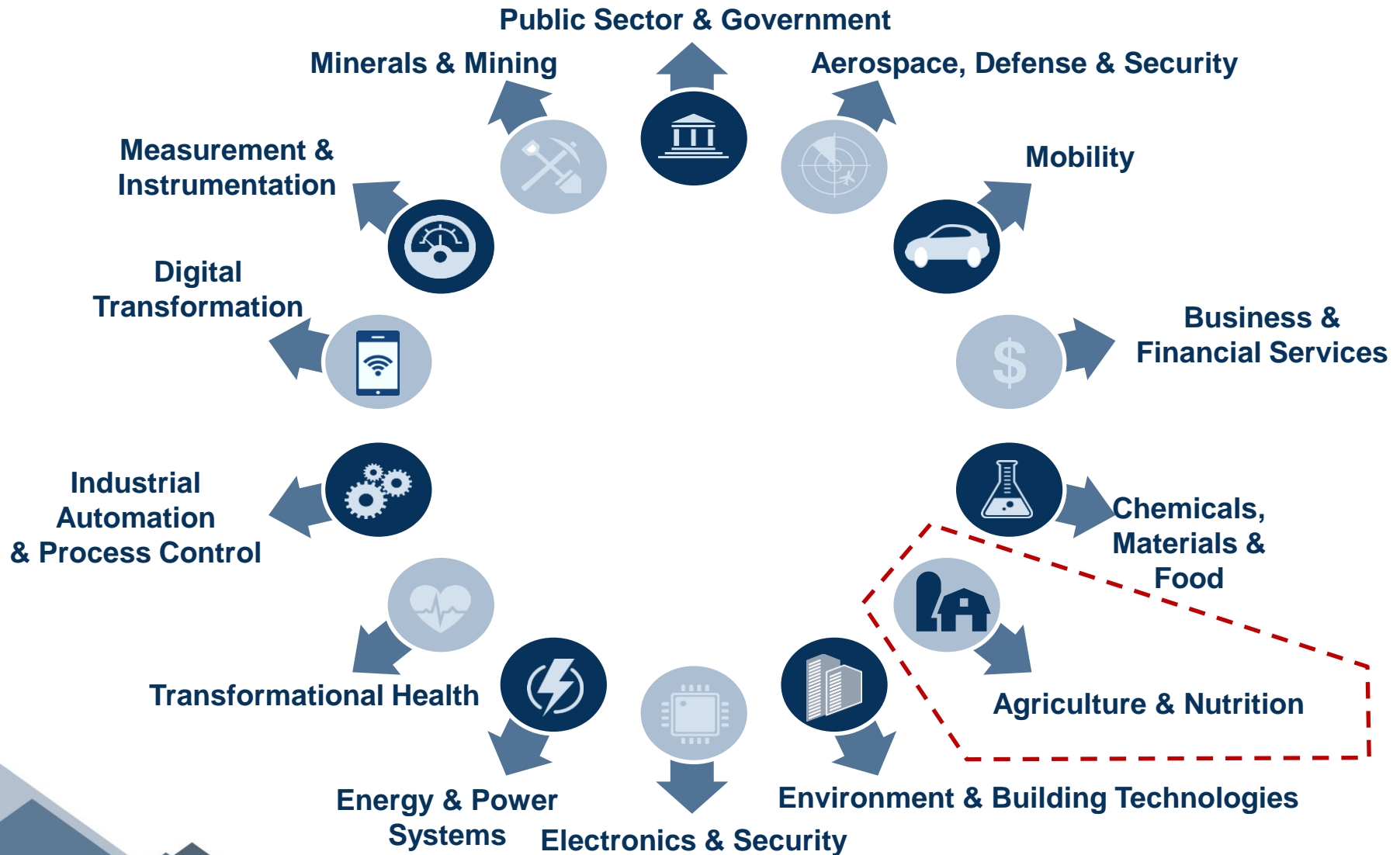
# Our Mission: support our clients to build and implement winning growth strategies

## The Growth Cycle



# Dedicated teams focused on 14 industries, at global & regional level: Unique capacity to identify & capture innovation opportunities

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# Frost & Sullivan's Agriculture & Nutrition Research

## COVERAGE AND EXPERTISE AREAS

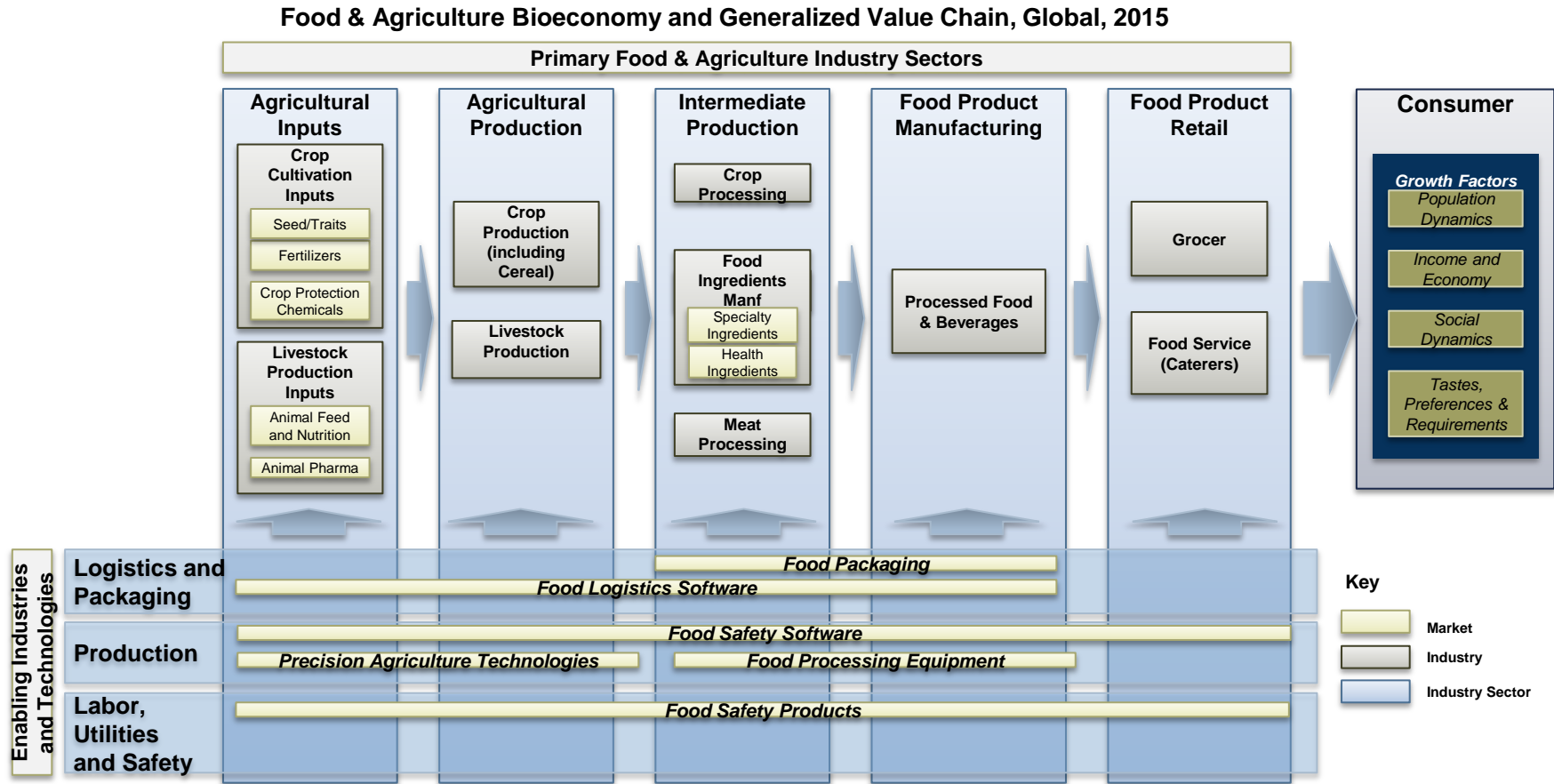


Over 100 analysts and consultants globally who track the above markets and enable companies to achieve transformational growth by maximising opportunities in established and emerging markets.



# Visionary Science—Agriculture & Nutrition Research

*The Challenge: In the 21st century, the primary challenge facing the entire global food & agriculture industry sector will be ensuring that it is intact into the 22<sup>nd</sup> century.*



The above industry sector value chain needs innovative solutions to address the inefficiencies that emerge from its operation and meet the needs of consumers

Source: Frost & Sullivan analysis.

# Visionary Science—Agriculture & Nutrition Research

*We help our clients identify the key challenges facing the food and agricultural industry sector in order to be successful in this market space today and tomorrow*



Managing the future of the **global socioeconomic environment** and the impact on the total demand, and regional distribution of demand, for agriculture product



The need for the tools and processes that safely optimizes **Resource Efficiency** in the current and future food and agricultural value chains given an increasingly challenging world. This includes the ever-growing need to enhance profitable yields on the farm and in the food manufacturing plant using **Advanced / Precision Engineering**

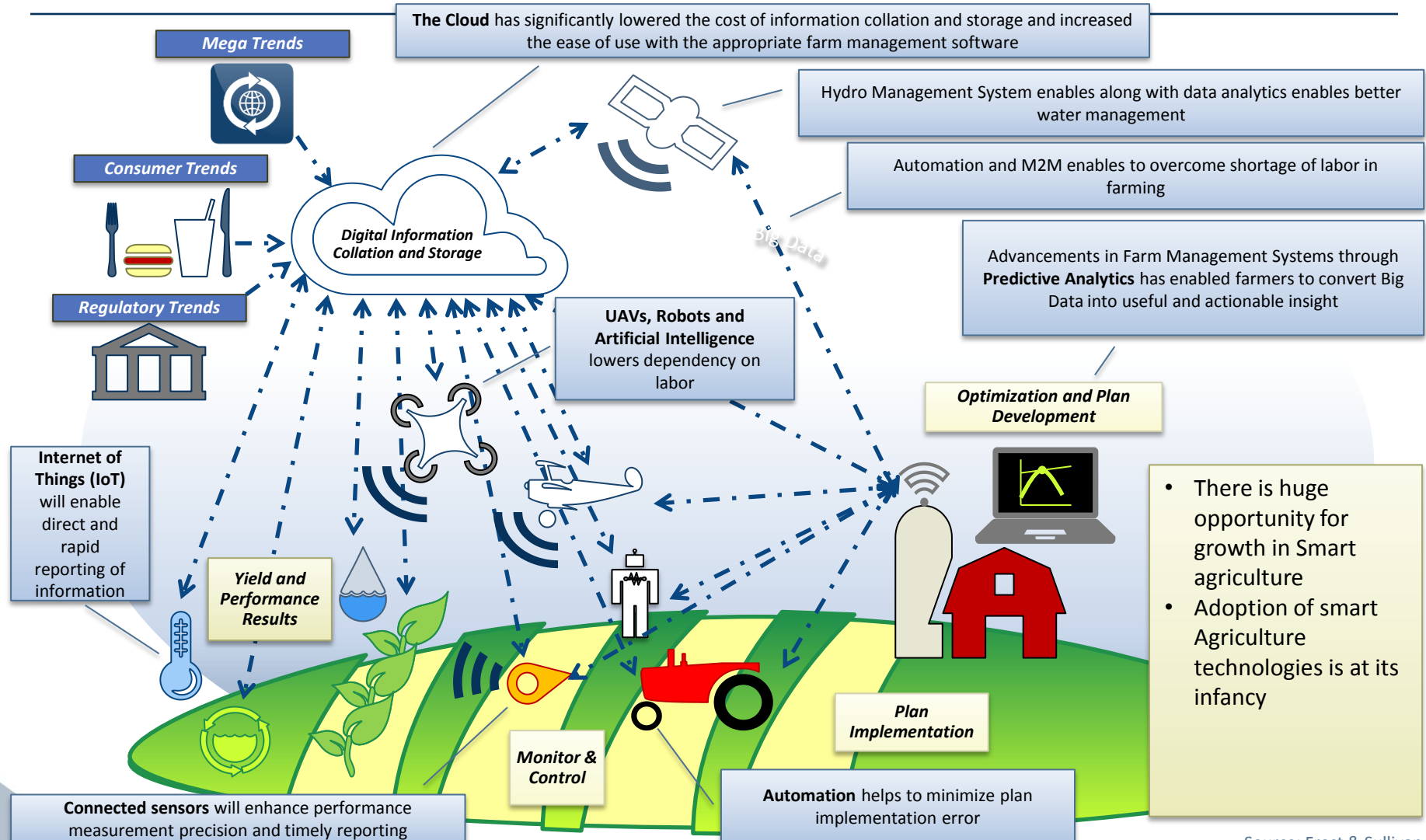


The rise of Freedom Food and specifically the need for **Enhanced Nutrition and Health** – starting from the development of safer and cleaner seeds and livestock, to value-added functional foods, to safer, more environmentally-friendly packaging

Source: Frost & Sullivan analysis.

