Access and Benefit Sharing
Key Points for Policy-Makers

THE FOOD AND BEVERAGE INDUSTRY

THE ABS CAPACITY DEVELOPMENT INITIATIVE

People and Plants international

University of Cape Town · iYunivesithi yaseKapa · Universiteit van Kaapstad

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SUMMARY OF KEY POINTS

HOW DOES THIS SECTOR USE BIOLOGICAL AND GENETIC RESOURCES?

- Located between agriculture, processing, distribution and retail, the food and beverage sector typically uses raw biological materials purchased from farmers or intermediate suppliers of ingredients.
- ABS may be relevant for sub-sectors focused on novel and functional foods, biotechnology, nanotechnology, bio-processing or the use of 'new' species or traditional knowledge to investigate bioactive compounds.

MARKETS, COMPANIES AND PRODUCTS

- Revenues of food and beverages worldwide reached $7.8 trillion in 2013.
- The rise in ageing populations in developed countries and the increased demand for 'healthy' foods and beverages in many parts of the world has led to increased adoption of functional foods and dietary supplements.
- The market for global functional foods and beverage sales is projected to top $130 million by 2015 with the market for functional food ingredients estimated to reach $2.5 billion by 2020. This is the fastest growing sector in the food industry, with annual growth rates of 6-10%.
- Beverages are by far the most popular functional foods category because of convenience, ease of distribution and storage, and opportunity to incorporate desirable nutrients and bioactive compounds. Biodiversity is of increasing interest for functional beverages.
- Scientific, technological and market changes are leading to greater consolidation and integration; most products are owned by very few companies.

CONSUMER TRENDS

- Key future trends that are influencing consumers in the developed world include a focus on alternatives such as novel proteins that are sustainably produced; more natural and less processed food and drink; environmental concerns; recognition that diets influence the way consumers look and feel; and sports nutrition.

TRENDS IN RESEARCH AND DEVELOPMENT

- The world's top 61 food and drink companies collectively invested $10.8 billion in R&D in 2012.
- The regulatory costs of getting a novel food approved, and functional claims permitted, are extremely high. This has a strong influence on R&D.
- Innovation mainly comes from know-how and process improvements to existing ingredients rather than R&D using new ingredients sourced from genetic resources.

