

Global Mega Trends and Recommendations for Turkish Food and Beverage Producers

*A Frost & Sullivan Analyst
Briefing*

7 November 2018



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Today's Agenda

- About Frost & Sullivan
- Mega Trends in Agriculture & Nutrition
- Key Growth Opportunities
- Final Thoughts and Q&A



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



- 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

- 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



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Frost & Sullivan's Agriculture & Nutrition Research

COVERAGE AND EXPERTISE AREAS

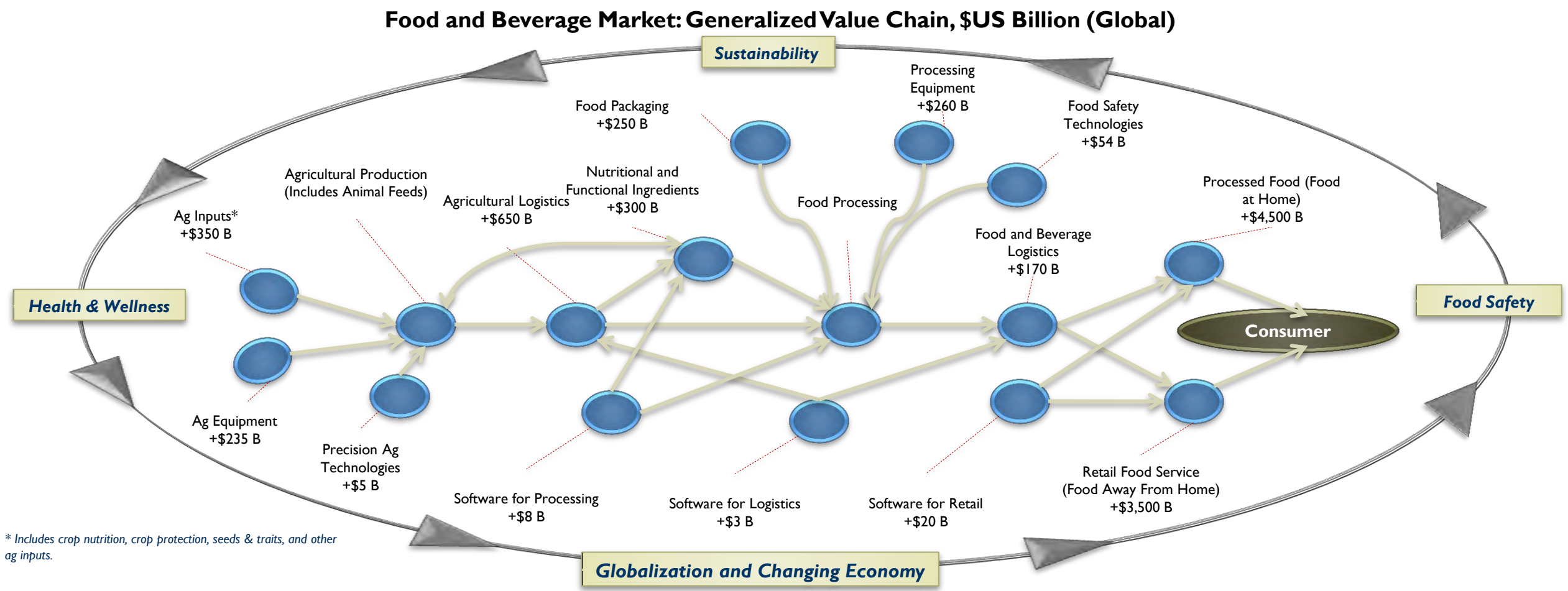


Over 100 analysts and consultants globally who track the above markets and enable companies to achieve transformational growth by maximising opportunities in established and emerging markets.

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 surpass \$USD 25 trillion in sales in 2025



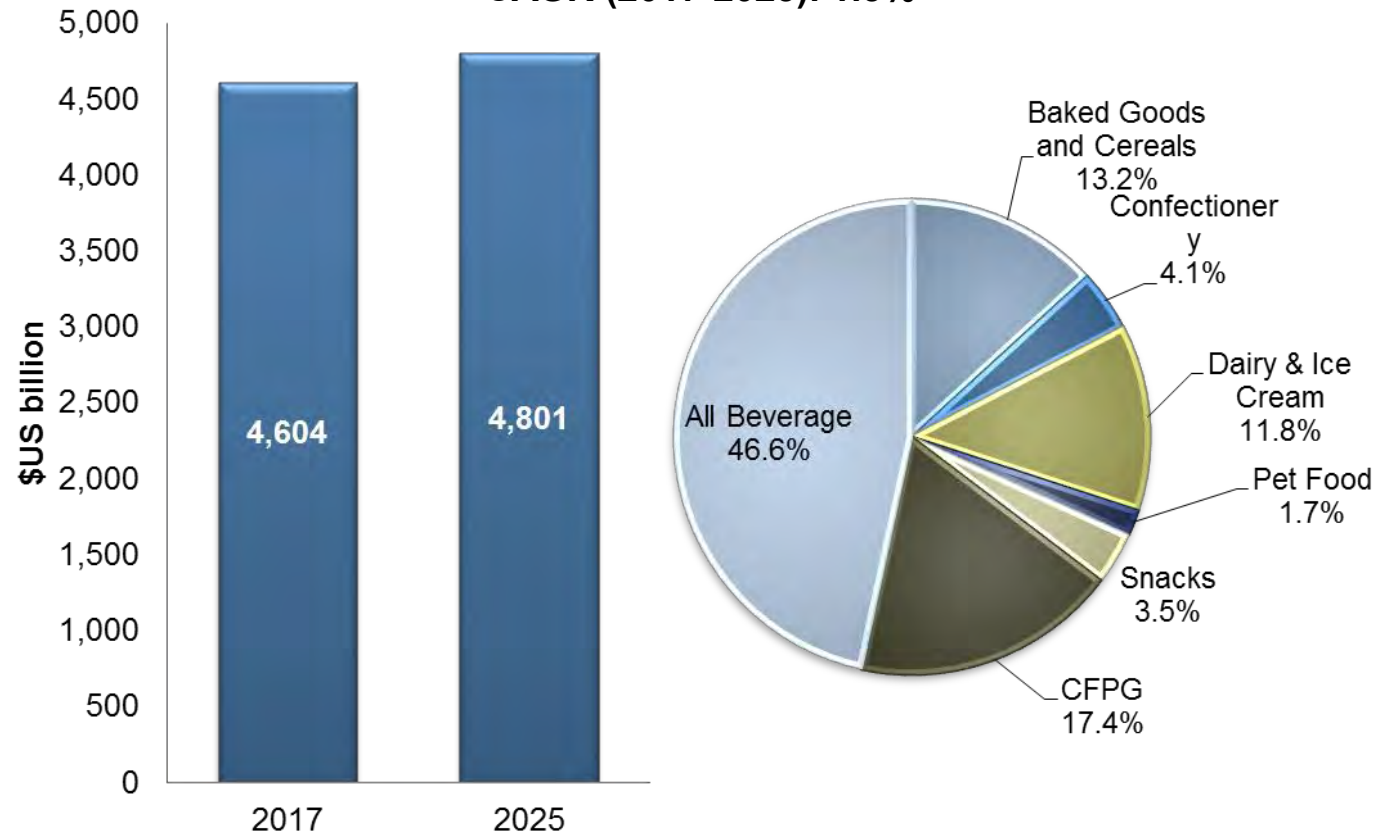
Note: Figures are rounded. The base year is 2017. Source: Frost & Sullivan

The Future of Food—Global Food & Beverage Market, Today and Tomorrow (continued)



- 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 \$4.604 trillion in 2017 and will grow to \$4.801 trillion in 2025.

**Total Processed Food & Beverage Products Market: Revenue Forecast (\$)
and Share by Product Type (%), Global, 2017–2025**
CAGR (2017-2025): 1.5%

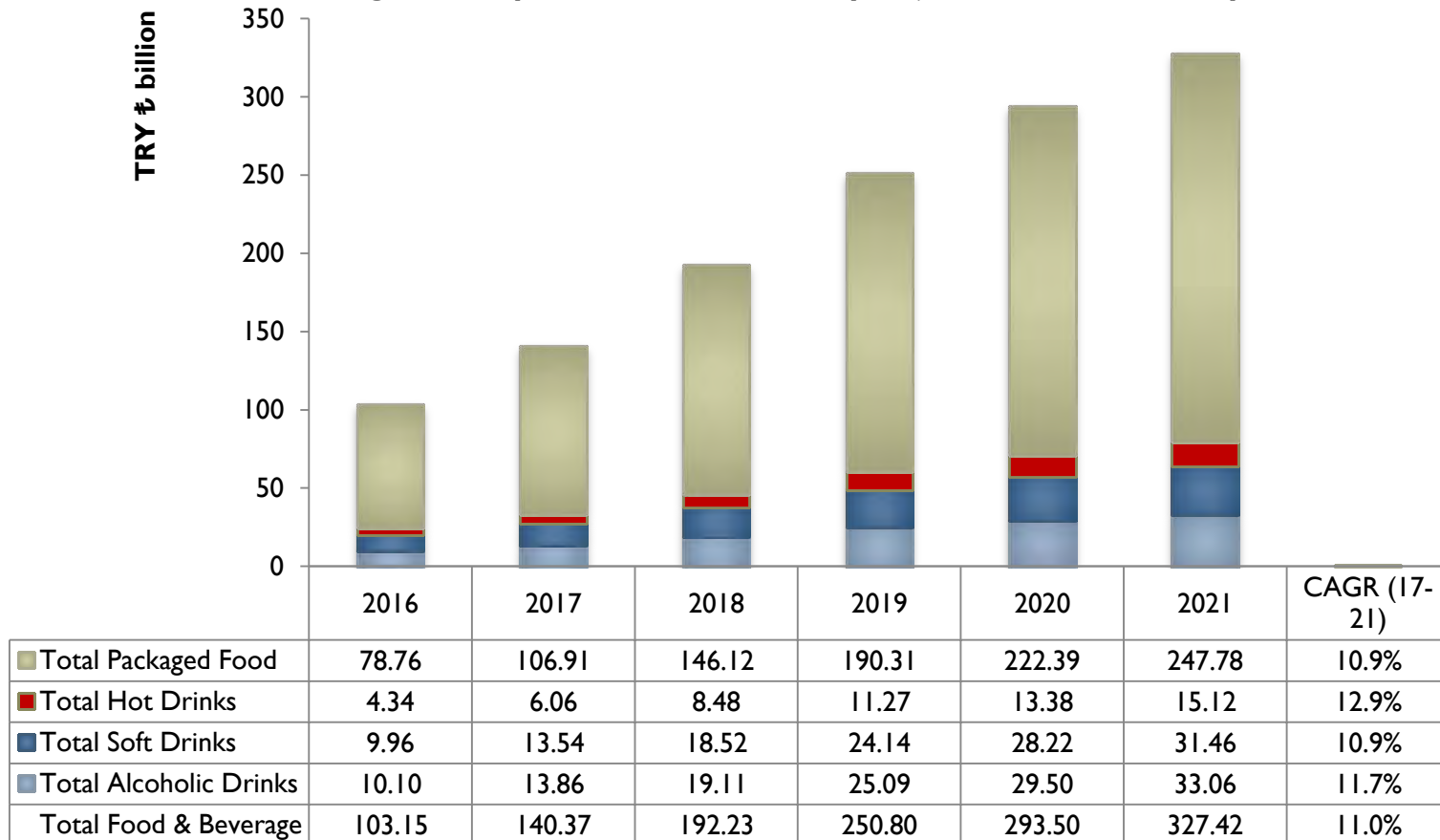


Note: CFPG = Canned, Frozen & Perishable Groceries. Figures are rounded. The base year is 2017. Source: Frost & Sullivan

Turkish Food & Beverage Industry

Market growth will be supported by growing incomes related to a recovering economy coupled with the increased demand for freedom food and enhanced health through nutrition.