# Visionary Science—Agriculture & Nutrition Research

## Digital Transformation in the Agriculture Eco-system

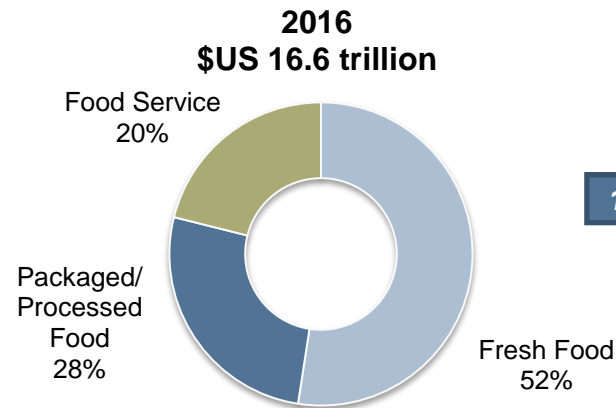


Source: Frost & Sullivan

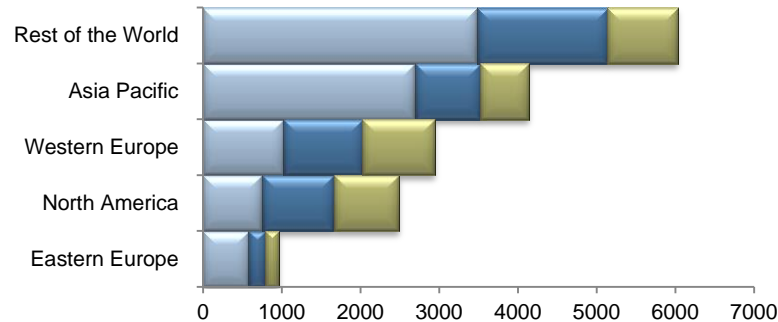
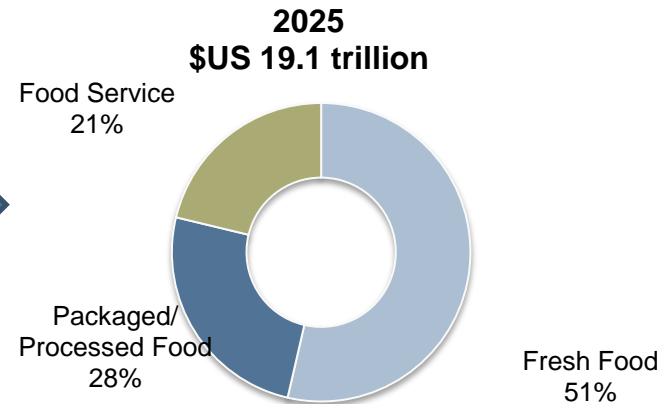
# Global Food & Beverage Market, Today and Tomorrow

*Total global expenditure on all food products by final consumers, whether fresh, processed, or through the food service sales channel, will reach \$19.1 trillion in sales in 2025*

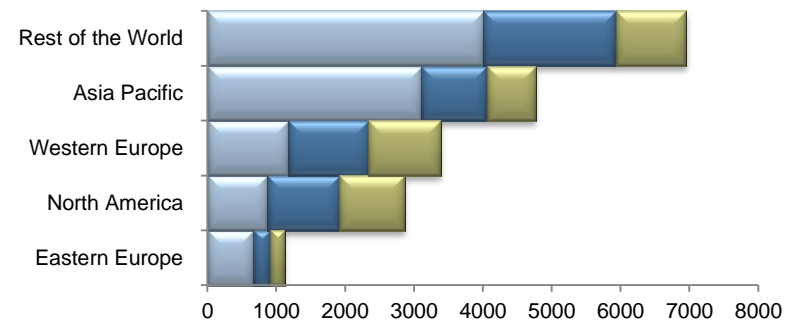
## Total Food & Beverage Consumer Expenditure by Primary Demand Channels and Region – Likely Scenario, Global, 2017 to 2030



**1.6% Growth**



	Eastern Europe	North America	Western Europe	Asia Pacific	Rest of the World
Fresh Food	581	753	1026	2691	3479
Packaged/ Processed Food	211	912	1002	833	1665
Food Service	174	818	914	613	885



	Eastern Europe	North America	Western Europe	Asia Pacific	Rest of the World
Fresh Food	670	868	1182	3103	4011
Packaged/ Processed Food	244	1052	1156	960	1919
Food Service	201	943	1054	707	1020

Note: All figures are rounded; the base year is 2016. Sources: Frost & Sullivan analysis.

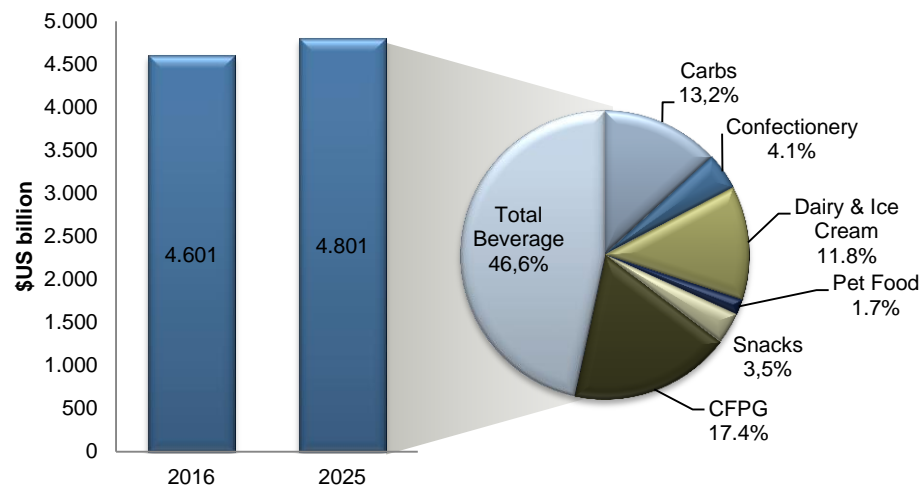
# The Future of Food—The Processed Food & Beverage Products Market, Today and Tomorrow



## Market Overview

- The processed food and beverage products market, which includes all products sold at retail to final consumers, is highly fragmented and dynamic. The emerging economies will see the greatest increase in the demand for packaged food & beverage products.
- Total global expenditure on processed food and beverage products by final consumers, reached \$4.601 trillion in 2016 and will grow to \$4.801 trillion in 2025.
- Consumers are increasingly wanting value-added food and beverage products that are free from environmentally-damaging pollutants, allergens, or over utilization of socially-valuable natural resources and are highly nutritious, offers other health benefits, and is ethically-produced.
- Meeting these consumer needs typically add to the cost of production, especially when there is an additional need to not sacrifice other consumer tastes and preferences.
- However, only some of these consumers are usually willing to pay a significant premium for these value-added food and beverage products, especially for products that offer more than one benefit (but at a decreasing rate).

**Total Processed Food & Beverage Products Market: Revenue Forecast (\$) and Share by Product Type (%), Global, 2016–2025**  
CAGR (2016-2025): 1.5%



## Top Predictions for 2016 to 2025

- 1 The three strongest growth categories among the food categories over the next year will be Baby Foods and Meal Replacement products within the CFPG category and the snacks category.
- 2 The weakest growth categories will be the breakfast cereal category (within the Carbohydrates category) followed by chewing gum within the confectionery category.
- 3 Regarding beverage products, the growth of hot drinks category will support the category as both alcoholic and soft drink sales are stymied due to market saturation and the consumers desires to seek out healthier alternatives.

Note: CFPG = Canned, Frozen & Perishable Groceries. Figures are rounded. The base year is 2016. Source: Frost & Sullivan