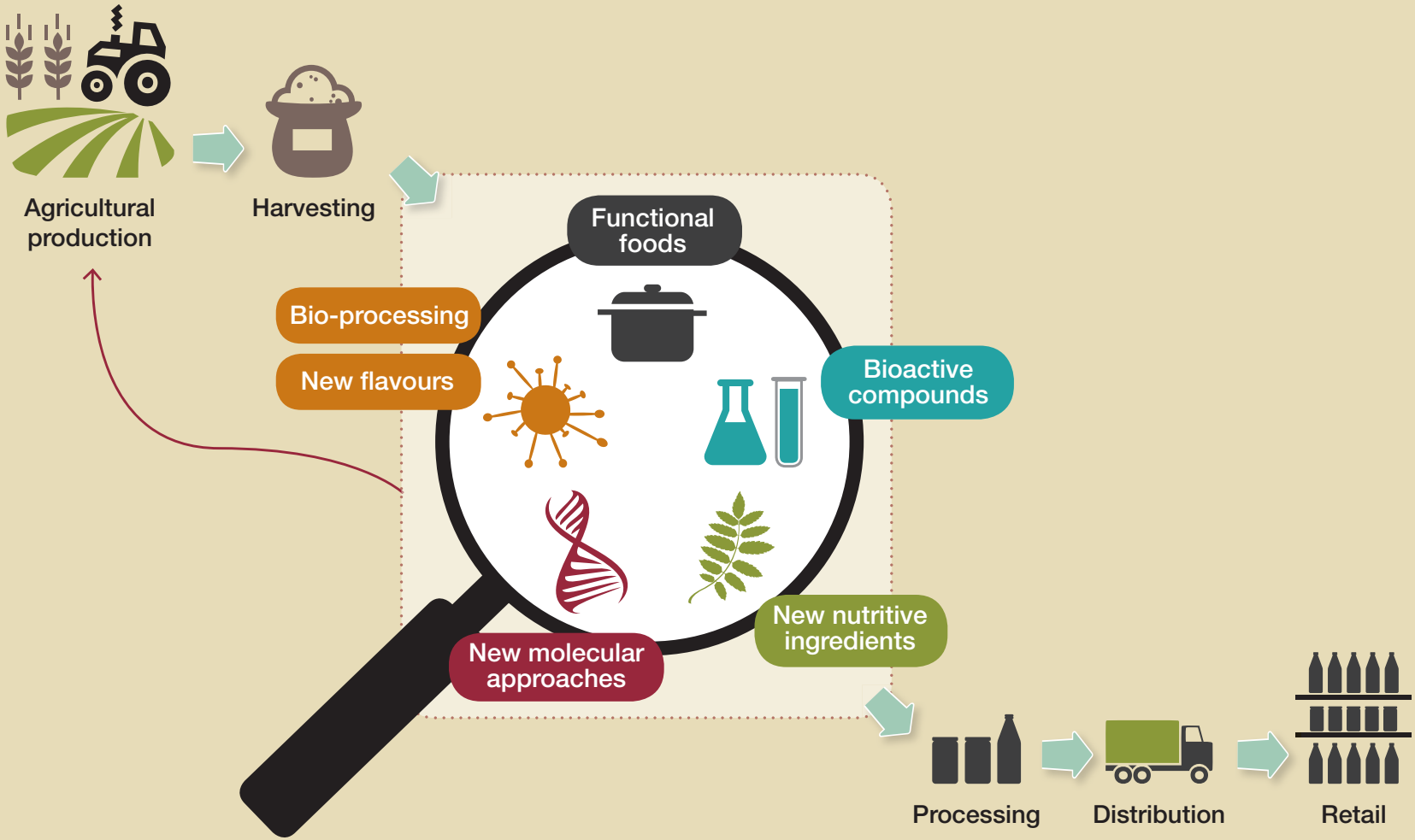
TRADITIONAL KNOWLEDGE

- Traditional knowledge may be used to indicate safety and efficacy of an ingredient, as a source of leads for bioactive compounds, or for research into traditional foods.

INDUSTRY AND ABS

- Awareness remains extremely low for most companies in this sector.
- A few larger companies are embedding ABS in their policies and procedures.
- As 'green' and 'local' become more important to consumers, companies are increasingly setting in place plans for environmental and social sustainability.

HOW DOES THIS SECTOR USE BIOLOGICAL AND GENETIC RESOURCES?



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ABS may be relevant for sub-sectors focused on novel and functional foods, biotechnology, nanotechnology, bio-processing or the use of 'new' species or traditional knowledge to investigate bioactive compounds.

MARKETS, COMPANIES AND PRODUCTS

The rise in ageing populations in developed countries and the increased demand for 'healthy' foods and beverages in many parts of the world has led to increased adoption of functional foods and dietary supplements.

Healthy — Prevention of (chronic) disease

Unhealthy

Diseased — Treatment of (chronic) disease

Traditional Diet | **Functional Foods** | **Dietary Supplement** | **Pharmaceutical**

Nutrition — **Pharma-Nutrition Interface** — **Pharma**

Traditional Foods and Beverages	Functional Foods	Nutraceuticals/ Dietary Supplements	Pharmaceuticals
Consumed freely.	Consumed freely and without regard to dose quantity.	Specified dose for diagnosing, treating or preventing disease, restoring or correcting function or maintaining/promoting health.	Contains an active medicinal ingredient, may or may not be from natural source.
In a format and serving size consistent with food use.	More of a traditional ingredient.	Only the traditional ingredient is processed separately (may be in combination with others to make a non-traditional product).	May be a traditional ingredient transformed by chemical processes.
Example: ginger beer.	Example: tea with added ginger (may reduce nausea).	Example: ginger supplements (to reduce nausea and inflammation).	Example: anti-nauseant tablet (active ingredient dimenhydrinate).




Types of dietary ingredients

Dietary fibre
Non-starch polysaccharides such as celluloses, gums and pectins, lignin, resistant dextrins, resistant starches.

Probiotics
Include various categories of bacteria which are used as food supplements to improve the intestinal microbial balance.

Prebiotics
Dietary ingredients based on short-chain polysaccharides such as chicory roots, asparagus and tomato that selectively alter the composition or metabolism of the gut microbiota.