Total Food & Beverage Industry: Domestic Revenues by Major Food Sector, Turkey, 2016-2021



- In Turkey, the total food & beverage industry sector in 2017 was valued at TRY ₺ 140 billion and is expected to grow at a Compound Annual Growth Rate (CAGR) of 16.9% through to 2021. This growth is inclusive of inflationary pressures on average prices.
- The packaged food segment is the largest segment at TRY ₺ 107 billion and will likely grow at a CAGR of 10.9% during the forecast period.
- The coffee drink segments (both hot and cold varieties) are the fastest growing segments and each is expected to grow more than 20% during the forecast period.

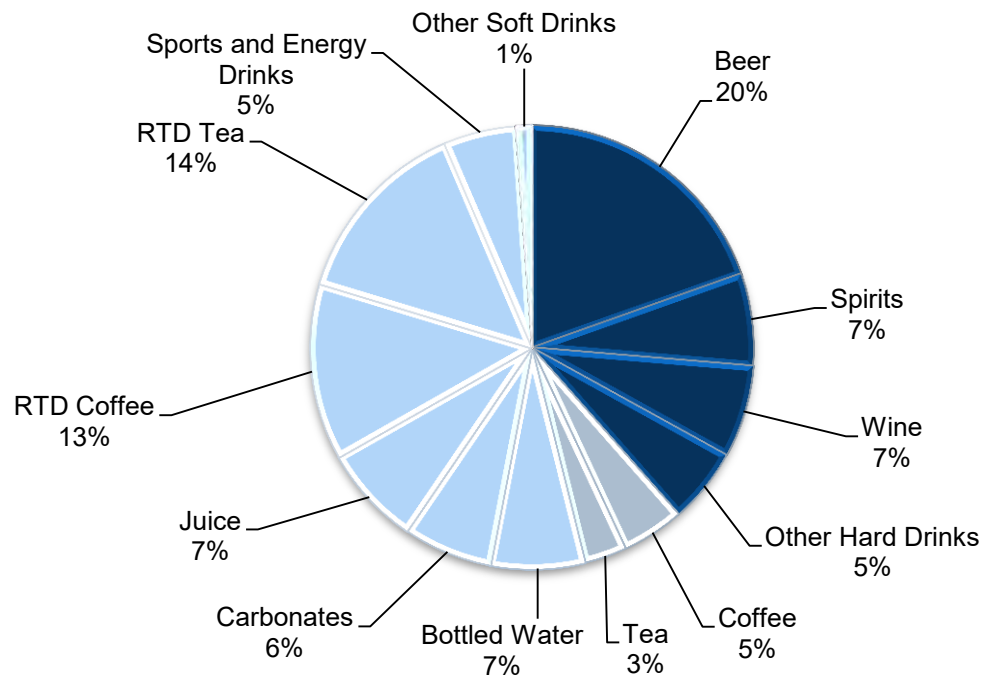
Source: Frost & Sullivan.

Turkish Food & Beverage Industry (continued)

Beer is the most popular beverage in Turkey, but coffee drinks are witnessing the greatest growth in the beverage category. Baked Goods is the largest processed food category in Turkey (nearly 50% of all food sales in 2017) and this is not expected to change significantly during the forecast period.

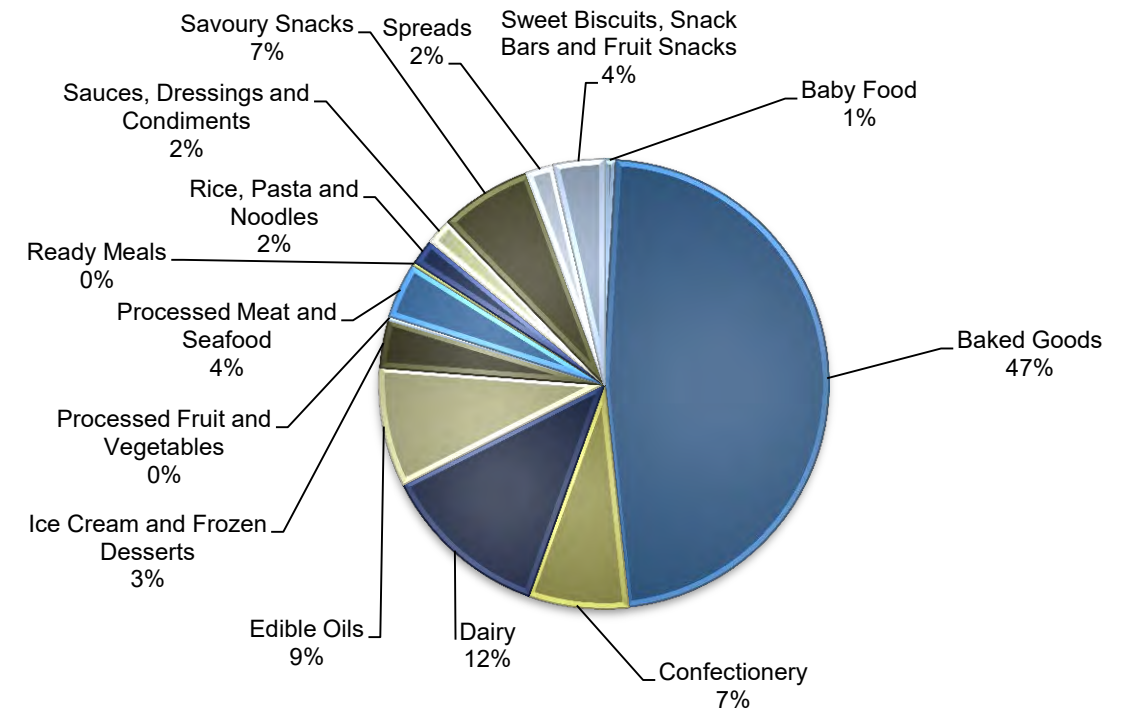
Total Beverage Industry: Revenues Share by Major Food Sector, Turkey, 2017

Total Revenue: TRY ₺ 8.4 billion



Total Processed Food Industry: Revenue Share by Major Food Sector, Turkey, 2017

Total Revenue: TRY ₺ 26.7 billion

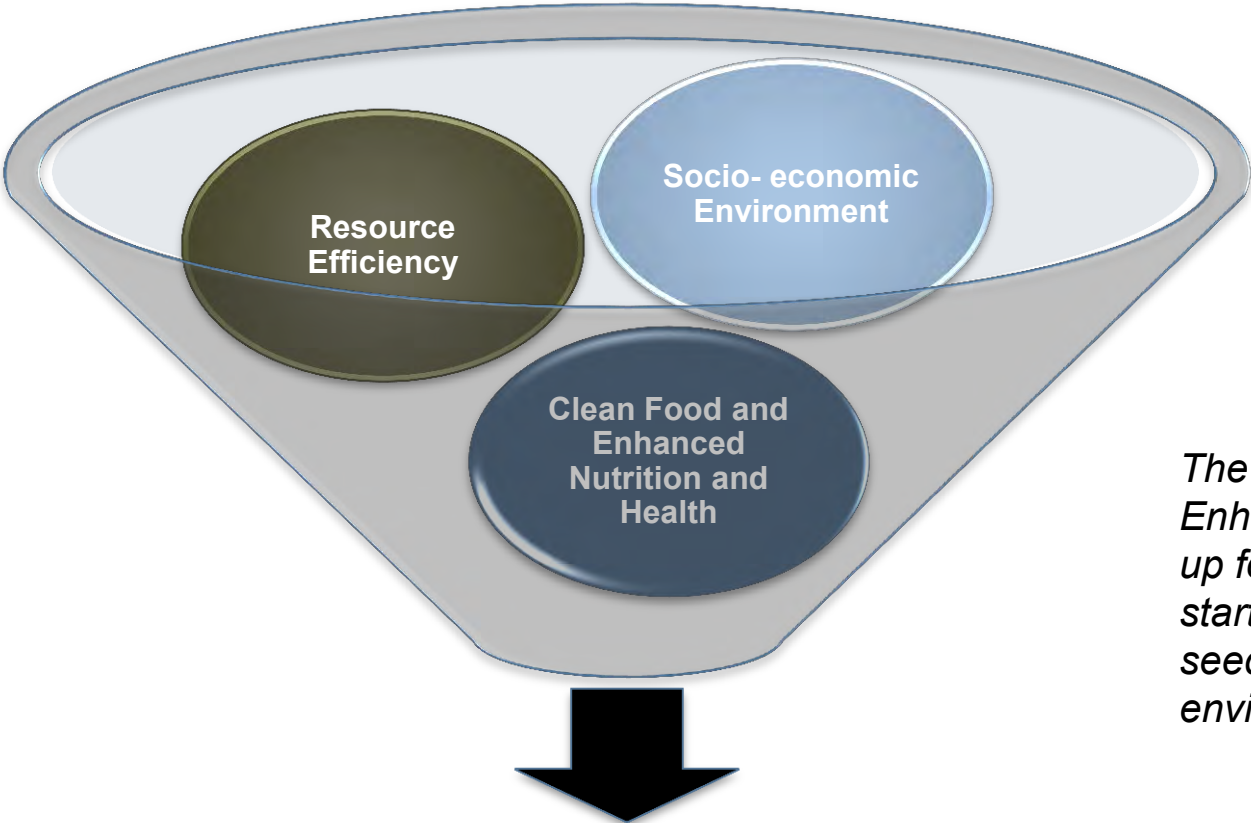


Source: Frost & Sullivan.