# The Future of Food—Key Sub Trends

Personalization and Customization



The Rise of Freedom Food



Not-so Fast Food and Street Food



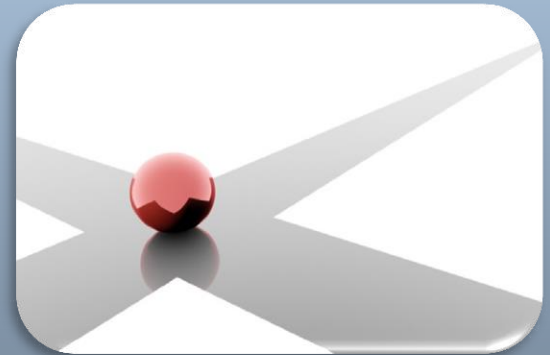
Enhanced Health & Nutraceuticals



Nutrigenomics



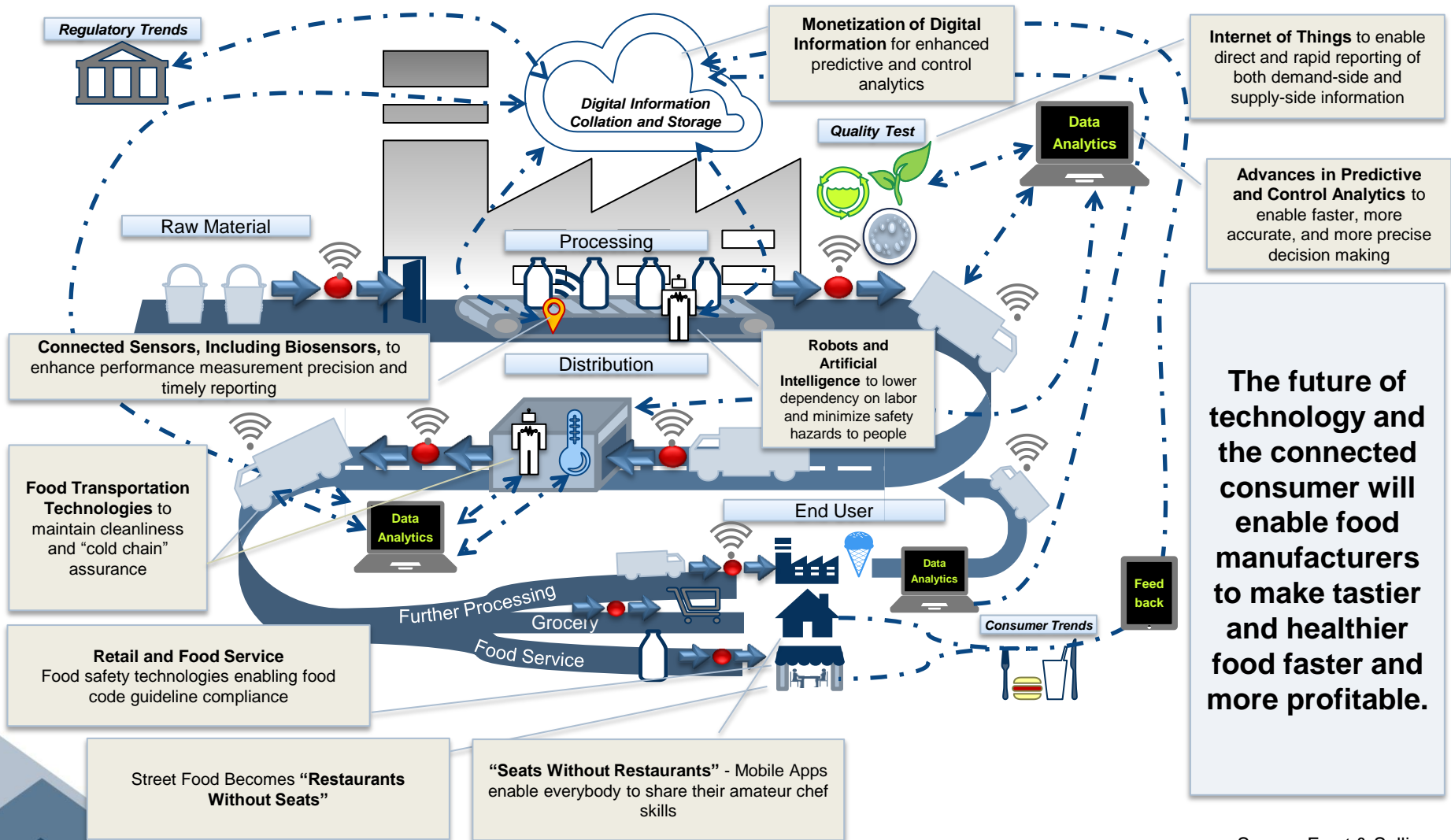
Protein at a Crossroads



Source: Frost & Sullivan

# The Future of Food—Connected Eating in the Cognitive Era

*Digital transformation in the food and beverage processing ecosystem will alter the business models and the way producers use information to maximize consumer and production value*

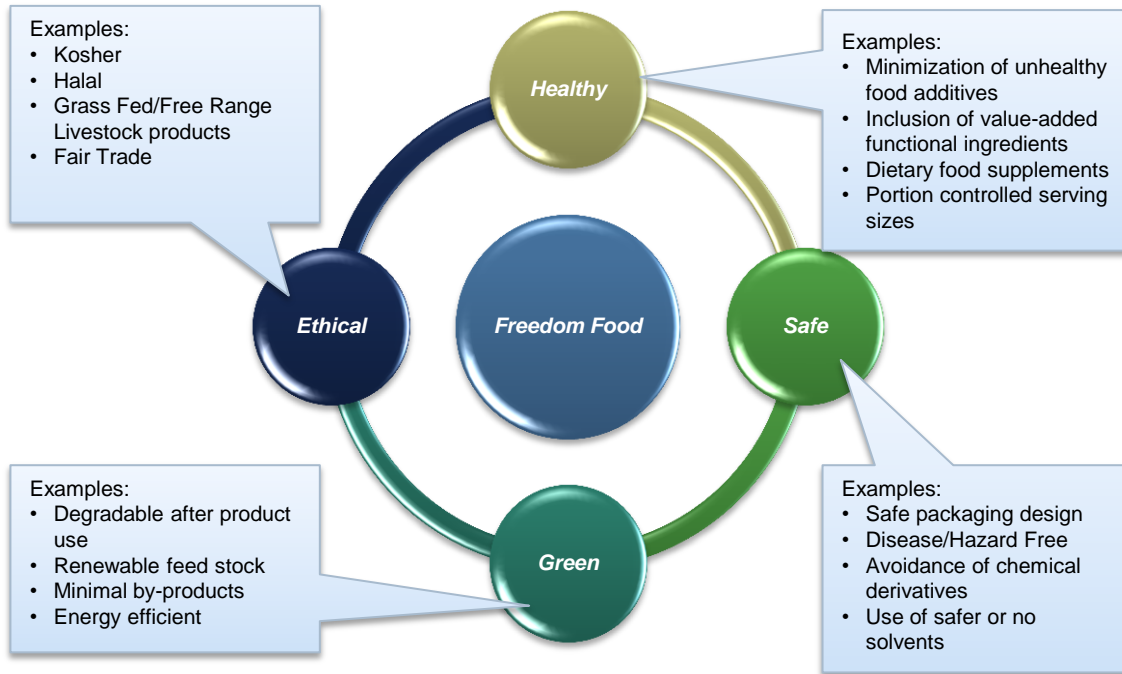


Source: Frost & Sullivan

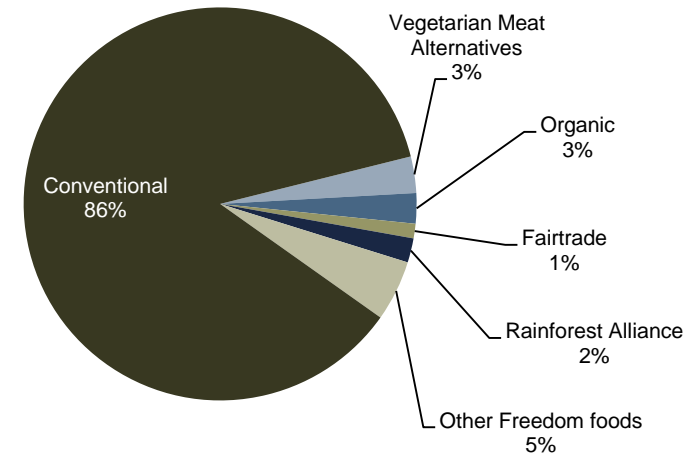


# The Future of Food—Freedom Food

*Demand will increase and customers will continue to pay a some positive premium for food free from undesired quality characteristics, but what consumers consider undesired will evolve.*



**Processed Food & Beverage Market by Freedom Food Categories, Global, 2016  
2017  
\$US 4.68 trillion**



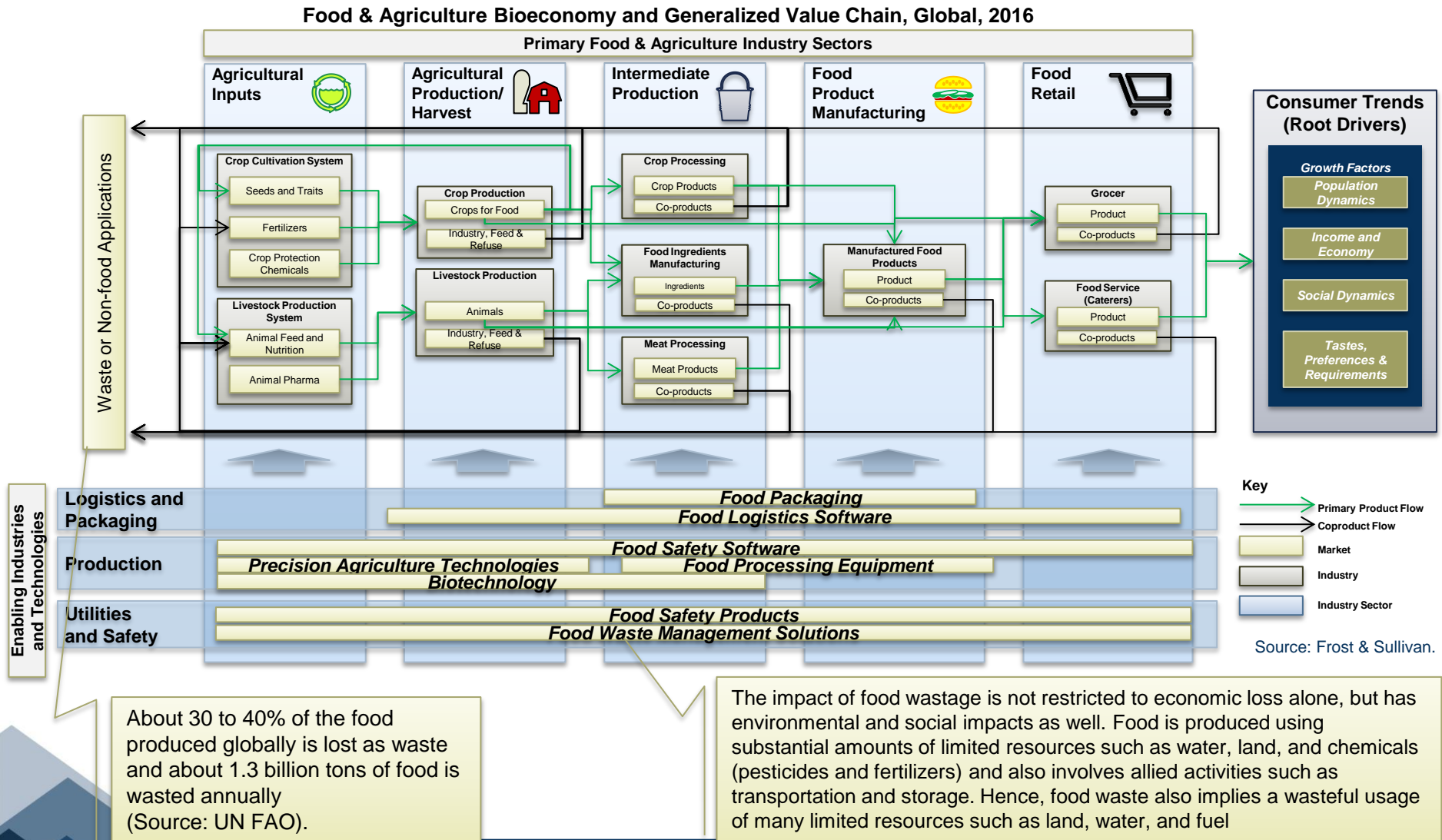
- Gluten-free, genetically-modified organism (GMO) free, sugar-free, fat-free, organic, fair trade, and even Halal and Kosher foods are examples of freedom foods that exhibit above average demand growth throughout the world.
- This in turn increases the likelihood of supply chain bottles necks and in turn what suppliers are able to charge, thus growth in food prices.
- Producing freedom foods increases the likelihood of supply chain bottles necks and in turn what suppliers are able to charge, thus growth in food prices and the demand for newer, more efficient, equipment.

**Producing freedom foods increases the likelihood of supply chain bottles necks and in turn what suppliers are able to charge, thus growth in food prices and the demand for newer, more efficient, equipment will likely follow.**

Source: Frost & Sullivan analysis.