Polyunsaturated fatty acids
Essential fatty acids including Omega 3 and 6. Found in fatty fishes, flaxseed, soybeans, canola, some nuts, vegetable oils and animal products.

Antioxidant vitamins
These are abundant in many fruits and vegetables and act against several degenerative diseases such as cancer and cardiovascular diseases by preventing oxidative reactions.

Polyphenols
These form a large group of phytochemicals, including flavonoids and phenolic acids, which are produced by plants as secondary metabolites to protect against stress. Examples include reservatrol from red wine, tea, and soybean.

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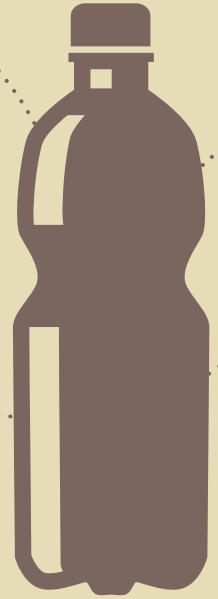
Beverages are by far the most popular functional foods category because of convenience, ease of distribution and storage, and opportunity to incorporate desirable nutrients and bioactive compounds. Biodiversity is of increasing interest for functional beverages.

Ginseng, from the genus *Panax*, has been used traditionally for thousands of years in Asia

Guarana which comes from the South American plant *Paullinia cupana*, has anti-oxidant properties and significant amounts of caffeine



Fruit of the African baobab (*Adansonia digitata*) is prepared as a powder for incorporation into food and beverages, and was recently approved as a novel food by the European Union

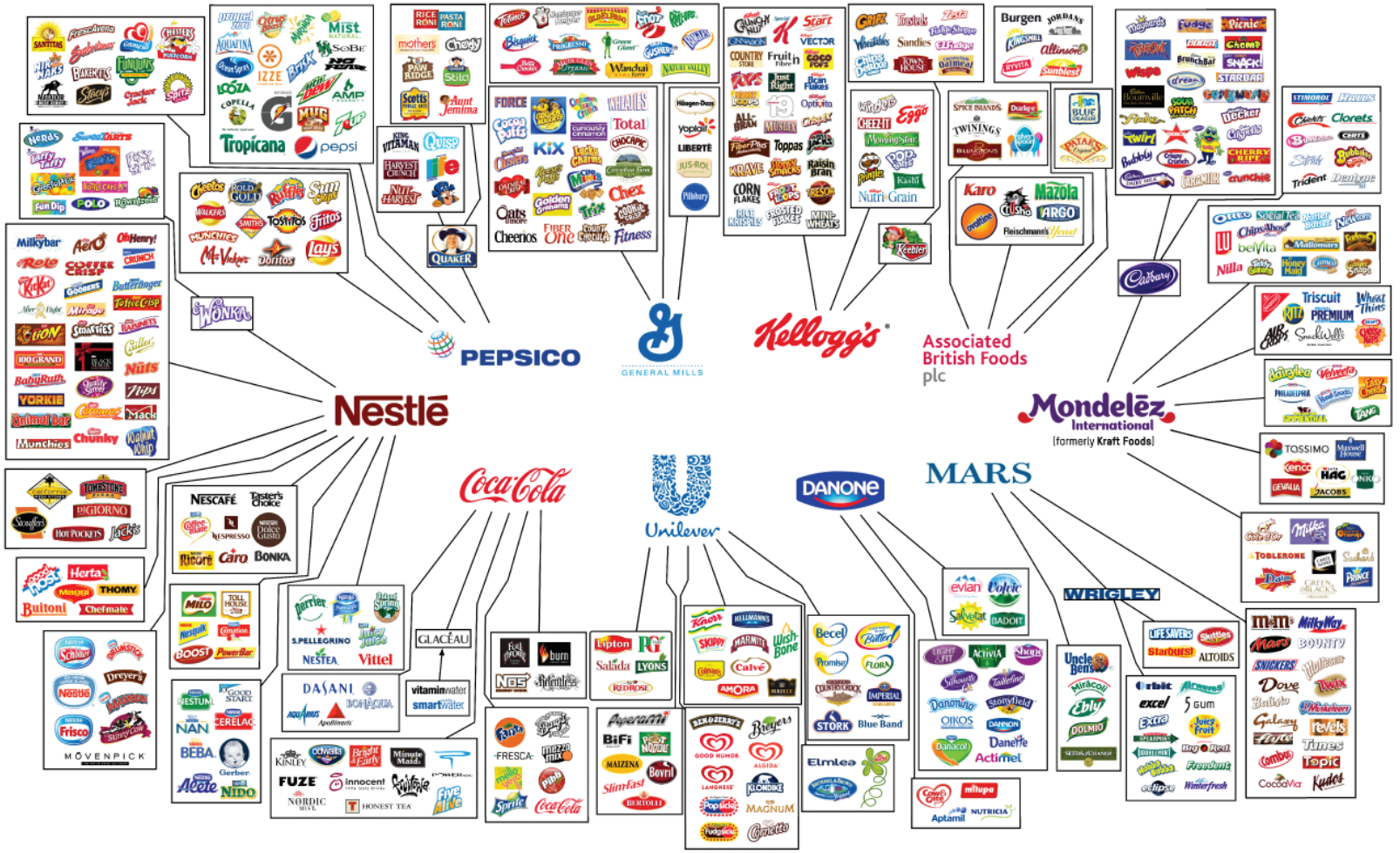
Prickly pear (*Opuntia* spp.) is used in whey-based beverages