Key Industry Challenges of the Agriculture & Nutrition Value Chain

3 themes emerge from the key challenges facing the food and agricultural industry sector that companies need to know in order to be successful in this market space today and tomorrow

The need for new tools and processes that safely optimizes Resource Efficiency in food and agriculture production. This includes the ever-growing need to enhance yields and profitability.



The need to better manage the changing global socioeconomic environment and its impact on the total demand for agriculture product.

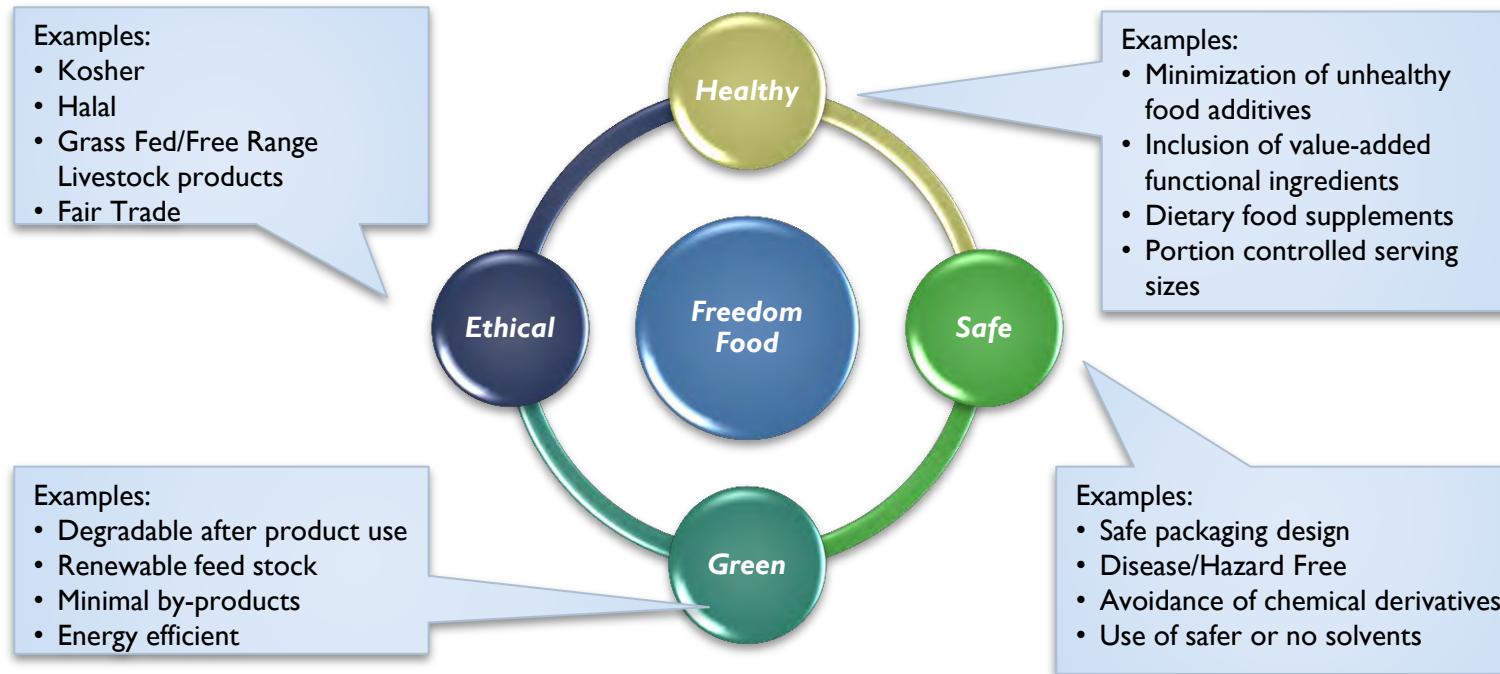
The rise of “Clean” Food and the need for Enhanced Nutrition and Health. This drives up food and agriculture production costs – starting from the use of safer and cleaner seeds and livestock, to producing more environmentally-friendly crops.

Need for Food & Agriculture Production Solutions

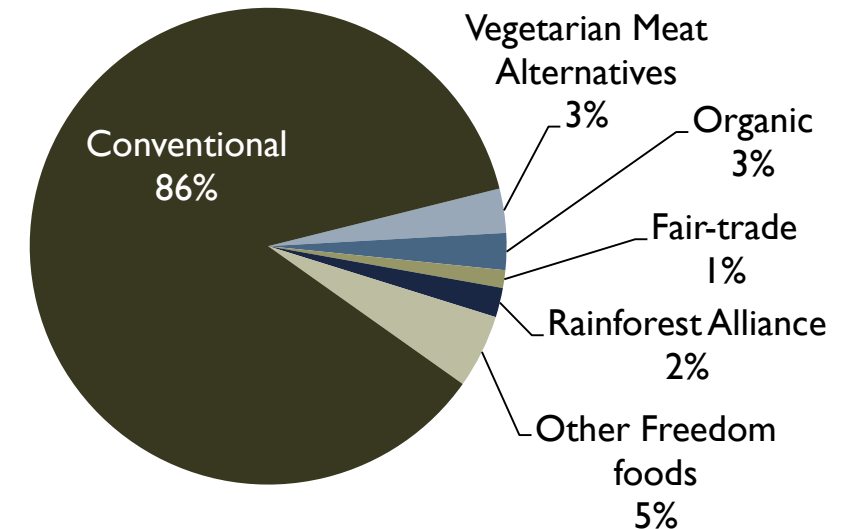
Freedom Food

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.

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.



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



- Gluten-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.

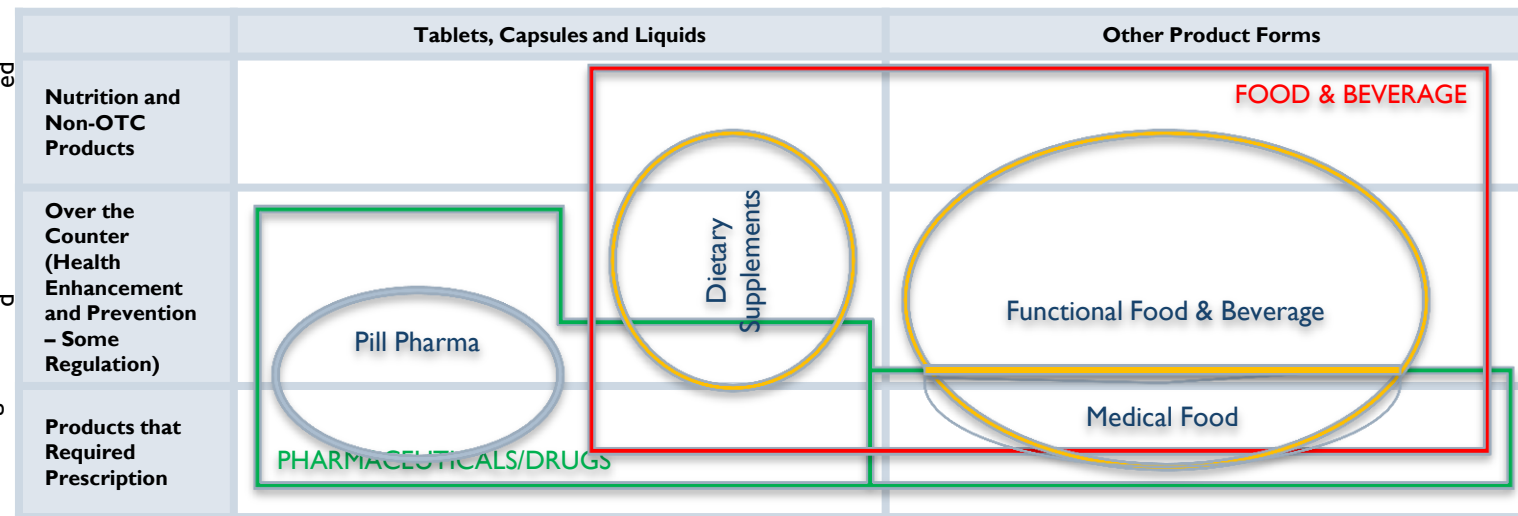
Source: Frost & Sullivan.

Enhanced Health and Nutraceuticals

Nutraceuticals lies at the intersection of the Food & Beverage and Pharmaceutical Industries. The US is the largest market for nutraceuticals growing at 5.8% and is expected to reach \$US 111 billion by 2020

Health Enhancement Claims

The Nutraceuticals Market: The Food & Beverage and Pharmaceutical Industry Convergence Map, Global, 2017

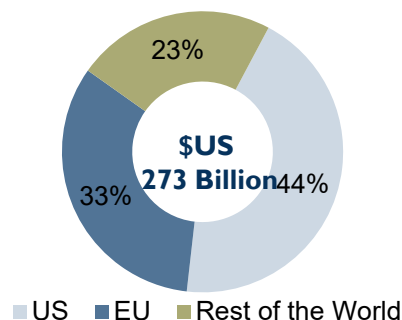


- Increasing consumer awareness toward health and wellness is the key driving factor for the growth of nutraceuticals market.
- With changing lifestyles and an aging population, the need to meet the daily recommended dose of nutrients is becoming a challenge. Hence, the need for nutraceutical products is increasing.
- In addition to this, the penetration of usage is bringing in additional growth primarily due to the rising health concerns and increasing consumer desire to lead a healthy life and to avoid dependencies on synthetic drugs.