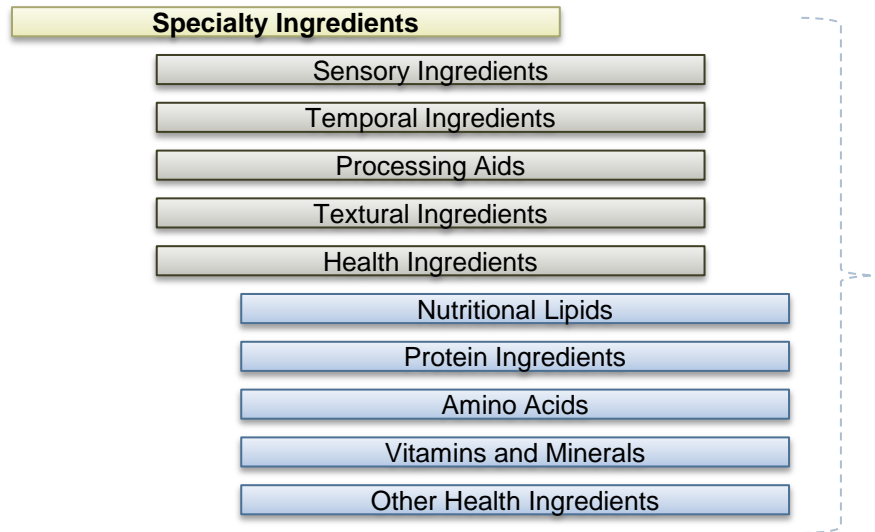
# Waste

The world produces more food than that required by the global population, but a sizeable population is still hungry. Major reason for this scarcity is food wastage or food loss occurring in various stages of food conversion or processing, including logistics.

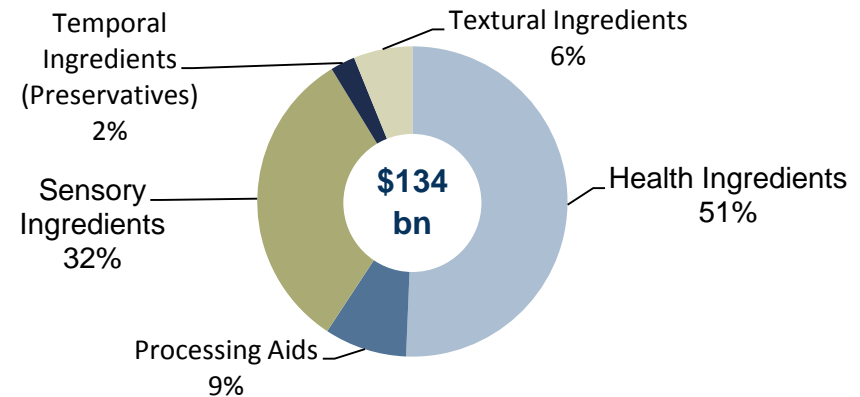


# Global Food & Beverage Ingredients Market

*Sensory Ingredients, of which flavors is a part of, contributes nearly 40% of all ingredient sales to the food & beverage market globally*



**Food & Beverage Ingredients Market Market Share by Ingredient Type Global, 2016 (in %)**



- Sensory ingredients are ingredients added to food products for the purposes of enhancing the consumer's sensory response to the given food product and includes all flavours, colours, sweeteners, salts, and fragrances.
- Processing aids are ingredients added to food formulations for the stated purpose of enabling the transformation of ingredients into a finished food formulation/product. Baker's yeast and baking soda are two good examples of processing aid ingredients.
- Temporal ingredients, or preservatives such as antioxidants or antimicrobials, are ingredients added to food formulations for the purpose of extending the life of the food product.
- Textural ingredients include emulsifiers, modified starches, and gelling agents are ingredients that improve the textural properties of food and beverages.
- Health ingredients are the set of ingredients added to food matrices and formulations for the explicit purpose of enhancing the nutritional and health profile of the finished food product. They make up the largest segment, by value, in the Global Food & Beverage Ingredients Market market. This market segment includes all vitamins and minerals and added functional health ingredients like probiotics, antioxidants, omega-3s, fibre, etc.

Source: Frost & Sullivan analysis

# Agriculture & Nutrition Global Clients

Non-Exhaustive



# Agriculture & Nutrition Research Library

Study	Publication Year	Region Scope
2019 Outlook of the Global Agriculture & Nutrition Sector	2018	Global
Focus on Americas Animal and Pet Nutrition Ingredient Market, Trends to 2022	2018	Global
Focus on Americas Crop Protection and Nutrition Markets, Trends to 2022	2018	Global
Focus on Americas Enabling Food Production Technology Markets, Trends to 2022	2018	Europe
Focus on Americas Phytonutrients Market, Trends to 2022	2018	Europe
Focus on Americas Precision Agriculture Technology Markets, Trends to 2022	2018	Europe
Focus on Americas Protein and Amino Acid Ingredient Markets, Trends to 2022	2018	Europe
Focus on Emerging Animal and Pet Nutrition Ingredient Market, Trends to 2022	2018	Europe
Focus on Emerging Crop Protection and Nutrition Markets, Trends to 2022	2018	APAC
Focus on Emerging Enabling Food Production Technology Markets, Trends to 2022	2018	APAC
Focus on Emerging Phytonutrients Market, Trends to 2022	2018	Europe
Focus on Emerging Precision Agriculture Technology Markets, Trends to 2022	2018	Global
Focus on Emerging Protein and Amino Acid Ingredient Markets, Trends to 2022	2018	APAC
Focus on Europe Animal and Pet Nutrition Ingredient Market, Trends to 2022	2018	APAC
Focus on Europe Crop Protection and Nutrition Markets, Trends to 2022	2018	Global
Focus on Europe Enabling Food Production Technology Markets, Trends to 2022	2018	Global
Focus on Europe Phytonutrients Market, Trends to 2022	2018	Europe
Focus on Europe Precision Agriculture Technology Markets, Trends to 2022	2018	Global
Focus on Europe Protein and Amino Acid Ingredient Markets, Trends to 2022	2018	Global
Future of the Global Animal and Pet Nutrition Ingredient Market, Trends to 2022	2018	Europe
Future of the Global Crop Protection and Nutrition Markets, Trends to 2022	2018	Global
Future of the Global Enabling Food Production Technology Markets, Trends to 2022	2018	Global

# Agriculture & Nutrition Research Library

Study	Publication Year	Region Scope
Future of the Global Phytonutrients Market, Trends to 2022	2018	Global
Future of the Global Precision Agriculture Technology Markets, Trends to 2022	2018	Europe
Future of the Global Protein and Amino Acid Ingredient Markets, Trends to 2022	2018	North America
Growth Opportunities in the Global Aquaculture Market	2018	Global
Growth Opportunities in the Global Microbiome Markets	2018	APAC
Growth Opportunities in the Natural Flavor and Food Ingredient Markets	2018	Global
Review of the Digital Transformation of Agriculture	2018	Global
Review of the Digital Transformation of Nutrition	2018	Asia Pacific
(GO) Growth Opportunities in the Global and European Protein Ingredients Market	2017	SA
(MEGA TRENDS) THE FUTURE OF FOOD - 2030	2017	Global
Americas Oils & Fats Market for Food Applications, Forecast to 2022	2017	Europe
Asia Pacific Oils & Fats Market for Food Applications, Forecast to 2021	2017	SA
Digital Transformation of Food Retail - The Uberization of Grocery Shopping	2017	Global
Emerging Nutritional Ingredients Markets, Forecast to 2025	2017	APAC
European Freedom Food & Beverage Market, Trends to 2025	2017	MENASA
European Oils & Fats Market for Food Applications, Forecast to 2023	2017	Europe
European Pesticides Market, Trends to 2021	2017	Global
Freedom Foods - Global Challenges and Opportunities	2017	Global
Global Agriculture & Nutrition Industry, Trends to 2025	2017	North America
Global and European Pet Food Ingredients Market	2017	Global
Global Food Safety Trends, 2017 to 2025	2017	North America

# Agriculture & Nutrition Research Library

Study	Publication Year
Global Logistics for Agriculture & Nutrition Value Chain Market, Trends to 2025	2017
Global Precision Agriculture Market, Trends to 2025	2017
Growth Opportunities in the Global and European Yeast Market	2017
Growth Opportunity Assessment of the Health Ingredients Market, 2017	2017
North American Food Service Market, Trends to 2025	2017
The Future of the European Packaged Food Industry	2017
Growth Opportunity Analysis of the Agriculture & Nutrition Industry Sector	2016
An Enabling Technology that Addresses California's Water Crisis	2016
Analysis of the Global Nitrogen Nutrients Market for Fermentation-Derived Specialty Biochemicals	2016
Analysis of the North American Protein Ingredients Market	2016
Analysis of the Smart Agriculture Technology Market	2016
Australian Aquaculture Feed Additives Market	2016
Digital Transformation in the Global Food & Agriculture Sector	2016
Food and Beverage Industry Value Chain in Turkey	2016
Future of Smart Agriculture in the Asia-Pacific Region	2016
Global Analysis of the Probiotic Market	2016
Goat Milk Powder Emerging Trends	2016
Growth Opportunity Analysis of the Food and Beverage Market in Europe	2016
Key Regulatory Perspectives for the Food and Beverages Market in the United States	2016
Strategic Analysis of the European Protein Ingredients for Human Nutrition Market	2016
US and European Dietary Supplement Ingredients Market Analysis	2016
US Market for Bacteriological Test Kits for Meat and Dairy Applications—2016	2016
Visionary Assessment of the ASEAN Food and Beverage Sector	2016
Encapsulation Shell Materials - Health & Wellness Ingredient Watch Tracker Series	2015



# Agriculture & Nutrition Research Library

Study	Publication Year	Region Scope
Health Ingredients Mega Trends - Using the Health Care Cost Savings Argument to Drive Nutraceutical Sales	2015	United States
Review of the Bakery Goods Product Market in Europe	2015	Europe
Review of the Sauces & Seasonings Product Market in North America	2015	North America
2015 Outlook of the Global Food and Beverage Market	2015	Global
Analysis of the South African Food Sweetener Market	2015	South Africa
APAC Synthetic and Natural Sweeteners Market	2015	Asia Pacific
Global Omega-3 Market - 2015	2015	Global
Global Packaged Food Market Overview	2015	Global
Global Pet Food Ingredients Market	2015	Global
Global Proteins, Enzymes, and Amino Acids Market - 2015	2015	Global
Review of the Confectionary Product Market in North America	2015	North America
Review of the Dairy, Egg, and Meat Food Product Product Market in North America	2015	North America
Review of the Ready to Eat Meals Product Market in North America	2015	North America
Review of the Sauces & Seasonings Product Market in APAC	2015	Asia Pacific
Strategic Analysis of the Global Chlorella Powder Ingredients Market	2015	Global
Strategic Analysis of the Global Organic Trace Minerals, Chelates, and Phytases for Animal Feed Applications Market	2015	Global
US Prebiotic Ingredients Market	2015	North America
When Sustainability and Health & Wellness are at Odds - the Case of the Global Aquaculture Industry	2015	Global
Bonanza in Agriculture Chemicals - Review of the Food & Agriculture Mega Trends Driving Fertiliser Market Profitability	2014	Global
Opportunities in the Protein Ingredients Market	2014	Global
Overview of the of the Global Omega-3 Ingredients Market. The Impact of Vegetarian-sourced Omega-3 Ingredients on the EPA/DHA Markets	2014	Global
Food & Agriculture Mega Trends - Strategic Insight of the Global State of the Food Economy	2014	Global
APAC Market for Amino Acids and Specialty Protein Ingredients for Human Nutrition	2014	Asia Pacific