Revenues of food and beverages worldwide reached US $7.8 trillion in 2013.

Top ten food and beverage companies 2014

(2013 sales USD million)

Scientific, technological and market changes are leading to greater consolidation and integration; most products are owned by very few companies.



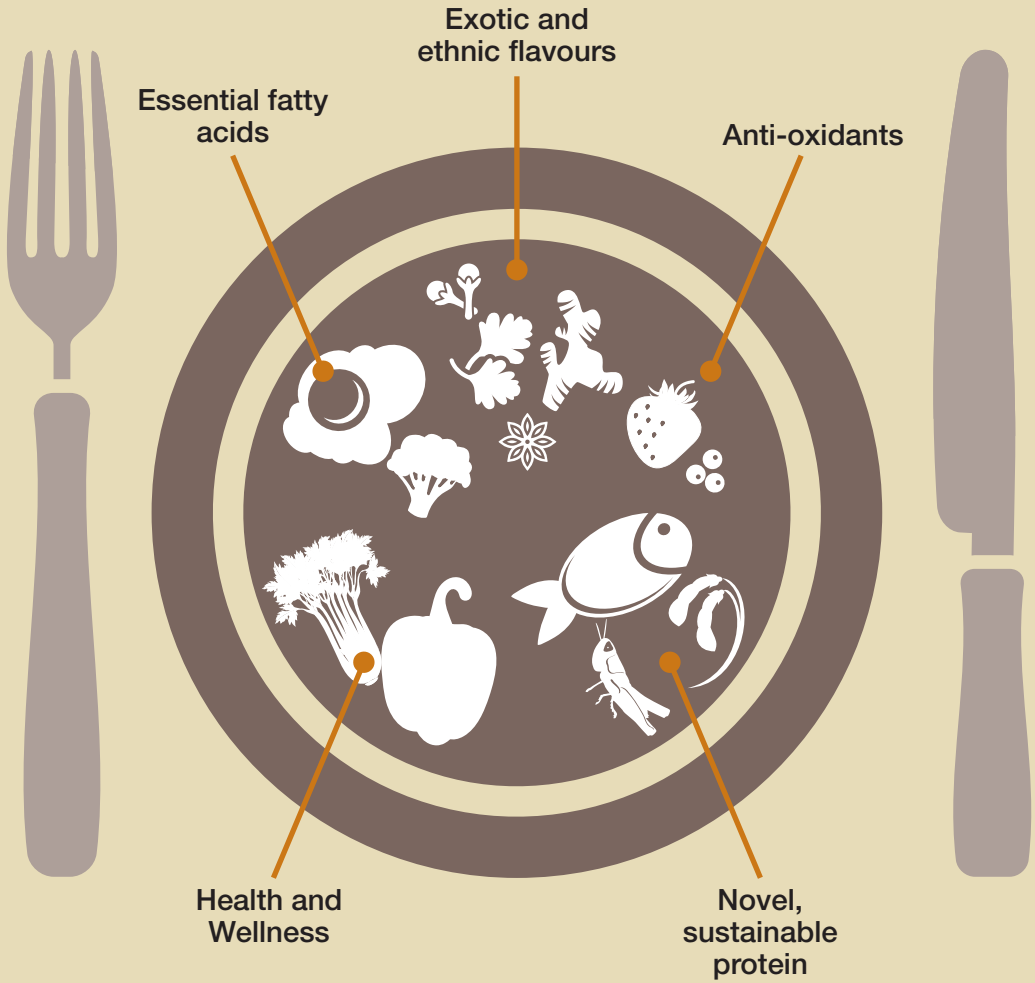
CONSUMER TRENDS

Key future trends that are influencing consumers in the developed world include a focus on alternatives such as novel proteins that are sustainably produced; more natural and less processed food and drink; environmental concerns; recognition that diets influence the way consumers look and feel; and sports nutrition.

Ageing population – developed world

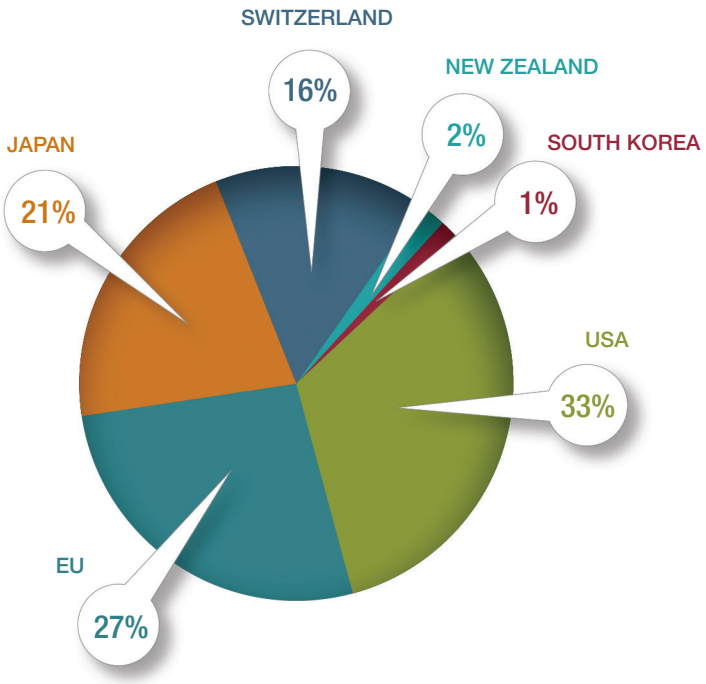
Child nutrition

Environmental and social consciousness



TRENDS IN RESEARCH AND DEVELOPMENT

The world's top 61 food and drink companies collectively invested US $10.8 billion in R&D in 2012.