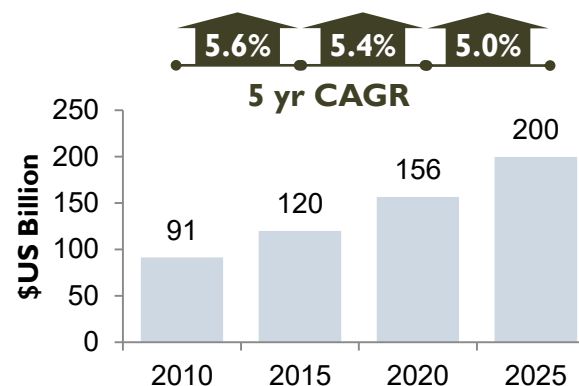
Total Nutraceuticals (Functional Food & Beverage and Dietary Supplements Market)

Nutraceuticals Market

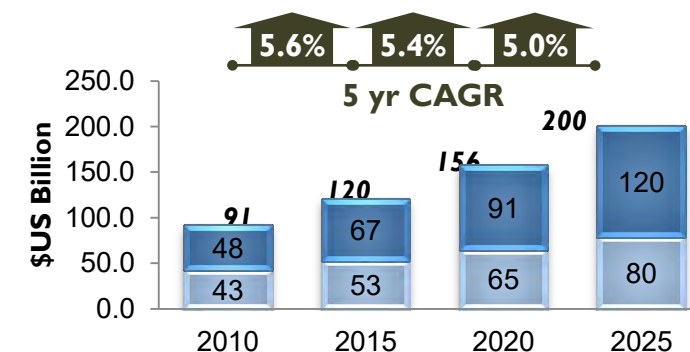
Revenue Share by Region, Global, \$US billion and %, 2015



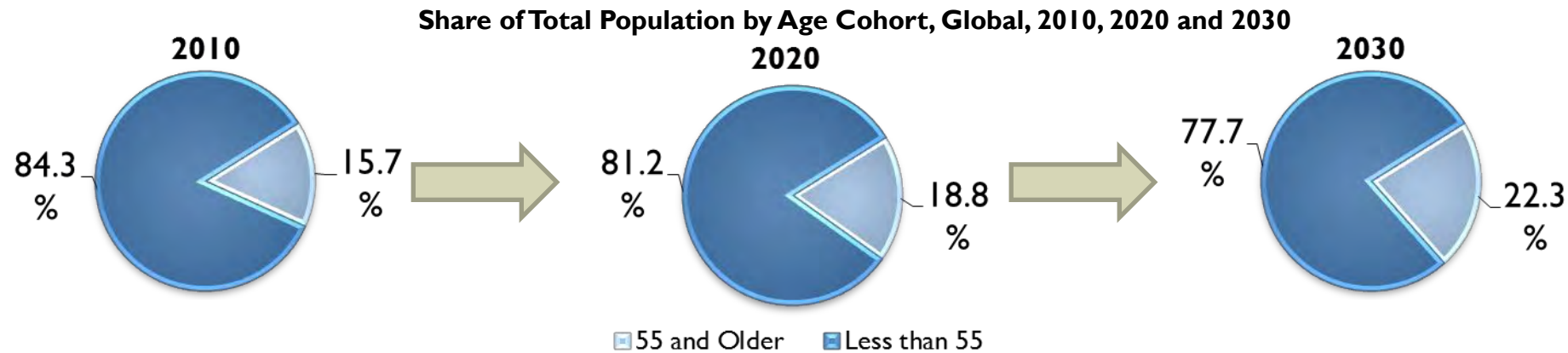
Revenue Forecast, US, \$US Billion, 2010-2020



Revenue Forecast by Product Type, US, 2010-2020



An Ageing World is Driving the Cost of Health Care related to Noncommunicable Diseases Throughout the World



Impact of the Ageing Population on Nations

- **Growing cost of health care:** The cost of health care will rise as the proportion of the aged population grows relative to younger population due to demand growth.
- **More burden on public care systems:** Long queues in publically-funded hospitals, retirement homes with long term care may lead to a compromise in quality, service dissatisfaction, and an overall lack of care.
- **Shrinking incomes and personal savings:** Seniors will decreasingly struggle to afford the cost of medical insurance and post-retirement living costs, especially if they suffer from a age-related disease like CVD, osteoporosis, age-related eye disease or dementia.

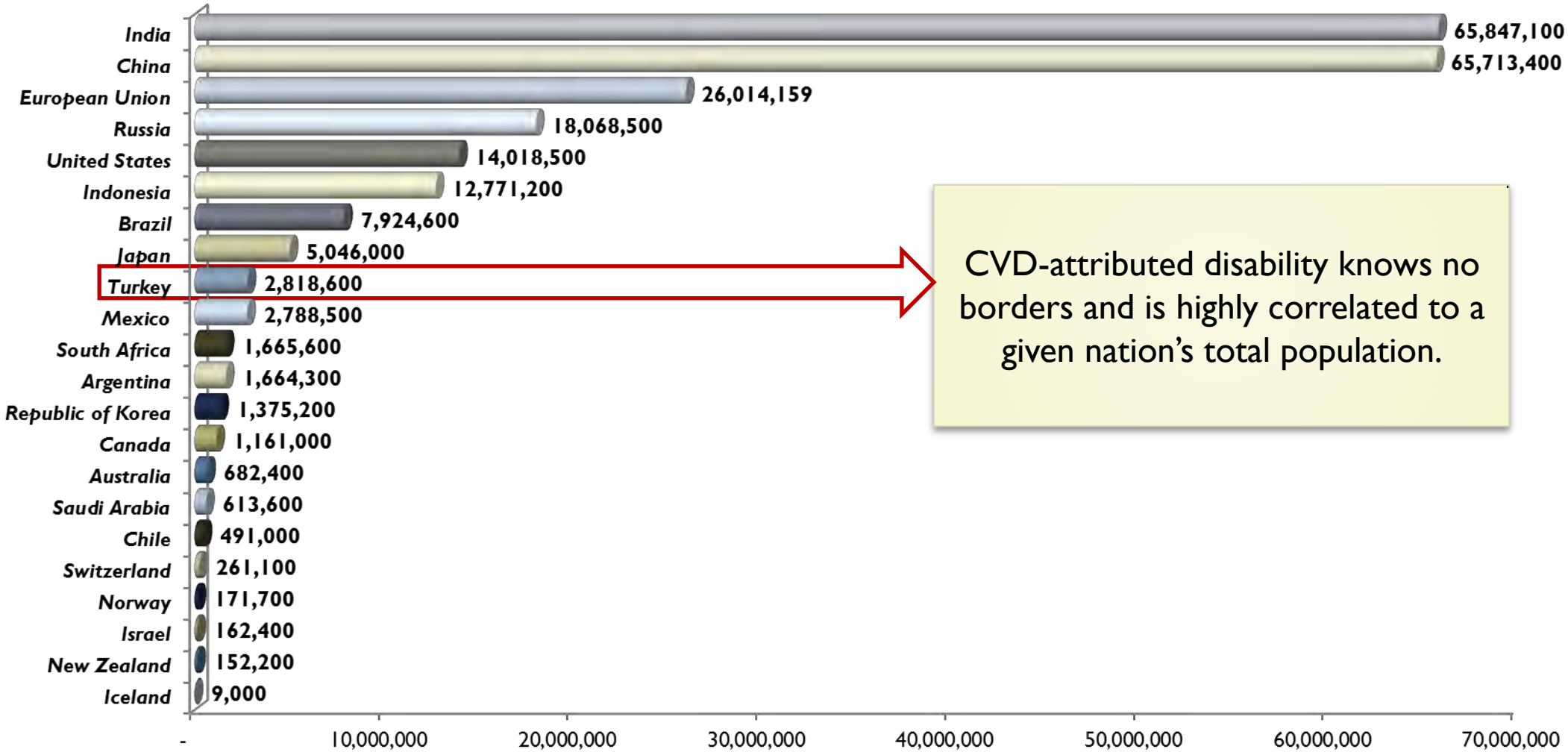
What if certain Dietary Supplements could contribute to reducing overall healthcare expenditures?

Source: Frost & Sullivan.

Turkish Food & Beverage Market Drivers—Burden of Chronic Diseases in Turkey

The cost of CVD-attributed events, in terms of lost healthy life years lost, is over 200 million years per year globally and nearly 3 million years in Turkey alone.

Total Number of Disability-adjusted Life Years Lost (DALYs) per Country Due to CVD-attributed Events, Global 2015



CVD-attributed disability knows no borders and is highly correlated to a given nation's total population.

Source: Global Health Data Exchange. Institute for Health Metrics and Evaluation. University of Washington
Source: Frost & Sullivan.

Nutrition of the Future: Personalized and Customized Nutrition and Nutrigenomics

The future of optimized nutrition is heavily dependent on the trends associated with Digital Transformation, which are impacting all facets of our lives.

Increasing Interest and Research

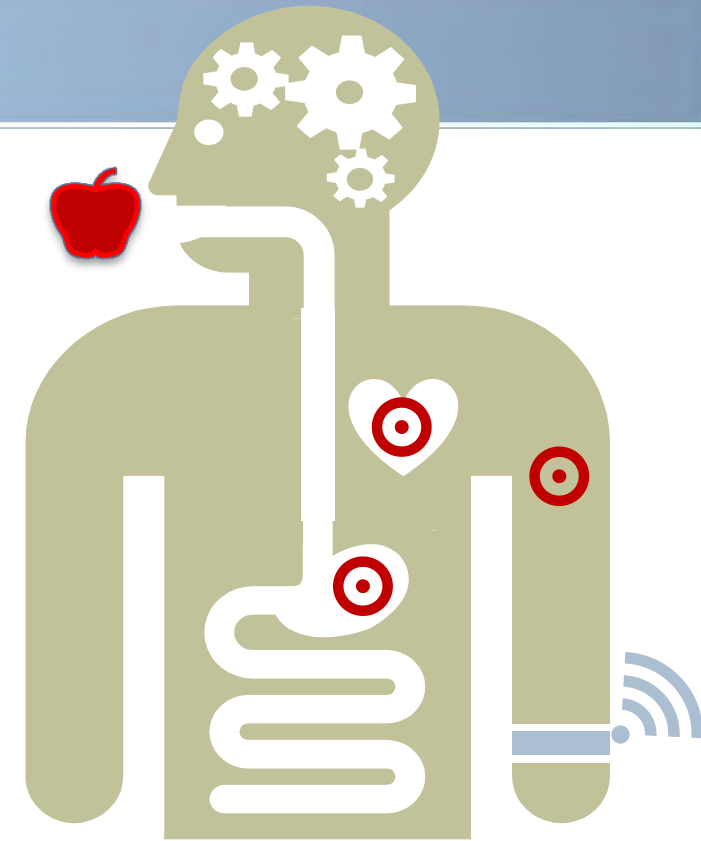
- Personalised nutrition has been identified as the next big thing in the food and beverage industry, as consumers increasingly move away from the one-size-fits-all approach. However, it remains to be seen how soon this technology will shape the food and beverage industry.

Technological Innovations

- Although the personalised nutrition market includes a combination of hardware, software and services, the success of the market will be highly dependent on technological advancement and innovations.

Rise of Big Data and IoT

- Personalised nutrition is mainly based on large and complex datasets; thus, the rise in digitisation will support this market, particularly as more challenges arise with the increase in these complex datasets.