# Agriculture & Nutrition Research Library

Study	Publication Year	Region Scope
Global Animal Feed Ingredients Market	2014	Global
Global Medical Foods Market	2014	Asia Pacific
US Sports Nutrition Ingredients Market	2014	North America
European Market for Amino Acids and Specialty Protein Ingredients for Human Nutrition	2014	Europe
Strategic Analysis of ANZ Nutraceuticals Market	2014	Asia Pacific
Review of the Confectionary Product Market in Europe	2014	Europe
Global Dynamics of the Alcoholic Beverage Ingredients Market	2014	Global
Global Market for Omega-3 and Omega-6 Fatty Acids (Focus on Microalgae)	2014	Global
Indian Nutraceuticals Market: Insights on Segmentation Dynamics	2014	India
The agro processing industry in Africa - Identifying key growth areas	2014	South Africa
US Market for Amino Acids and Specialty Protein Ingredients for Human Nutrition	2014	North America
US Market for Vitamins and Minerals for Human Nutrition	2014	North America
US Market for Dietary Supplement Products Market	2014	North America
Overview of the Maize and Sugar Cane Markets in South Africa and Other Selected African Countries	2014	Africa
Merger and Acquisition Trends in the Global Food and Beverage Industry	2014	Global
Southeast Asia Oleochemicals Market	2014	Asia Pacific
Strategic Analysis of the Global Omega-3 for Pharmaceutical Applications	2013	Global
Food Additives Market Update	2013	India
Bone & Joint Ingredients Market	2013	Global
Natural Food Ingredients Market	2013	Global
MEGA TRENDS - Strategic Insight of the Global State of Food Safety	2013	Global
PHYTOSTEROLS - Health & Wellness Ingredient Watch Tracker Series	2013	Global
NA Sensory and Textural Food Additives Market	2013	North America
Strategic Analysis of the US Equine Nutraceutical Market	2013	North America
EU Sensory and Textural Food Additives Market	2013	Europe

# Agriculture & Nutrition Research Library

Study	Publication Year	Region Scope
APAC Nutritional and Functional Food Ingredients Market Strategic Analysis	2013	Asia Pacific
Brazilian Shelf Life Extension Food Additives Market	2013	Latin America
US Choline Chloride Market	2013	North America
Sports Nutrition Ingredients - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Global Food & Beverage Distribution Services Market	2013	Global
Global Dairy Ingredients Market	2013	Global
Probiotics and Enzymes - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Brazilian Market for Animal Feed Additives	2013	Latin America
Omega-3	2013	Global
The Need for Diabetic Management Solutions in the United States	2013	North America
Growth in the Demand for Eye Health Solutions	2013	Global
Protein Market	2013	Global
COLLAGEN PEPTIDE - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Hot Trends in the Women's Health Ingredients Market	2013	Global
Animal Feed Additives - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Sweeteners - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Global Trends in Agriculture	2013	Global
Proteins - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Strategic Analysis of the Global Food & Beverage Processing Support Markets	2013	Global
Antioxidants - Health & Wellness Ingredient Watch Tracker Series	2013	Global
Women's Health Market	2013	Global
APAC Animal Feed Ingredients Market	2012	Asia Pacific
APAC Shelf Life Extension Food Additives Market	2012	Asia Pacific
Aquaculture Feed Ingredients Market- Outlook and Trends	2012	Global
CEE Animal Feed Additives Market	2012	Europe
EU Animal Feed Ingredients Market	2012	Europe

# Agriculture & Nutrition Research Library

Study	Publication Year	Region Scope
EU Nutritional and Functional Food Ingredients Market Strategic Analysis	2012	Europe
EU Shelf Life Extension Food Additives Market	2012	Europe
Global Natural High Intensity Sweeteners Market	2012	Global
Global Resveratrol Market	2012	Global
MEGA TRENDS - Strategic Insight of the Global State of H&W (Health Claim regulation Round Up)	2012	Global
MEGA TRENDS - Strategic Insight of the Global State of Sustainability in F&B	2012	Global
MEGA TRENDS - Strategic Insight of the Global State of the Food Economy	2012	Global
Mexican Shelf Life Extension Food Additives Market	2012	Latin America
NA Animal Feed Ingredients Market	2012	North America
NA Nutritional and Functional Food Ingredients Market Strategic Analysis (Spillover from 20xx)	2012	North America
NA Sensory and Textural Food Additives Market	2012	North America
NA Shelf Life Extension Food Additives Market	2012	North America
Strategic Insight of the Global (Animal) Protein Ingredients Market for Human Health Applications	2012	Global
Strategic Insight of the Global (Veg) Protein Ingredients Market for Human Health Applications	2012	Global
Strategic Insight of the Global Pet Food Ingredients Market	2012	Global

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who we are, what we do



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# Custom Ad Hoc “Growth Consulting” Research

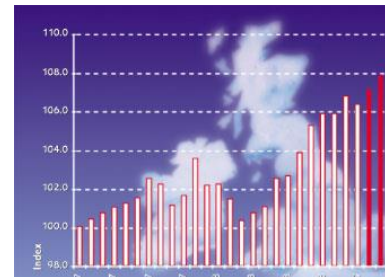
## Supply and demand side capabilities

### Demand Side Research

- Market feasibility
- Usage and attitudes
- Market segmentation
- Brand
  - Equity
  - Image and positioning
- Advertising and communications testing
- Concept testing and product development
- Pricing
  - Strategy development
  - Optimization
  - Elasticity
- Distribution and channel testing
- Customer satisfaction and loyalty

Integrated  
Solutions

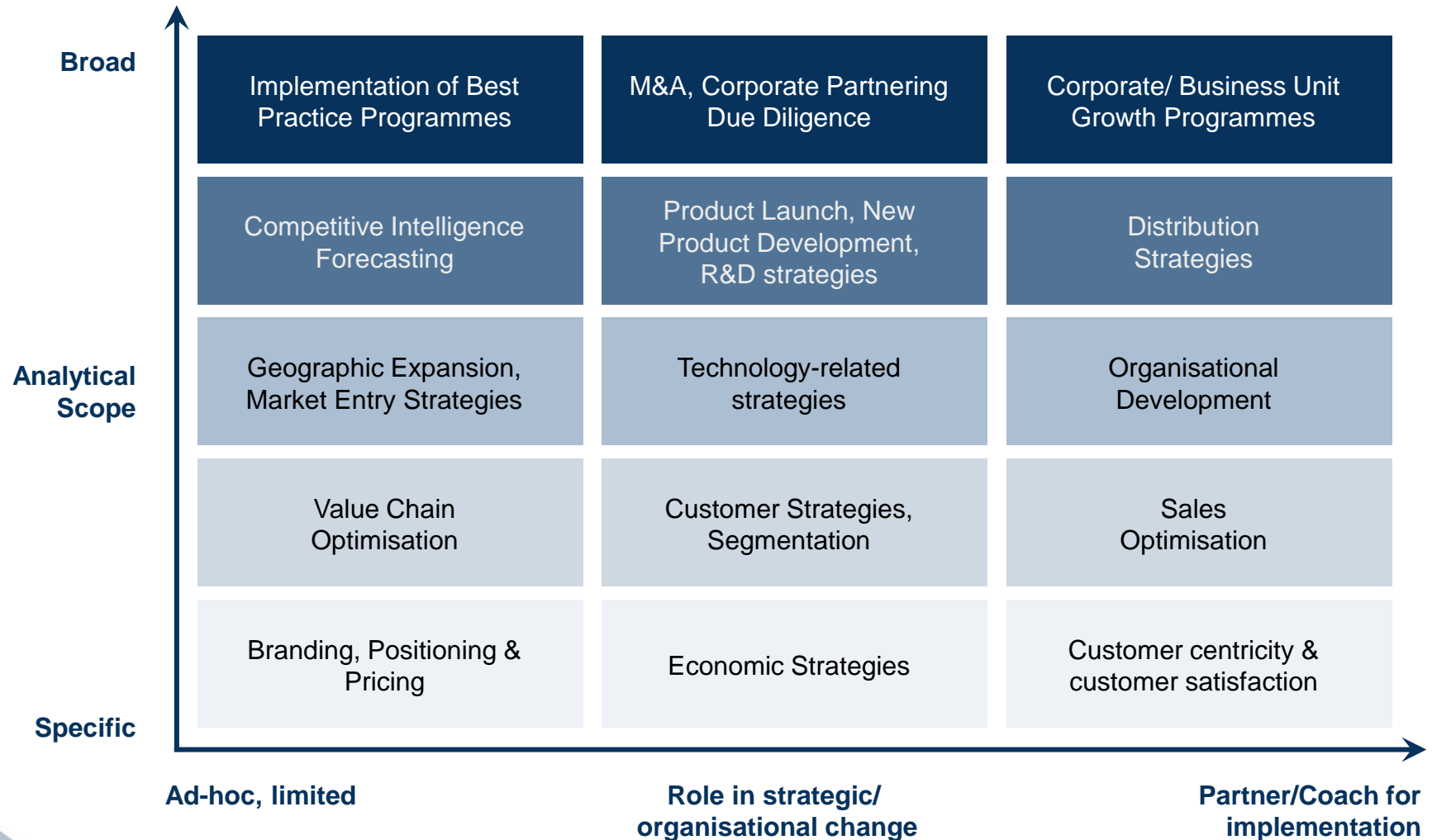
Frost & Sullivan is able to couple supply side information and insights with demand side research to provide a 360° perspective.



### Supply Side Analysis

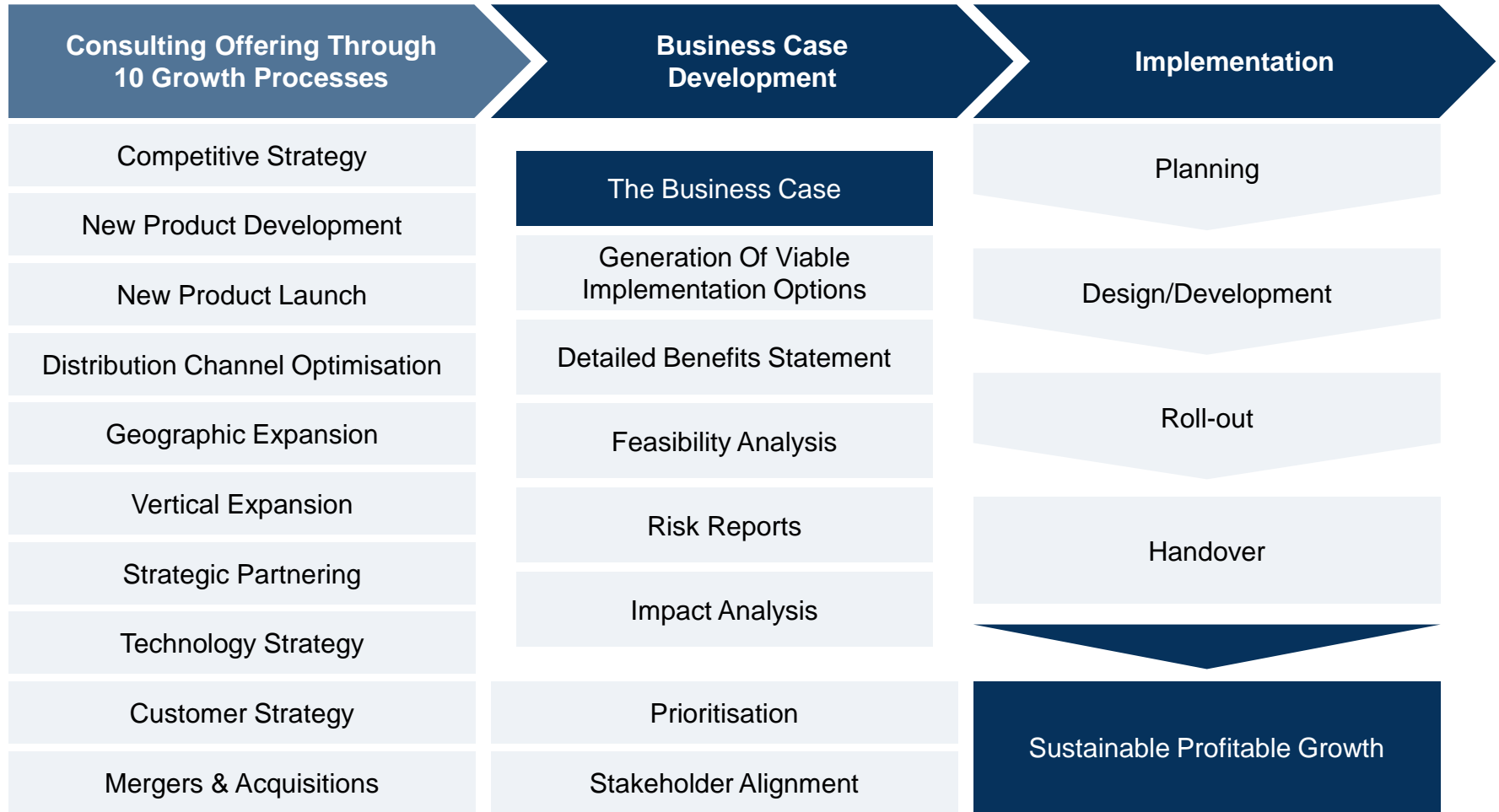
- Industry structure
- Competitive positioning
- Market sizing
- Pricing
- Promotion
- Innovation
- Alliances, JVS, M&A
- Technology analysis