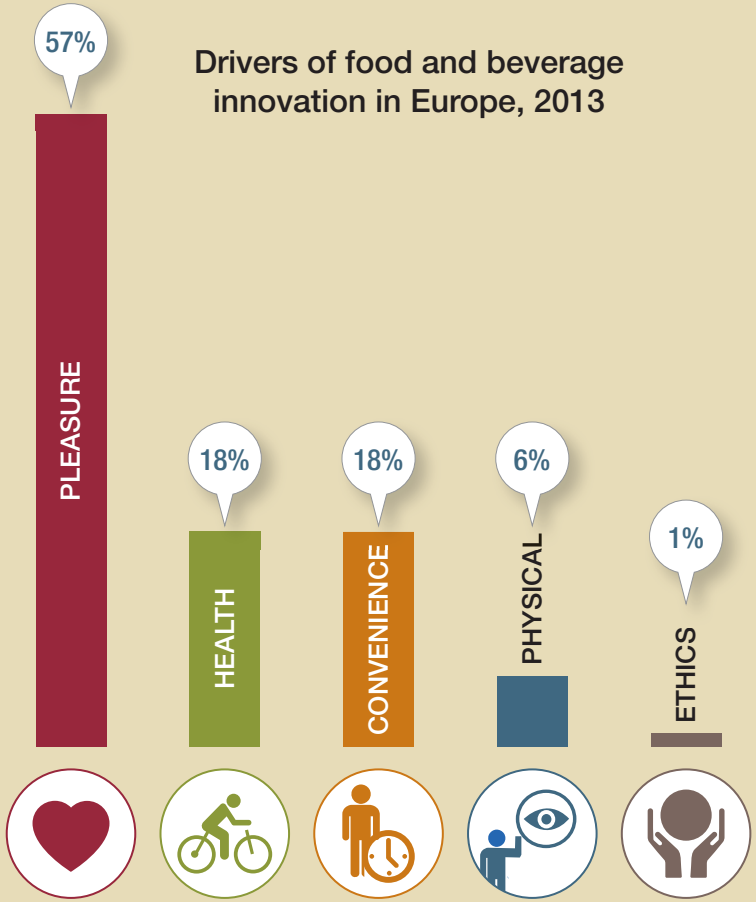


Country	Investment USD billion	Number of companies
USA	$3.59	15
EU	$2.84	17
Japan	$2.22	23
Switzerland	$1.73	2
New Zealand	$0.25	1
South Korea	$0.12	3

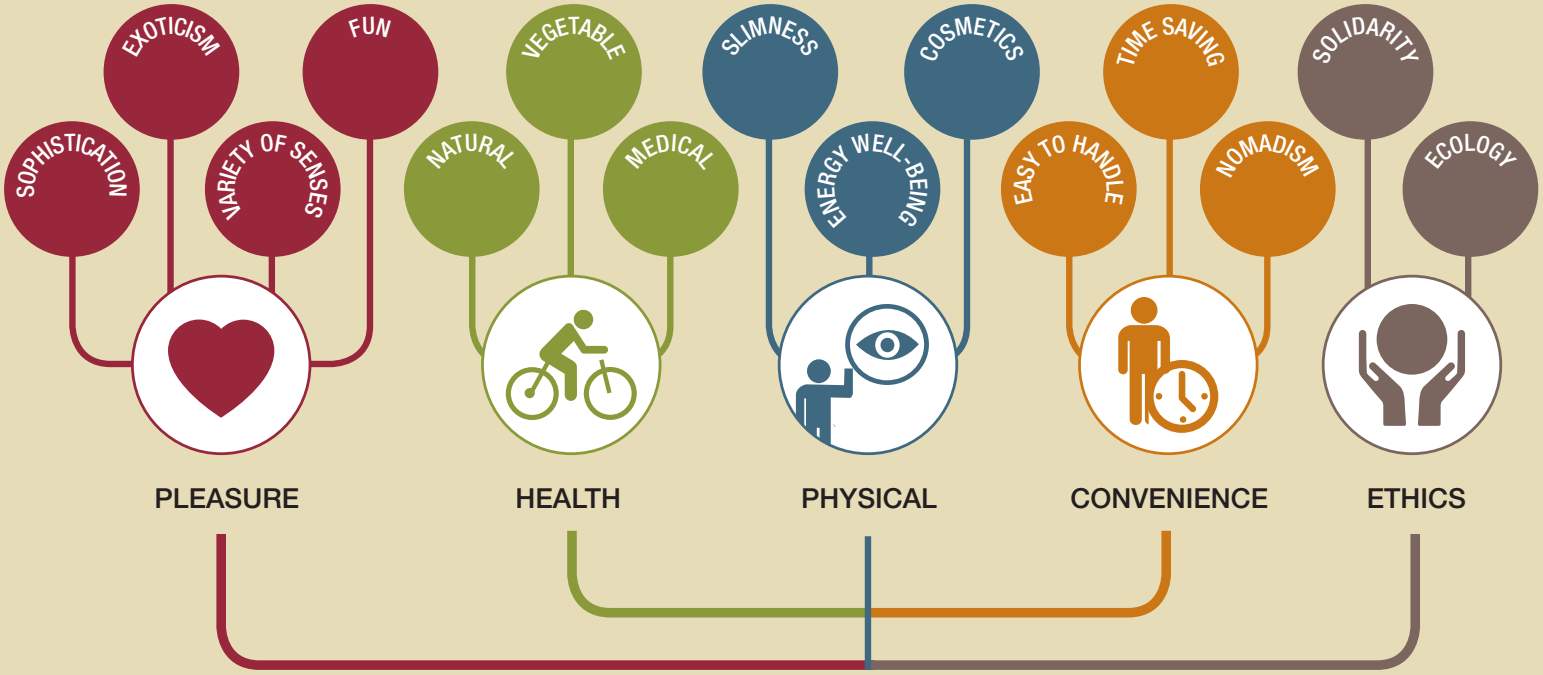
The regulatory costs of getting a novel food approved, and functional claims permitted, are extremely high. This has a strong influence on R&D.