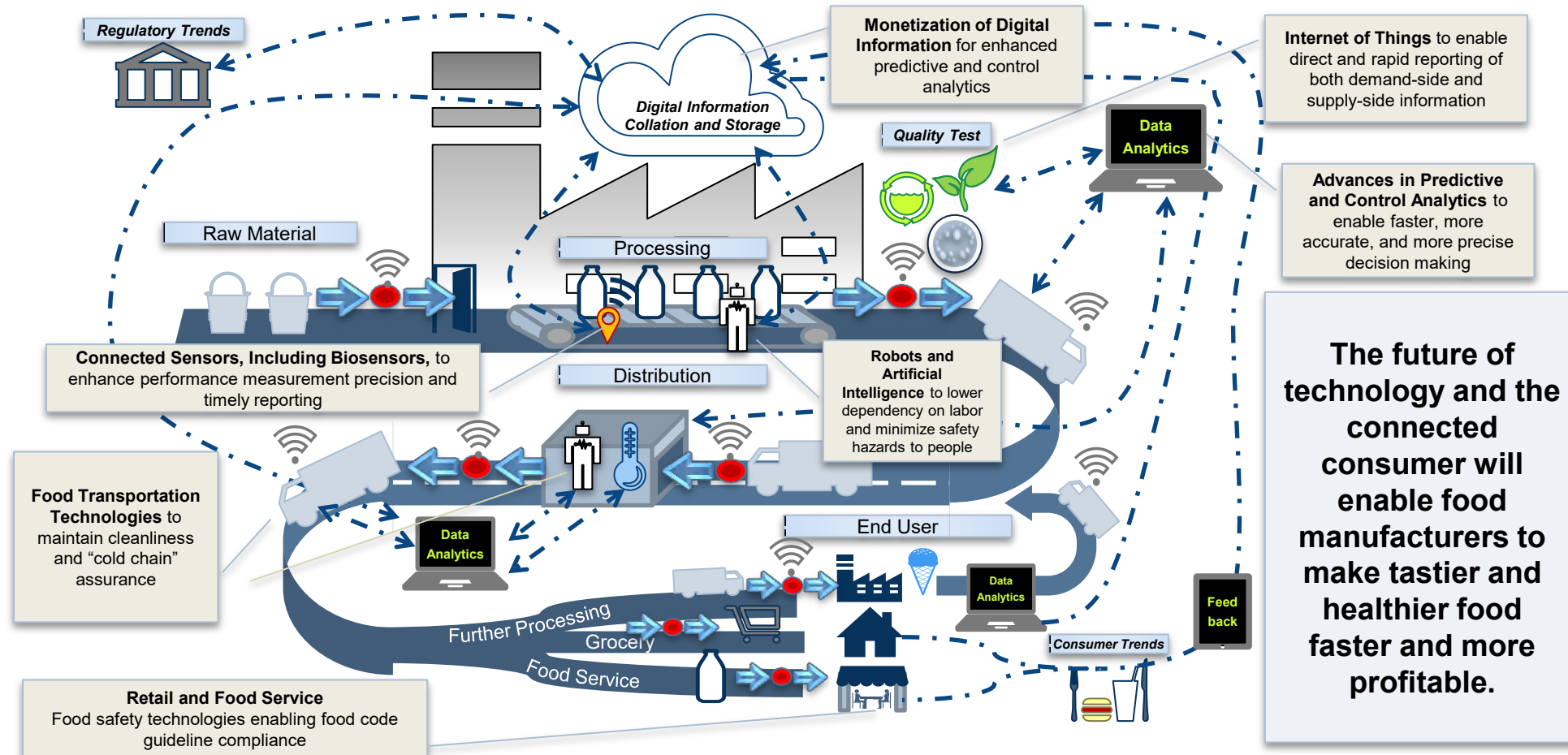


Source: Frost & Sullivan.

“We Accelerate Growth”

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.

New Business Models will Transform How We Eat

New business models are redefining the entire brand/product innovation-to-market commercialization process, driving the need for new business capabilities.



New business models enable food sellers to better meet the needs of today's, and tomorrow's, grocery shoppers and restaurant patrons.

- **Speed of consumer learning and the increasing complexity of local networks, enabled by the lower cost of consumer data generation and information transmission, drive the demand for more food choice and food delivery customization.**
- **This in turn could weaken the importance of product-specific brands and strengthen the importance of lifestyle brands.**

Smartphones, wearables, tablets, and other personal consumer media devices will ultimately displace traditional forms of media (television, radio, papers) and change how food is retailed in the grocery store.

- **However, consumers will still want to see, touch, and taste the products they buy, which will change the roles of brick-and-mortar retailers.**
- **Also, crowdsourced-driven innovation pipelines can drive down the cost of marketing considerably and better enable niche market customization.**

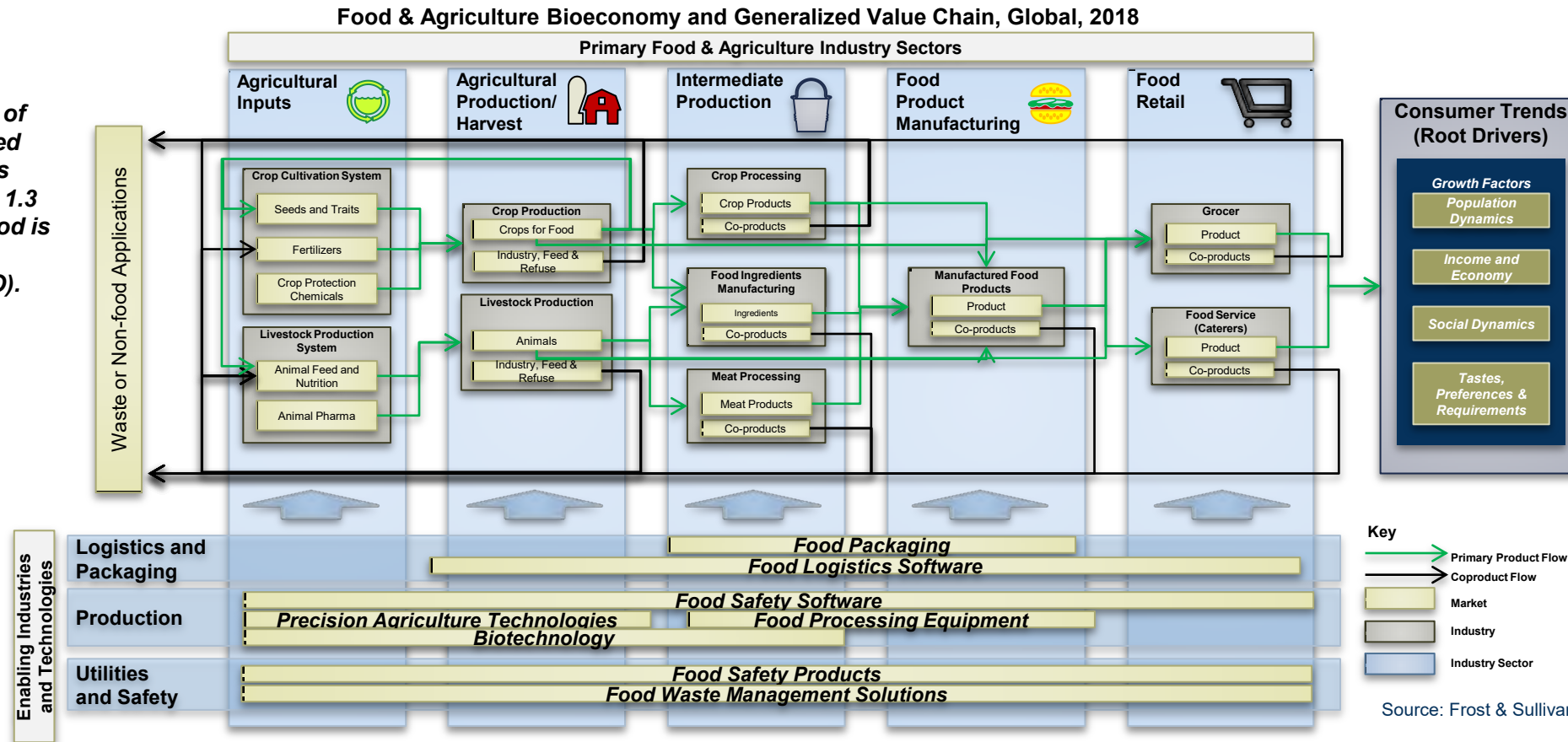


Source: Frost & Sullivan.

The Challenge of Stabilizing Food and Managing Food 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.

About 30 to 40% of the food produced globally is lost as waste and about 1.3 billion tons of food is wasted annually (Source: UN FAO).