# Growth Consulting: Illustration of some of our typical projects: Systematically tailored to your unique situation & needs



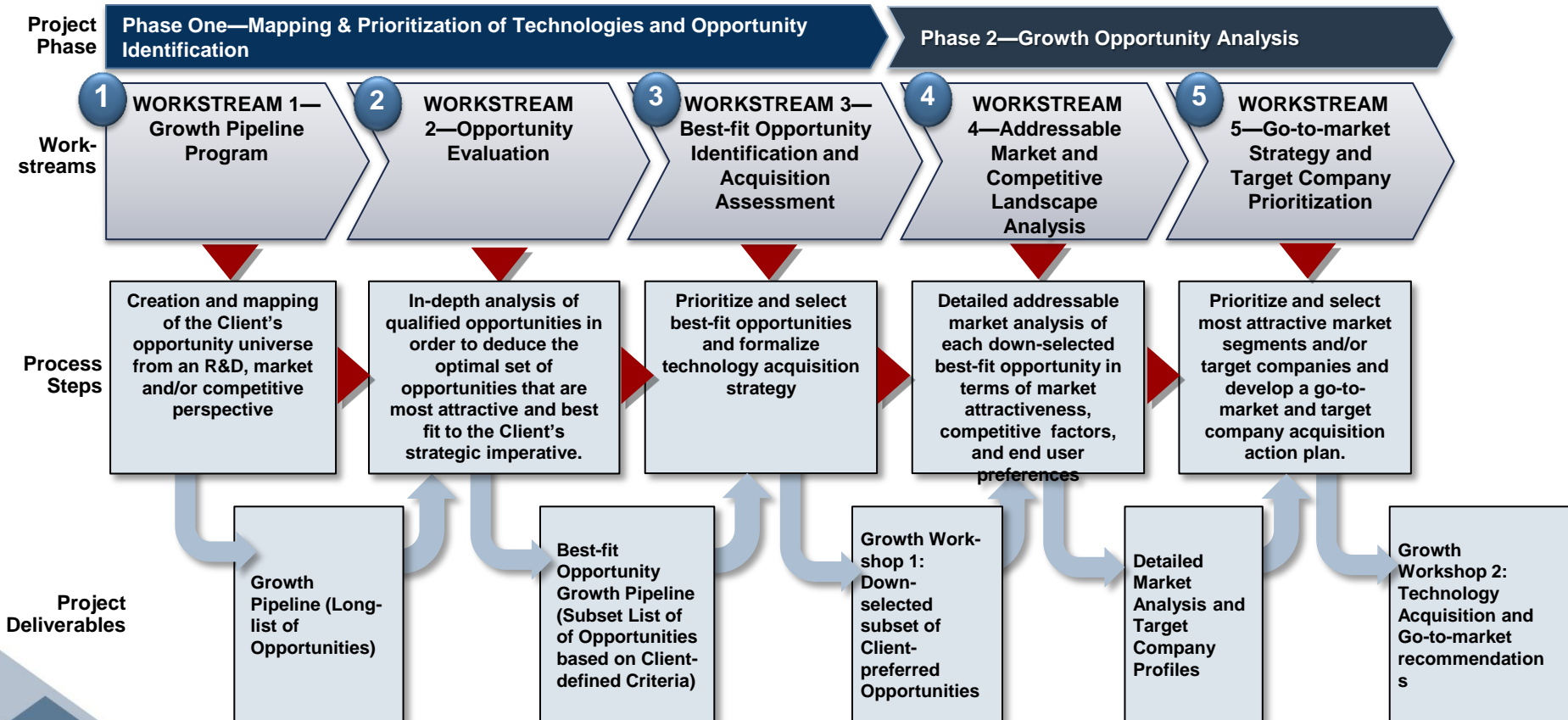


# Growth Consulting: Services are offered for all 10 growth processes from concept to completion

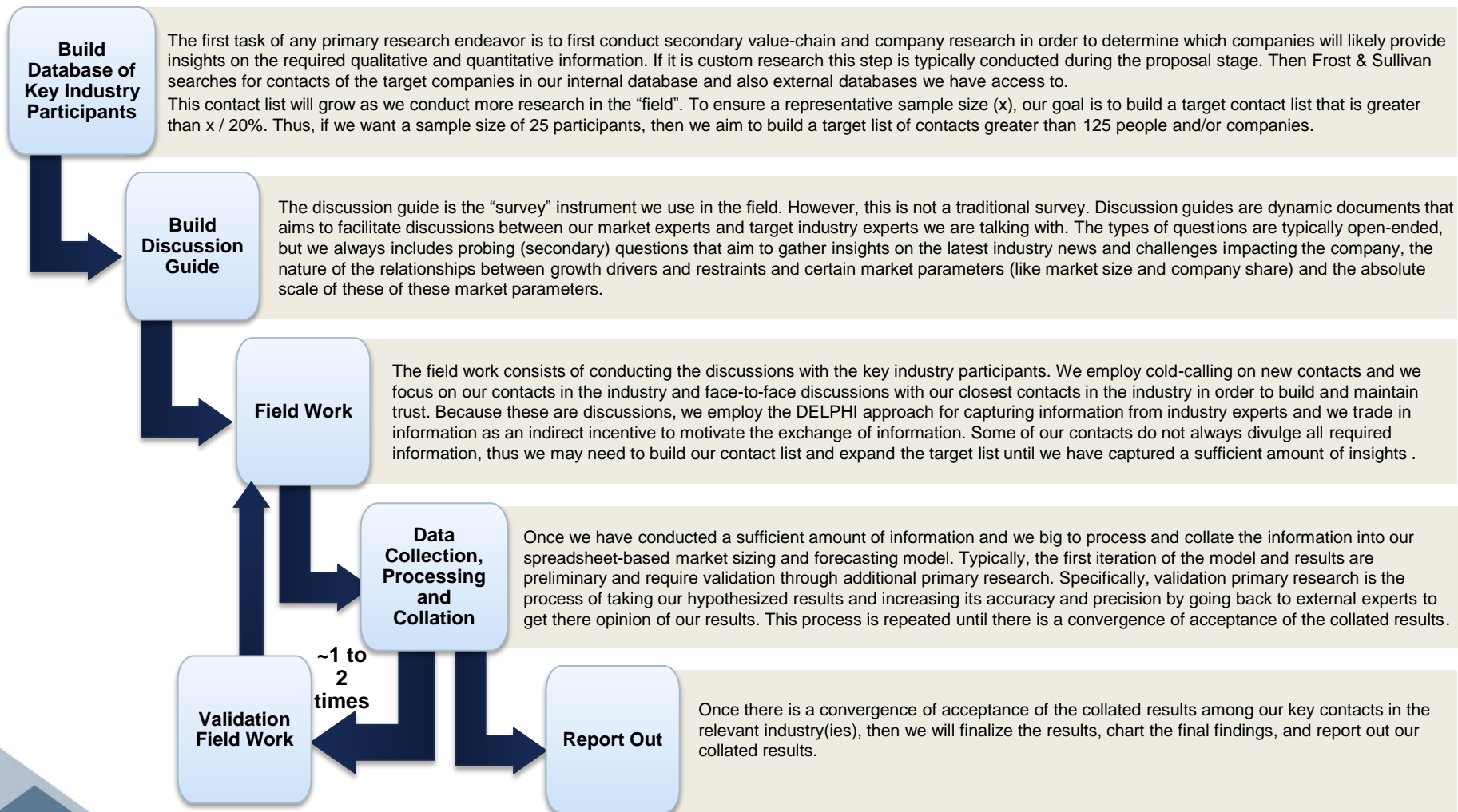


# Growth Consulting: Example of Frost & Sullivan's Growth Pipeline Strategic Approach

- Phased and modular approach to develop a blue-print of an optimized process in close coordination with client. Using deduction, we can quickly move from a large universe secondary research to primary research with high priority targets with progressively deeper evaluation and analysis of fewer focal points
- A collaborative approach with active involvement of client, particularly on criteria development for technology and partner short listing



## Growth Consulting: Key Differentiator—Our Primary Research Process



# Custom Consumer Research

## Quantitative and Qualitative Analytical Tools

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Frost & Sullivan's uses state-of-the-art qualitative and quantitative analyses synergistically to derive deep insights into customer behavior and attitudes.



### Quantitative Approaches

- Factor Analysis
- Regression Analysis
- Correspondence Analysis
- Multi-dimensional Scaling
- Cluster Analysis
- Van Westendorp / Price Sensitivity
- Conjoint Analysis
- TURF
- Q-Sorts

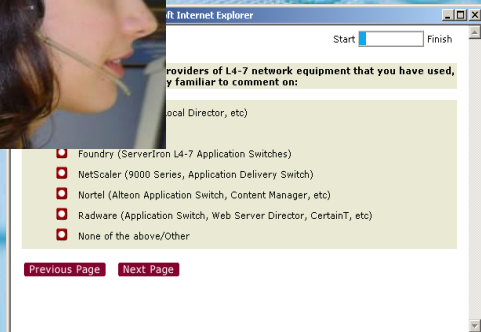
### Qualitative Approaches

- Idea Generation
- Ethnographic Techniques
- Exploratory Tools
- Concept Development

# Custom Consumer Research

## Global Data Collection

Frost & Sullivan's employs a spectrum of quantitative and qualitative survey capabilities, as well as providing global coverage services.



### Quantitative Survey Capabilities

- Computer Aided Telephone Interviews
- Web-based Surveys

### Qualitative Survey Capabilities

- In-Person and Online Focus Groups
- Usability Clinics

### Global Coverage

- Multi-lingual Capabilities
- Cost Competitive

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# Case Study: Assessment of the Market Potential for Investing in the Indonesian



## The Client: Leading Regional Conglomerate

### The Challenge

- Sime Darby was planning to develop a sugarcane plantation in Indonesia, and wanted to get an in-depth understanding of costing and best practices in sugarcane plantation in West Papua, Indonesia.

### Project Objectives

- To provide an introduction to the sugar industry and an overview of the APAC sugar market.
- To analyse the Indonesian sugar industry with respect to market metrics and forecast its growth.
- To provide insights on the regulatory and competitive environment in the industry.
- To develop high level financial analysis for investing into the sugar industry and provide recommendations to Sime Darby on entering the industry.