Innovation mainly comes from know-how and process improvements to existing ingredients rather than R&D using new ingredients sourced from genetic resources.

Drivers of food and beverage innovation in Europe, 2013



Food innovation trends in Europe



TRADITIONAL KNOWLEDGE

Traditional knowledge may be used to indicate safety and efficacy of an ingredient, as a source of leads for bioactive compounds, or for research into traditional foods.

Baobab is now approved as a novel food in the EU and is incorporated into a powder, exported, and sold as an organic, gluten-free, and fair trade fruit. The commercial development of this product depended upon a long history of traditional use, and grew directly from this use. In some cases baobab supply is based on ABS agreements, but because baobab occurs widely across the African continent, sourcing is highly variable; ABS compliance will thus depend on national regulations. Traditional knowledge associated with baobab is spread throughout the continent and is an excellent example of a case in which broader, communal forms of benefit sharing are the most appropriate.

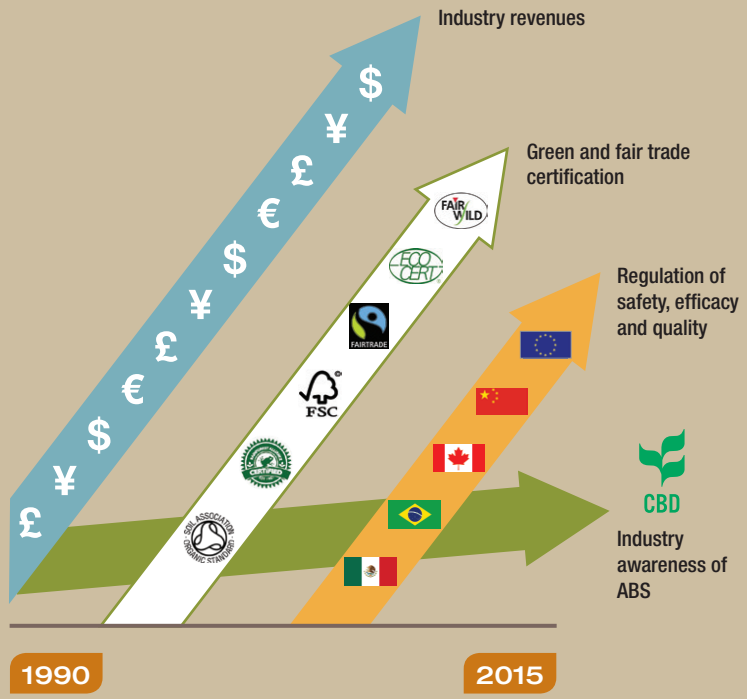
INDUSTRY AND ABS

Awareness remains extremely low for most companies in this sector.

A few larger companies are embedding ABS in their policies and procedures.

As 'green' and 'local' become more important to consumers, companies are increasingly setting in place plans for environmental and social sustainability.

The food and beverage sector (1990 – 2015)



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Page 6

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Page 7

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Page 9

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THE ABS CAPACITY DEVELOPMENT INITIATIVE

www.abs-initiative.info

www.bio-economy.org.za

People and Plants international

www.peopleandplants.org

The Access and Benefit-Sharing Key Points for Policy-Makers series has been produced to provide governments, companies, researchers, communities and others with background information to assist with the development of access and benefit-sharing measures to implement the Nagoya Protocol. The briefs are organised around central, key points on trends and practices in markets, research and development, and ABS. More detailed information on these sectors can be found at: www.bio-economy.org.za; www.abs-initiative.info; www.peopleandplants.org; CBD Bioscience at a Crossroads policy briefs: https://www.cbd.int/abs/policy-brief/default.shtml/; and in the upcoming book: http://www.routledge.com/books/details/9781138779099/

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