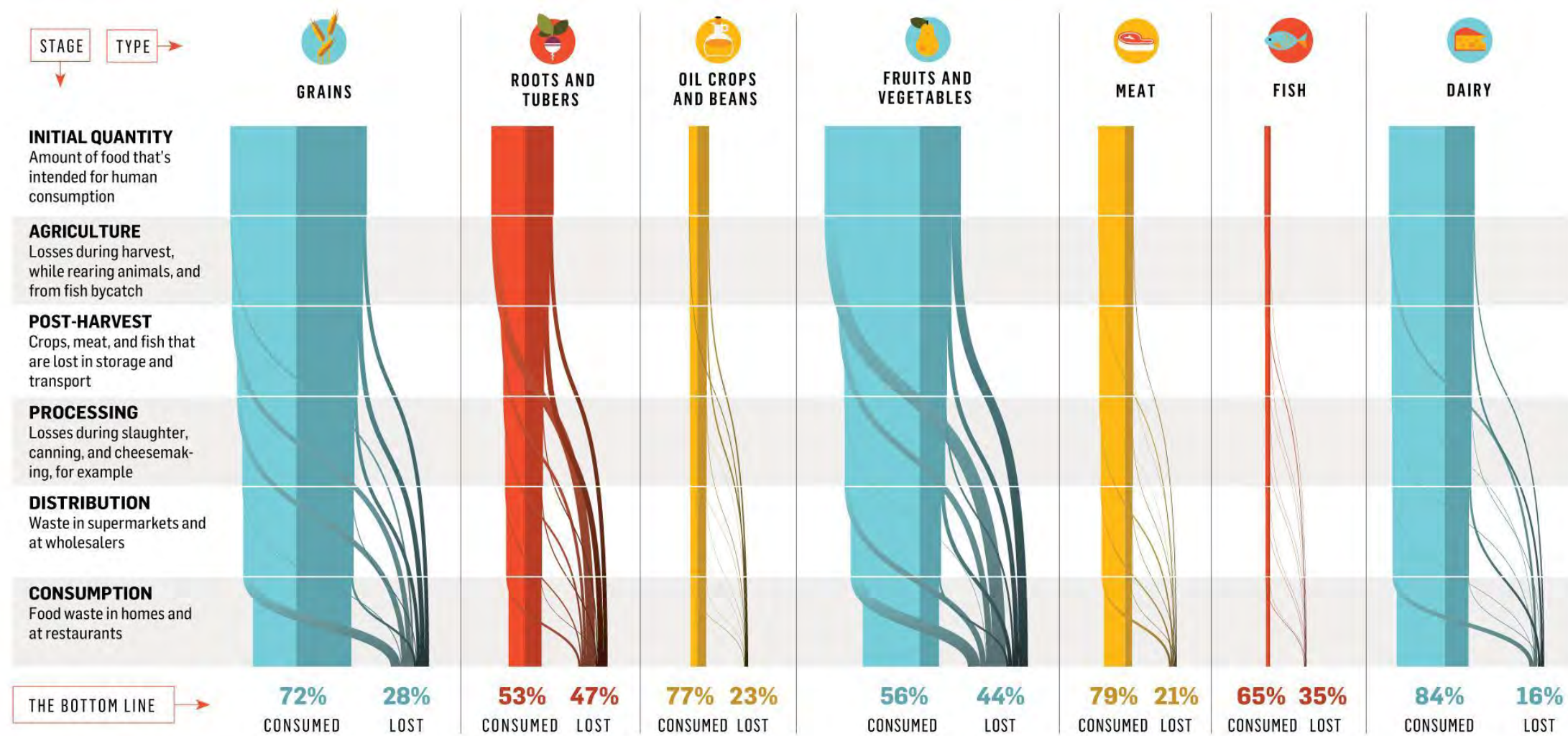


The impact of food wastage is not restricted to economic loss alone, but has environmental and social impacts as well. Food is produced using substantial amounts of limited resources such as water, land, and chemicals (pesticides and fertilizers) and also involves allied activities such as transportation and storage. Hence, food waste also implies a wasteful usage of many limited resources such as land, water, and fuel

Source: Frost & Sullivan.

The Challenge of Stabilizing Food and Managing Food Waste

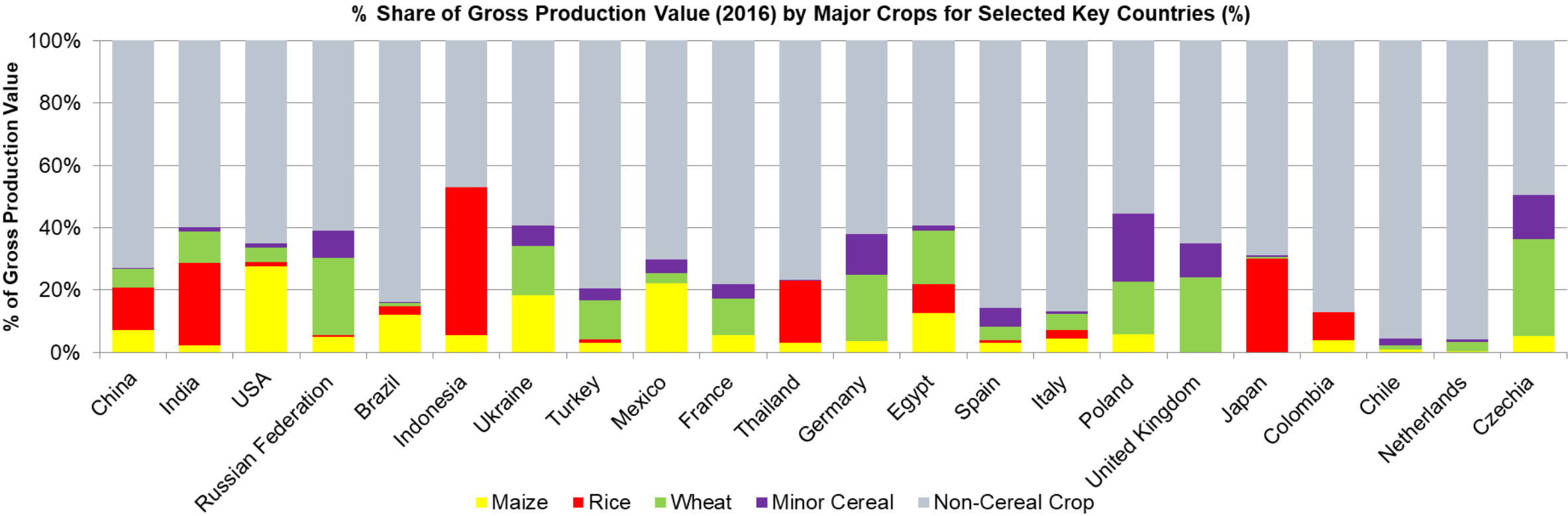
Food Wastage occurs Throughout the Various Processes in the Food Value Chain. In terms of product category, Fruits & Vegetables are the largest sources of food waste in the value chain



Source: FAO and Frost & Sullivan analysis.

The Challenge of Stabilizing Food and Managing Food Waste

The more valuable the crop, the more likely that farmers will work to protect and enhanced yield through digital technologies



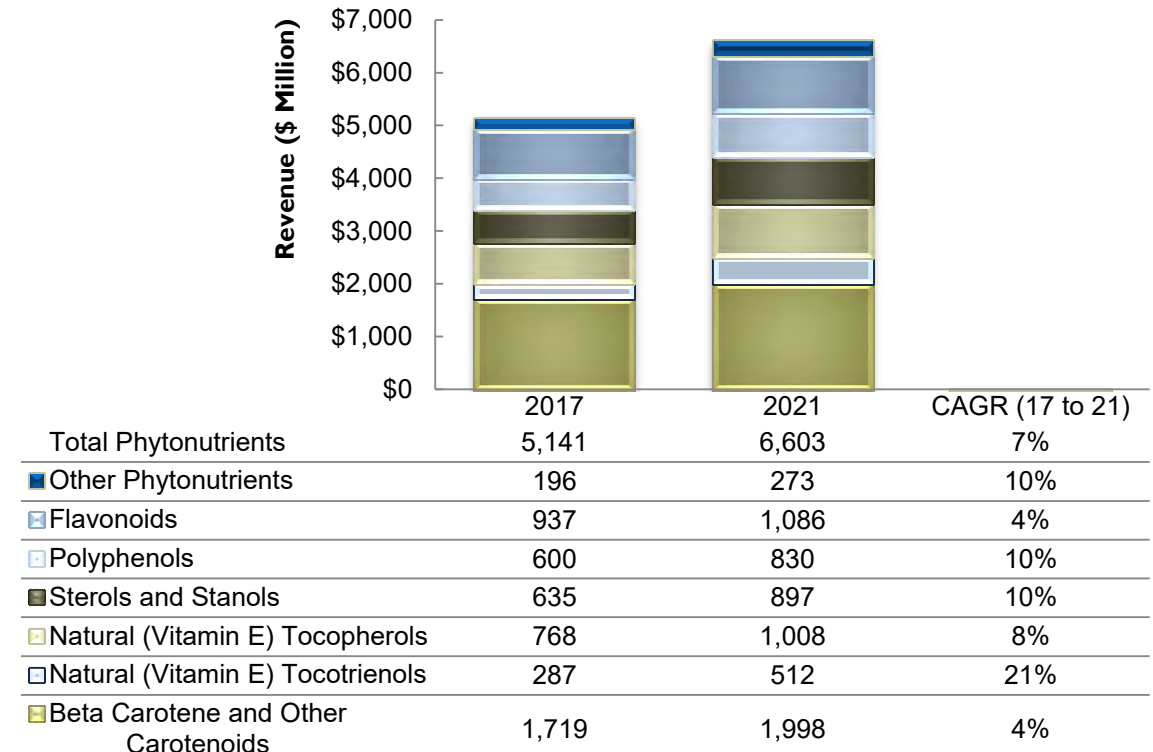
Source: Frost & Sullivan.

Key Growth Opportunities—Focus on Phytonutrients (Plant Extracts)



- Globally, the phytonutrients market is generating a lot of interest.
- In 2017, revenue the global total phytonutrients ingredients market was \$5,141 million and will grow at a compound annual growth rate (CAGR) of 7 % to 2021.
- Phytonutrients are substances derived from plant extracts which offer a number of important functional benefits for food and beverage including antioxidants
- Clinical trials supporting the health claims made by the products will help establish their credibility and build confidence among the end users.
- The market for nutraceuticals is regulated in developed countries, such as the Global, and in the European Union (EU) illustrates some of the factors contributing to the growth of the global phytonutrients market in 2017.

Total Phytonutrient Market: Revenue Forecast by Product Type, Global, 2014 to 2021

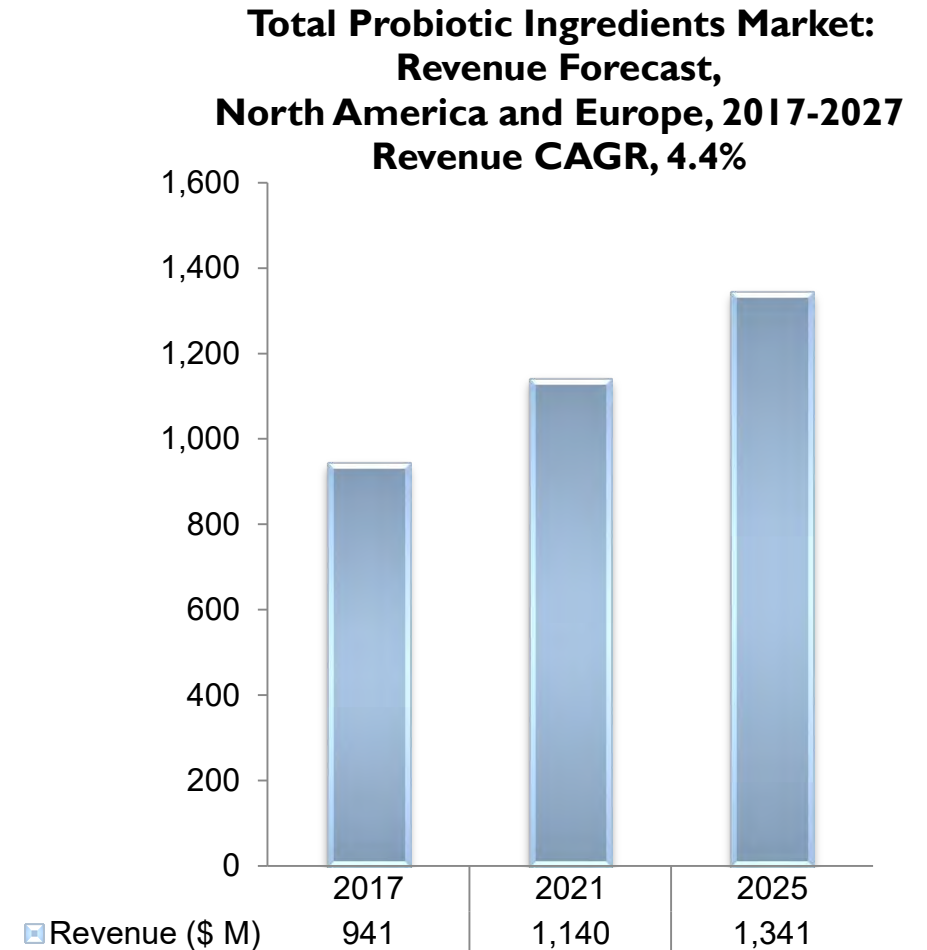


Note: All figures are rounded. The base year is 2016. Source: Frost & Sullivan analysis.