## Our Approach and Work

Frost & Sullivan proposes a three –fold approach to evaluate the growth opportunity which involves the following:

- (i) Frost & Sullivan will tap into the expertise of our global consulting and research staff to develop insights into the defined industry
- (ii) Secondary research will be utilised to further develop a baseline understanding of the entire value chain and specified products
- (iii) Primary research will be focused on obtaining targeted information from industry experts

## Outcome and Business Impact

- To identify whether there was potential market opportunities for Sime Darby
- To provide “Go” or “No-Go” recommendations with regards to Sime Darby’s investment in the Indonesian sugar industry.
- Key product deliverables:
  - Overview of the APAC Sugar Industry
  - Indonesian Sugar Industry (Market overview, Regulatory environment , Competitive landscape, Financial analysis)





# Case Study: “Go/No Go” Recommendation for Market Entry into Bioenergy Generation



## The Client: Major Japanese Conglomerate

### The Challenge

- The client had developed a sophisticated anaerobic digestion system and wished to conduct a feasibility study of market entry into the Malaysia’s palm oil industry.

### Project Objectives

- Landscape assessment of wastewater treatment practices in Malaysia’s palm oil industry
- Assessment of competing technology providers
- Analyses of environmental regulations in Malaysia
- Progress update of CDM projects in Malaysia
- “Go/No Go” recommendations for market entry.



## Our Approach and Work

- Frost & Sullivan analyzed the environmental regulations pertaining to treatment of wastewater generated from the palm oil industry, where each state has differing levels of environmental compliance
- We also identified the various wastewater treatment technologies being implemented by the industry and the main technology providers providing these solutions. Comprehensive profiles of each technology provider was prepared.
- The status of Clean Development Mechanism (CDM) projects in Malaysia were assessed and the challenges associated with obtaining CDM certification was identified
- Based on in-depth knowledge of industry practices, recommendations for market entry into Malaysia was provided.

## Outcome and Business Impact

- Frost & Sullivan provided a comprehensive report detailing the industry landscape
- We provided a “Go/ No Go” decision for market entry into Malaysia, accompanied with strategic recommendations for market entry success
- The client expressed great satisfaction with Frost & Sullivan’s depth of subject matter, as evidenced in the client feedback form



# Case Study: Profiling of Key Cocoa Butter Substitute Manufacturers

## The Client: Large Multinational Cocoa Butter Manufacturer



### The Challenge

- A large multinational player that develops, markets and produces cocoa butter substitute products wanted a detailed company profiling conducted on major producers in Malaysia, Thailand and Indonesia.

### Project Objectives

- To access the market of cocoa butter substitute products
- To understand the competitive landscape of the CBS/CBE/GBR market
- To profile key industry players through primary interviews



### Our Approach and Work

- To develop a comprehensive profiling of major producers within the Cocoa Butter Substitute Manufacturers. Frost and Sullivan analysts conducted extensive primary research through conducting numerous interviews with key participants within the supply side of the value chain. To complete the understanding of the competitive landscape of the CBS/CBE/GBR market. Analysts also conducted an extensive secondary research through a complete review of secondary sources of information such as inputs from industry experts and rubber associations, trade journals, annual reports and in-house research reports.
- The consolidation of information provided the framework for analysis and profiling of the players within the Cocoa Butter Substitute Manufacturers market.

### Outcome and Business Impact

- An analysis of the information consolidated provided the framework for the company to identify suitable partners within the region specified in the study



# Case Study: Opportunity Analysis for an Innovative Crop Plant Protection Chemical Equipment in Europe



## The Client: A European-based Plant Protection Chemical Equipment Manufacturer

### The Challenge

- The company had developed a machine that can produce a pesticide solution on site (on the farm). Based on strong fundamentals supporting the agrochemical industry's growth, the company needed to determine what opportunities for growing company sales in the pesticide sector.

### Project Objectives

- To evaluate the company's defined product portfolio to uncover what other addressable markets the their machine can support.
- To evaluate the defined pesticide (focus on fungicides, bactericides and/or virucides) opportunity space for attractiveness to identify potential plays for the system based on market quantifications, competitive landscape, value chain/customer insight, margins, drivers, unmet needs, and requirements for conversion of the company's chemistries to agrochemical end-products.
- To address critical factors for success, potential barriers, and deliver a Go/No Go assessment on market entry strategies based on pesticide opportunity profiles rated by attractiveness and best fit to the company's chemical competencies and overall business strategy.



## Our Approach and Work

The data was collected via secondary research (including Frost & Sullivan's in-house databases, government publications, industry and company publications as well as relevant statistical databases)

## Outcome and Business Impact

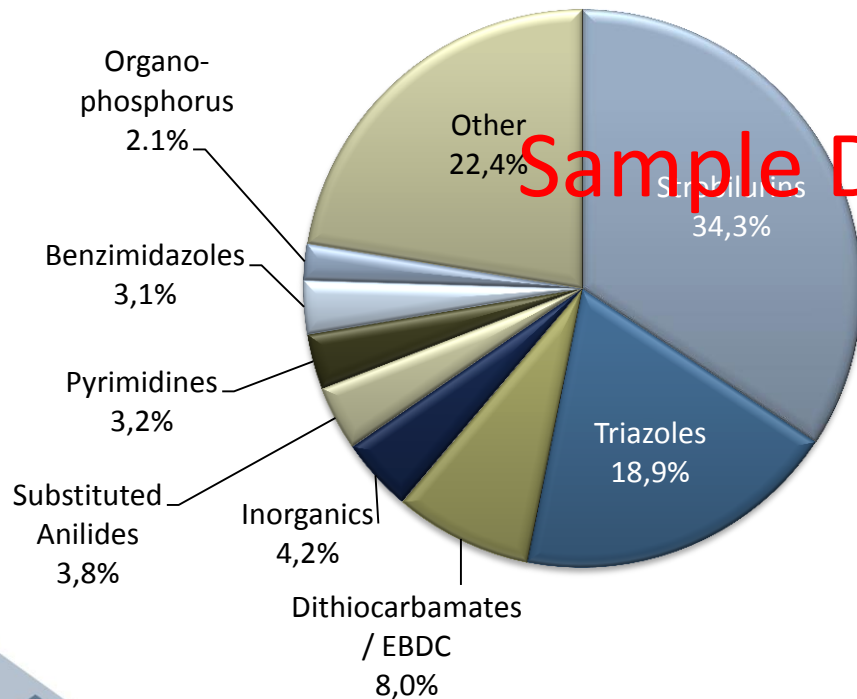
Provided the company with an independent validation/assessment of potential pesticide plays rated and ranked in terms of attractiveness and specific "ability to win" recommendations for top rated profitable opportunity areas with direct impact to the penetration of the company business development process resulting in top line growth in this space. Also, we provided the company a comprehensive understanding of relevant pesticides in terms of key global market quantifications, trends, issues, unmet needs and competition and key customers.



# Case Study: Opportunity Analysis for an Innovative Crop Plant Protection Chemical Equipment in Europe

The top three fungicide classes account for 61.2% of the global fungicide market in revenues

## Global Fungicide Market: Revenue by Chemical Type, 2012



In 2012, strobilurins held the largest market share in the global fungicide market with 34.3%. BASF (kresoxim-methyl) and Syngenta (azoxystrobin) pioneered this broad-spectrum fungicide class, launched in 1996.

Strobilurins was followed by triazoles and dithiocarbamates. The top 3 comprised 61.2% of the global fungicide market in 2012.

The use of triazoles in Europe has recently come under threat with the European Commission wishing to redefine what is considered to be an endocrine disruptor. A ban on this class of fungicide would have far-reaching repercussions for crop yields and quality in this region.

Source: Frost & Sullivan

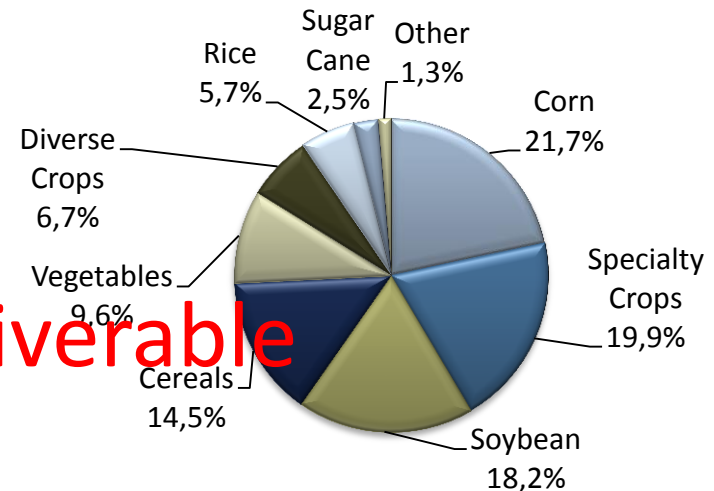
# Case Study: Opportunity Analysis for an Innovative Crop Plant Protection Chemical Equipment in Europe

Syngenta AG



Headquarters:	Switzerland
Established:	2000 (result of a merger)
Group Sales	€11.05 billion (2012)
Crop Protection Sales	€8.03 billion (2012)
Fungicide Sales	€2.37 billion (2012)
Major Fungicide Brands:	Biggest brand: Amistar Others: Alto, Bravo, Revus, Ridomil Gold, Score, Tilt, and Unix
Global Fungicide Market Share:	24.3% (2012)

**Syngenta AG: Percent Revenue by Crop Application, 2012**



## Market Strategy:

*"Increasingly, we are offering integrated protocols designed to meet specific needs such as early planting and cold tolerance."*

Syngenta AG Annual Review 2012,  
comment on Europe, Africa, and Middle East

# Case Study: Opportunity Analysis for Egg Ingredients in Emerging and Attractive Applications



## The Client: The American Egg Board

### The Challenge

- Egg producers face a significant challenge—despite the egg's naturally containing nearly all of the key nutrients (proteins, lipids, vitamins, minerals, etc.) required by all living beings for a healthy life, egg ingredients only have a marginal penetration in a significant number of nutraceutical applications. American Egg Board was exploring the possibility of helping its members expand its presence in emerging and attractive ingredient markets by understanding the technological, competitive and market barriers that stand in their way to successfully exploiting new growth opportunities.

### Project Objectives

The objective of this opportunity analysis was:

- To understand key market penetration success factors and the most attractive opportunities, and to identify any entry barriers for egg ingredient processors today and in the future
- To uncover end user core needs that egg ingredient processors can address via innovation
- To gain an understanding of the growth trends from a customer perspective
- To determine the size and growth of egg ingredients' addressable market by product type, region, and end application
- To uncover any regulatory issues that may serve as a potential challenge (either an opportunity or a threat) to a given egg ingredient market participant
- To promote the unique attributes of egg ingredients to potential end users and to generate sales opportunities for American Egg Board membership



## Our Approach and Work

Our approach was based on a two pronged approach where detailed supply side primary research including interviews with key competitors and centers of influence was supported with a detailed customer research survey and analysis. Specific customer feedback was obtained in the form of qualitative and quantitative insights include:

- Market Attractiveness Statistics
- Product specification preferences and product choice criteria
- Technology, Competitive, and Regulatory Trends
- Egg Ingredient Supplier's Ability to win



## Outcome and Business Impact

The final report presented to the client was leveraged in its member's go-to-market strategy and helped molds the total industry's focus on the nutraceutical segment. Specifically, the detailed customer insights helped the trade association's fine-tune its marketing message approach, its channel strategy, and its current competitive technology strategy.