Key Growth Opportunities—Focus on Probiotics



- The **total probiotics supplements retail market** was valued at \$3.8 billion in 2017 and is expected to reach \$6.6 billion by the end of 2027, based on a CAGR of 5.4%. The total probiotic ingredients market was worth \$941 million in 2017
- An increasing number of consumers are taking preventative control towards their health and trying to ensure general well being, which is supporting the demand for natural ingredients like probiotics.
- Beyond probiotics being natural, it is globally recognized to be safely used in food targeted across all population including infants, consequently, increasing usage across all segments.
- The market is dominated by probiotic food and beverages, given that digestive health remains a top reason why consumers choose functional foods. Thus, there will be a sustained level of demand for probiotic products.

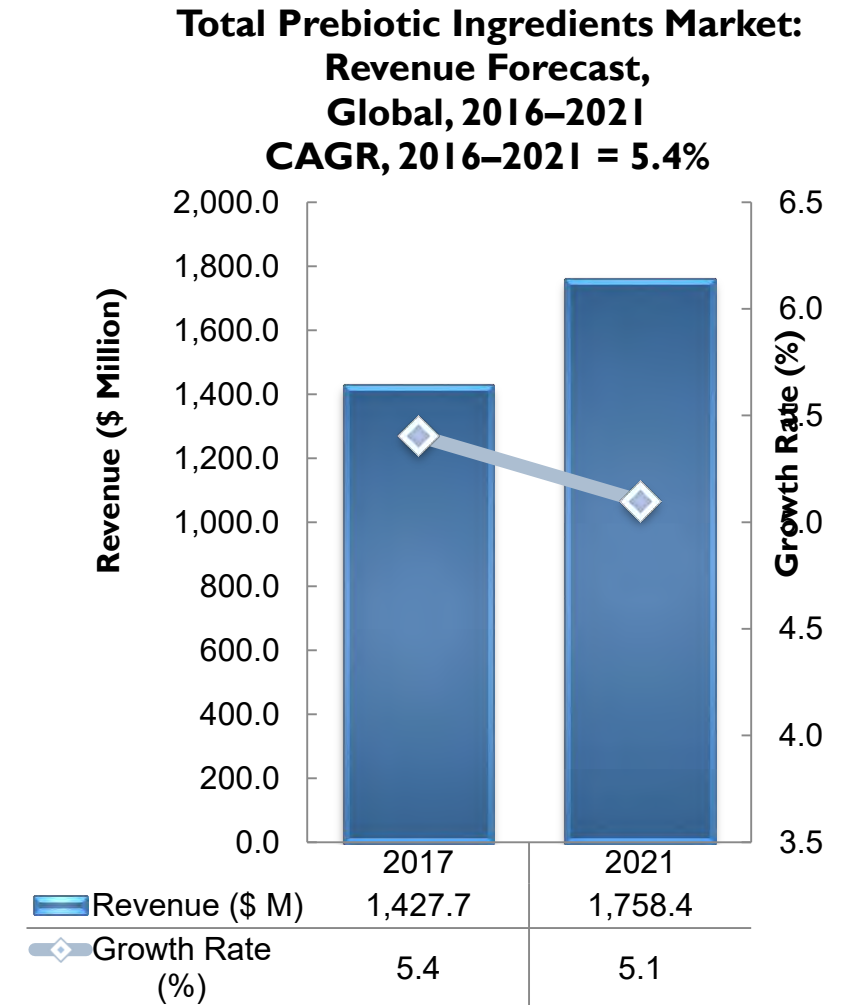


Source: Frost & Sullivan

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Key Growth Opportunities—Focus on Prebiotic Ingredients

- The global prebiotic ingredients market was worth \$1.35 billion in 2016, and is expected to register a CAGR of 5.4% from 2016 to 2021.
- The future of the prebiotic ingredients market will depend on consumer trends in the food and beverage industry, such as the increasing demand for natural ingredients, reduced sugar, and reduced fat. Research and Innovation will be key to meeting these requirements and getting approval for claims.
- Galacto-oligosaccharide (GOS) will continue to dominate the global prebiotic ingredients market throughout the forecast period, driven by demand in the infant nutrition market.
- Innovation offers the highest growth opportunity in this market, with a number of companies already offering innovative solutions that will contribute to market growth. For example, GOS from peas by Olygose. In addition, XOS is still being regarded as an emerging prebiotic.



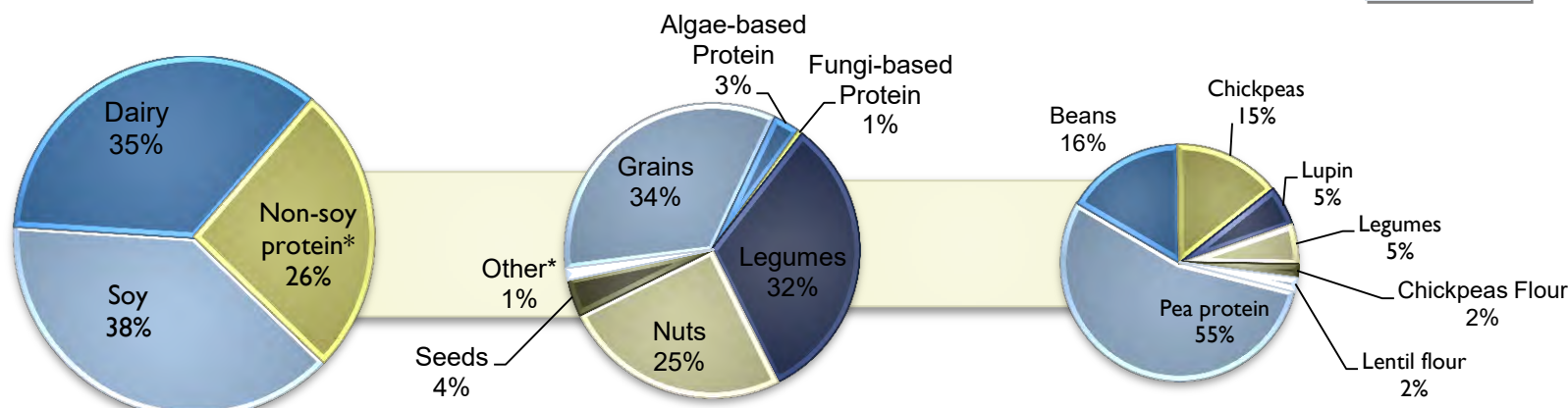
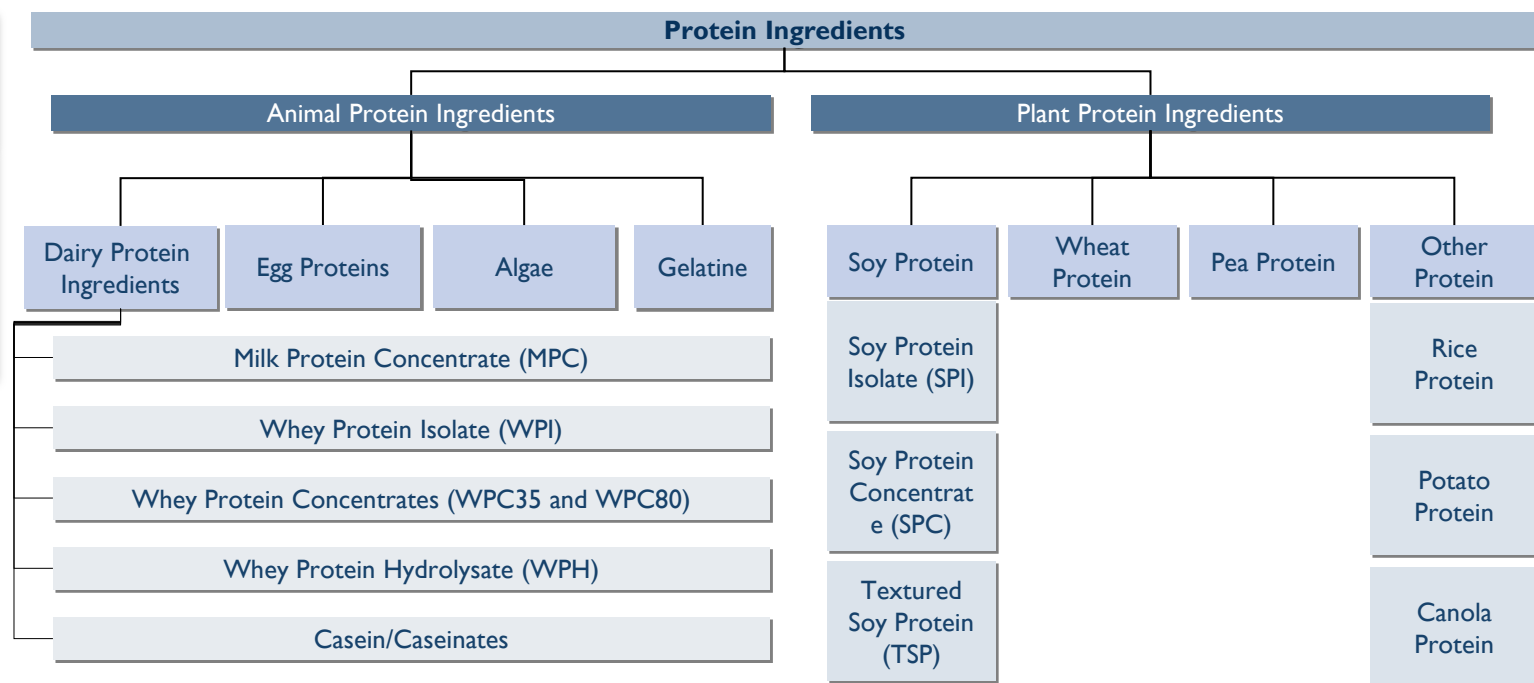
Note: All figures are rounded. The base year is 2016. Source: Frost & Sullivan

“We Accelerate Growth”

Key Growth Opportunities—Focus on Proteins Ingredients

Market Size (Revenue)	Market Revenue Size CAGR
\$20.8* (\$ B) (2016)	6.9% (2016-2020)

- The protein ingredients product space is highly fragmented, where there is a lot of competition for a limited number of end applications.
- This makes the importance of quickly identifying and addressing opportunities and threats critical.
- Substitution by other plant proteins into the soy and dairy categories such as pea protein, beans, nuts and other legumes is occurring

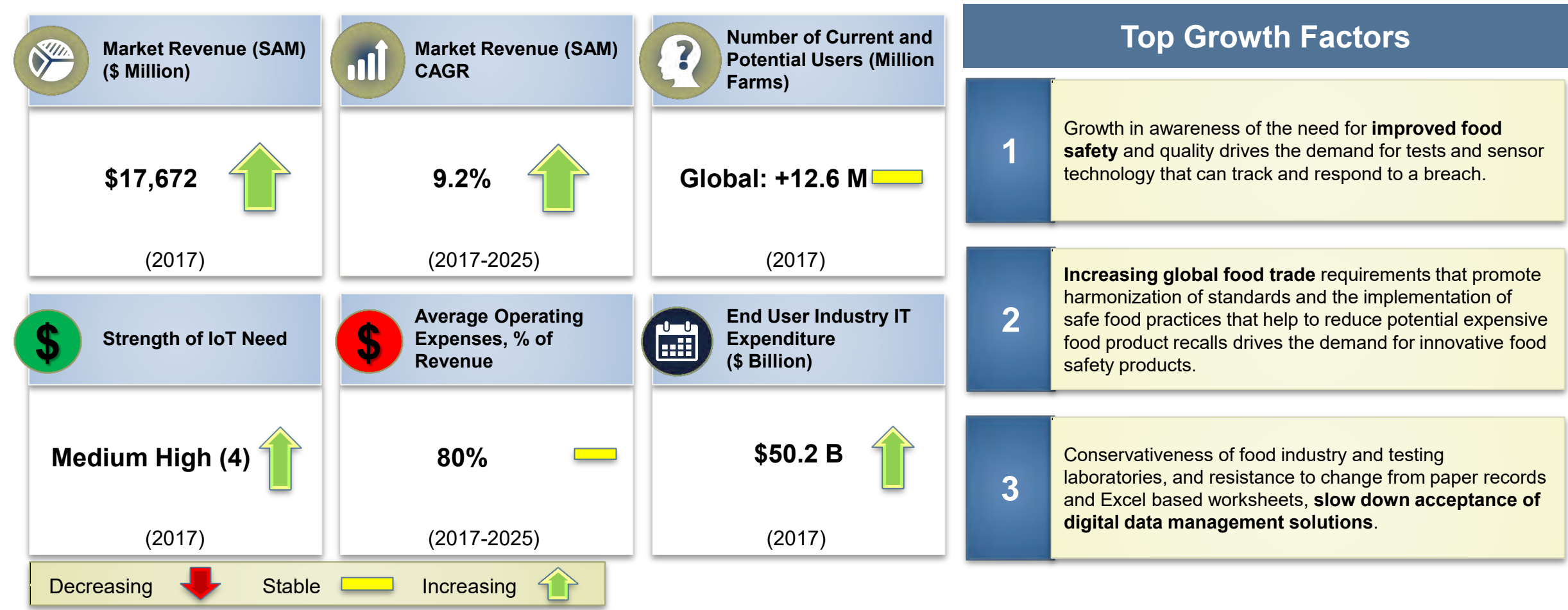


Source: Frost & Sullivan.

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Key Growth Opportunities—Internet-of-Things (IoT) for Agriculture & Nutrition Market

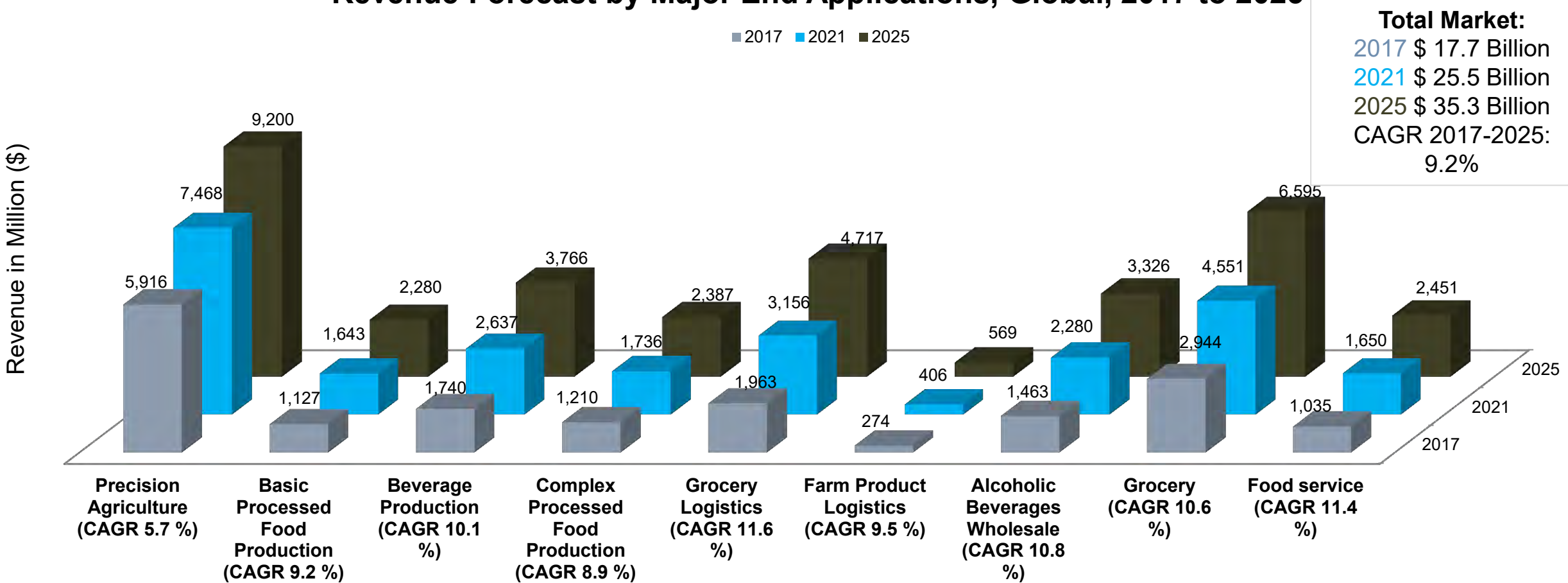
In 2017, the market revenue for total IoT for agriculture & nutrition market was \$5,053 million and it is expected to grow at a CAGR of 9.2%.



Key Growth Opportunities—IoT for the Agriculture & Nutrition Market

Grocery Logistics and Food Service end applications are expected to experience relatively higher growth rates, yet all sectors are expected to exhibit strong growth in the demand.

Revenue Forecast by Major End Applications, Global, 2017 to 2025



Key Growth Opportunities—IoT for F&B Processing Growth Opportunities



Opportunity 1: Harmonized food safety information

- Global food trade/ imported foods
- Demand for novel/ exotic foods
- Need for less-processed foods



Opportunity 2: Big data analytics

- Voluminous data on outbreaks & epidemiology
- Multiple big data banks
- Diverse big data at end market & consumer levels



Opportunity 3: Rapid detection methods

- Immuno-assays
- Biosensors
- DNA-based Assays



Opportunity 4: Advanced food safety software as a service (SaaS)

- Expansion of Software Features
- Interface with Tracking & Traceability
- Cloud-based Technologies



Opportunity 5: Emerging technological innovations



- Intervention Technologies
- Electronic Tractability
- Automation & Robotics

Source: Frost & Sullivan.

“We Accelerate Growth”

The Future—Key 2019 Food & Beverage Industry Trends

Specialty Ingredients Trends

-  ***More focus on “Green” specialty ingredients***
-  ***Consumer interest in fortified food and beverages will decline***
-  ***The search for novel specialty ingredients will continue***

Health Ingredients Trends

-  ***Finally, the choice between Health & Wellness and Taste is not a Tradeoff***
-  ***Assessing Risk Biomarkers to Guide Marketing Strategy***
-  ***Cooking at Home Equals Healthy Living***

Food Safety Trends

-  ***Stricter regulatory compliance drives food safety product adoption***
-  ***Growth in consumer need for improved and proven food safety***
-  ***Continued consumer skepticism of GMO safety***

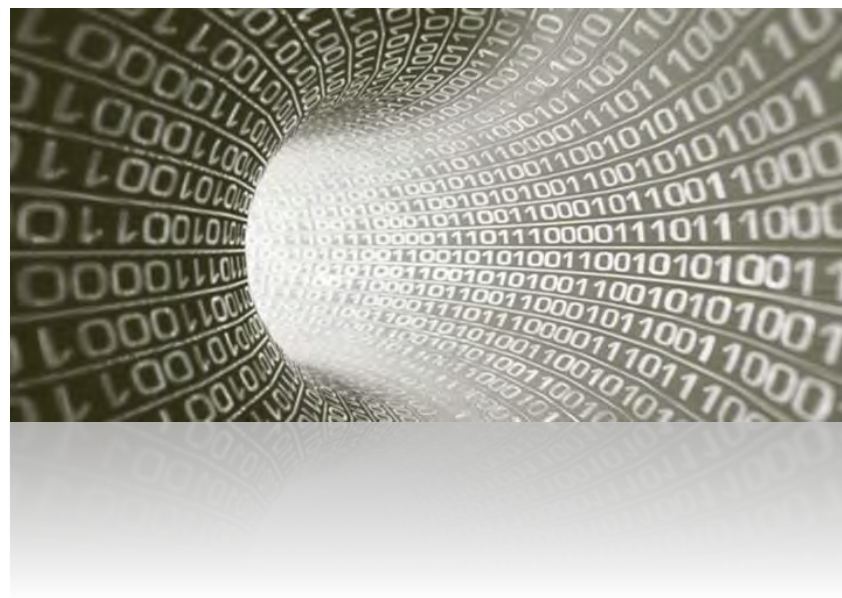
Source: Frost & Sullivan.

Final Thoughts



Source: Frost & Sullivan.

Thank you!



November 5, 2018