# Case Study: Opportunity Analysis for Egg Ingredients in Emerging and Attractive Applications

In terms of least competition, an egg processor's best bet is in the proteins, amino acids, and other specialty ingredients spaces. However, even though the degree of competitive rivalry is higher in other market areas, these segments should not be avoided. Risk and potential return are usually positively correlated.

Competitive Forces Product Category	Buyer Power	Supplier Power	Threat of Substitutes	Threat of New Entrants	Degree of Competitive Rivalry
Vitamins	3	1	1	1	2
Minerals	4	1	1	4	2
Lipids	3	1	3	4	3
Amino Acids	4	4	4	7	5
Proteins	6	7	7	7	7
Others Specialty Ingredients	4	7	4	4	5

Attractive       Not Attractive

Note: Detailed competitive analysis results by ingredient are included in the supplemental Excel spreadsheet. Source: Frost and Sullivan



# Case Study: Developing market entry options through market assessment, pricing strategy, channel strategy, business modeling and partner identification

## THE CLIENT: MAJOR PROCESSED FOOD MANUFACTURER

### THE CHALLENGE



- The client wanted to enter the high growth China market. The client is in a B2B set up and serves the premium market. Helping the client to enter China with the appropriate business model was critical
- The client needed an understanding of the cost/margin structure which is critical to be competitive as the product would be imported in to China
- Key preferences of consumers from a brand recall standpoint, channels preference was important to test the hypothesis

### PROJECT OBJECTIVES

- The objective is to provide market entry options to the client through registration type, channel preference, business model pricing strategy and key partners



### OUR APPROACH AND WORK



- Evaluation of the registration category that could provide ease of entry as well as differentiation
- Identifying the potential for a premium market using supply side research and hypothesis development
- Identifying key brands, their positioning and price points
- Establishing cost/margin structure to enable the client to decide the CIF cost
- Channel preferences and their strength/weakness
- Consumer research to test the hypothesis from supply side research
- Development of appropriate business models and recommendation of B2C model for market entry
- Market entry strategy and partner identification

### OUTCOME AND BUSINESS IMPACT



- Recommended the client on registering as a general food for faster entry and health food from a long term perspective
- Adopting a B2C model for the China market
- Client has planned to enter the market with a B2C model

# Case Study: Due Diligence of the Global Human Milk Oligosaccharides Market

## THE CLIENT: EMERGING FOOD INGREDIENT COMPANY

### THE CHALLENGE



- The company was interested in getting a third-party validated due diligence assessment of the Human Milk Oligosaccharides (and Other Prebiotics) markets and its business plan of addressing the current and future needs of the market in order to provide increased certainty of the scale of the company's opportunity to its investors, and thus obtain new funds for production capacity expansion.

### PROJECT OBJECTIVES



- To understand key market penetration success factors that maximises potential sales and delivers the most attractive opportunities
- Identify any entry barriers the client may face today and in the future
- Determine which infant formula companies are likely to adopt a new HMO ingredient
- Quantify the client's addressable market and test whether there is a sustainable competitive advantage that investors can be excited about.

## OUR APPROACH AND WORK



For the purposes of this scope of work and in order to offer a time sensitive option, Frost & Sullivan highly leverage already existing Market Engineering™ Reports and our internal databases, coupled with targeted primary research with key industry participants to generate the required data in a cost-effective manner. In addition, a sound macroeconomic-based demand model was developed for this project to help derive grounded estimates of the current state of the prebiotics market. Key sources of end user data includes, IRI, EuroMonitor, Frost & Sullivan, and other third party data providers.

## OUTCOME AND BUSINESS IMPACT



The final report presented to the client and its potential investors by Frost & Sullivan. Frost & Sullivan engaged in detailed Q&A and sufficiently addressed the investor's queries. In the end, the investors were won over and the client company received additional investment in order to expand its production capabilities.

# Case Study: Due Diligence of the Global Human Milk Oligosaccharides Market (continued)

The conservative upper case scenario assumes that all of the major infant formula manufacturers are possible customers, but the probability of any one of the companies being a Company X customer does vary.

Company X's HMO Business: Estimated HMO Industry Demand and Company X Sales by Infant Formula Company Analysis, Global, 2015-2025

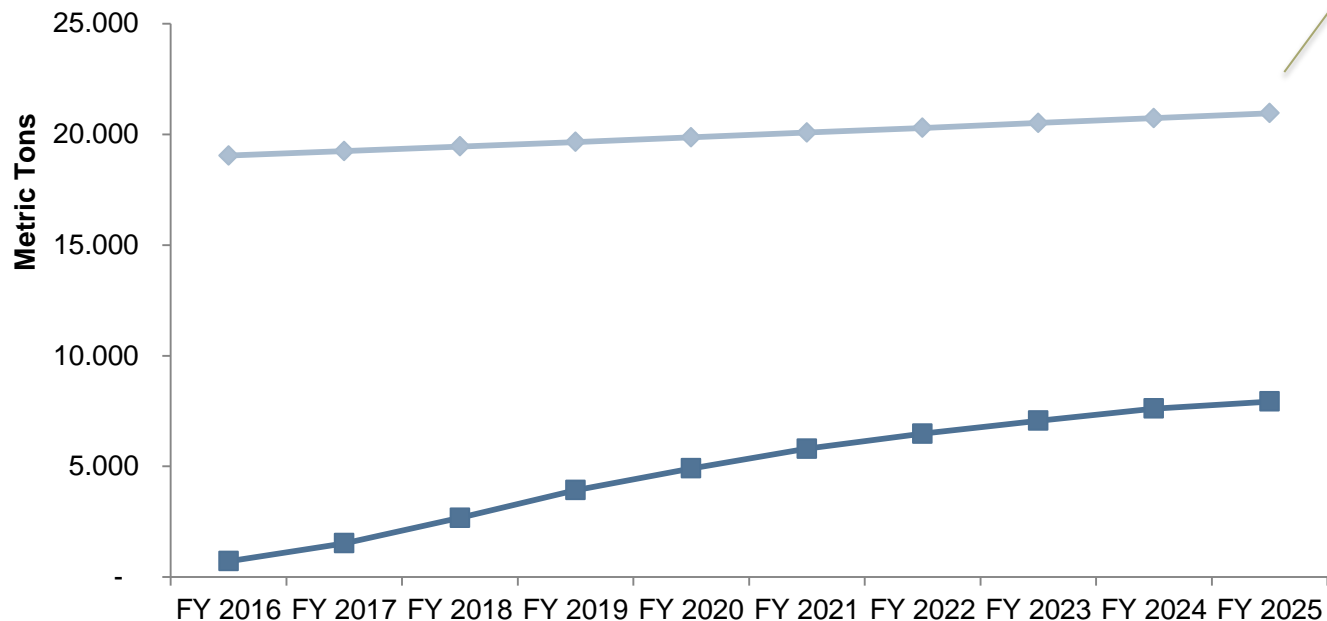
Customer	Estimated Total Industry Demand (2019/2020)	Estimated Total Industry Demand (2024/2025)	Estimated JWBT Volume Sales (2019/2020)	Estimated JWBT Volume Sales (2024/2025)	Estimated Customer Penetration (2019/2020)	Probability of Winning Customer and Notes
Nestle	xxx.xx	xxx.xx	xxx.xx	xxx.xx	5%	LOW:
Danone	xxx.xx	xxx.xx	xxx.xx	xxx.xx	50%	MEDIUM: Good Chance
Mead Johnson	xxx.xx	xxx.xx	xxx.xx	xxx.xx	50%	MEDIUM: Good Chance
Abbott	xxx.xx	xxx.xx	xxx.xx	xxx.xx	100%	CERTAIN
Friesland	xxx.xx	xxx.xx	xxx.xx	xxx.xx	75%	HIGH LIKELIHOOD

Note: All figures are rounded. Excludes Metagenics in this analysis. The base year is 2014. Source: Frost & Sullivan analysis.

# Case Study: Due Diligence of the Global Human Milk Oligosaccharides Market (continued)

Assuming 100% substitution of xxxx content and that all IF categories are included, the global IF industry could need more than 20 thousand metric tons of HMOs. Thus, capacity expansion coupled with an attractive consumer value proposition is needed to accelerate penetration beyond 38%. However, this may not be a profit maximising scenario due to the need for significant price reductions.

Company X's HMO Business: Estimated HMO Industry Demand and Company X Total Unit Shipment Forecast: 2 Scenarios, Global, 2015-2025



**Potential Addressable Market (PAM):** 100% Market Penetration  
xxx MT by 2025

**Conservative Total Addressable Market (TAM):** xxx% Minimum Market Penetration resulting in xxx MT in expected unit shipments by due to IF formulators initial focus on premium brands and a blended oligosaccharides formulation period.

Note: All figures are rounded. The base year is 2013. Source: Frost & Sullivan analysis.

# Client Testimonials

"Frost & Sullivan provided us with a very clear picture of the market opportunity we wanted to better understand. They demonstrated excellent knowledge of the end use industry and high standards of professionalism. Their clear recommendations helped us to precisely focus our marketing effort. The continuous dialog with Frost & Sullivan throughout the project enabled us to make best use of our resources. Good value for money!"

**DuPont**

"Frost & Sullivan executed our order for a global market analysis in an excellent way. Regular phone and face to face consultations provided us within the predetermined time period and an estimated cost frame with data which enabled us to start a new significant project development in our company."

**Grillo-Werke AG**

"Frost & Sullivan played a vital role in helping us to determine whether or not we should expand one of our businesses worldwide. Having become an extension to our team, they approached the assignment with enthusiasm, dedication, and professionalism. We were fortunate to have a Frost & Sullivan team on the ground in three continents to conduct the research. The fact base Frost & Sullivan helped build ultimately saved us \$ millions in a failed market entry attempt into unattractive markets. I look forward to working with Frost & Sullivan again"

**Greif Inc.**

"Frost & Sullivan is a highly competent and dynamic research firm whose professional expertise has helped further define opportunities to expand our brand presence in Western Europe. Their ability to develop unique and economical research methodologies to capture market needs across many diverse countries is impressive. We would recommend Frost & Sullivan to other firms seeking a clearer picture of existing or future opportunities and markets."

**Carhartt**

# What Our Clients Say

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*The session from Frost & Sullivan was an amazing illustration of how much we can still do given the future ahead. Just getting this many people to see a clear vision was a task in itself, never mind providing actionable ideas for us! Super job*

**CEO – Global Fortune 500  
Transportation Company**

*What a session! The feedback from the first phase was really positive with all team members really getting on board and embracing it. This was down to your engaging work and facilitation expertise that really brought out the knowledge from your team as well as ours. We look forward to continuing the project work over the next few months.*

**VP Marketing – Fortune  
100 Manufacturer**

*Interesting to see Frost & Sullivan view on upcoming Mega Trends and how they got there, really someone who has a solid idea where we need to go.*

**CMO, Global Fortune 500  
Semiconductor Company**

*Real and tangible trends with a logical story backing them up, brilliant presentation.*

**CIO – Global Fortune  
100 IT Company**

*Really value the thought leadership and insights on socioeconomic macro trends to assess the implications for business and technology. I will be connecting with Frost & Sullivan again.*

**CSO – Global Fortune 100  
Networking Company**

*Intriguing ideas on Mega Trends, Mega Cities, I had a chance to discuss with Frost & Sullivan how they can help push us farther. Brilliant insight that is highly actionable*

**CMO – Global Fortune 500  
Networking Company**





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