



Nutrition & Health

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Nutrition & Health targets consumer-driven ingredient markets worth €80 billion¹ with robust growth rates and low cyclicality



Higher demand for **natural ingredients**

Eco-friendliness and sustainability becoming the decisive purchasing factors

Health benefits and **convenience** of growing relevance

Nutrition & Health businesses hold or strive for leading positions among suppliers in their market segments

21%¹



Aroma ingredients

- **Cost leadership** in citral and derivatives
- **Strong volume growth** after startup of aroma ingredients complex in Kuantan, Malaysia
- >60 products in the scent ranges **mint, citrus, rose, lavender, muguet**

25%¹



Animal nutrition

- **Pioneer** and innovator in **feed enzymes**
- Enabler for **reduction of antibiotics**
- **Cost leadership** in **vitamin A**, strong position in vitamin E

25%¹



Human nutrition

- Among leading players in **specialty health ingredients**
- **Solution provider** in desserts and artisanal bakery
- Pioneer in **vitamin A food fortification**

28%¹



Pharma solutions

- **Innovative excipients player** for various applications
- **Strong player** in **ibuprofen** and **omega-3**
- **Enables** production of **biologic drugs**

1%¹



Enzymes²

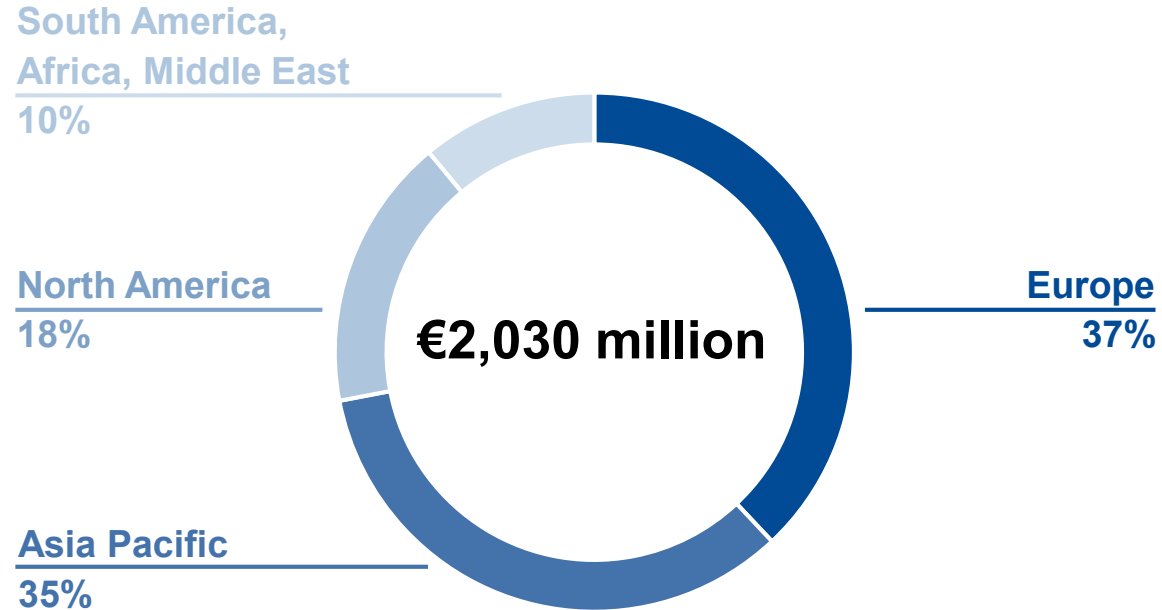
- BASF strives for a **leading position** in the global enzymes market
- New Global Business Unit acts as **central hub**
- **Innovation program ensures** a continuous stream of new products

¹ Percentage of Nutrition & Health division sales 2020

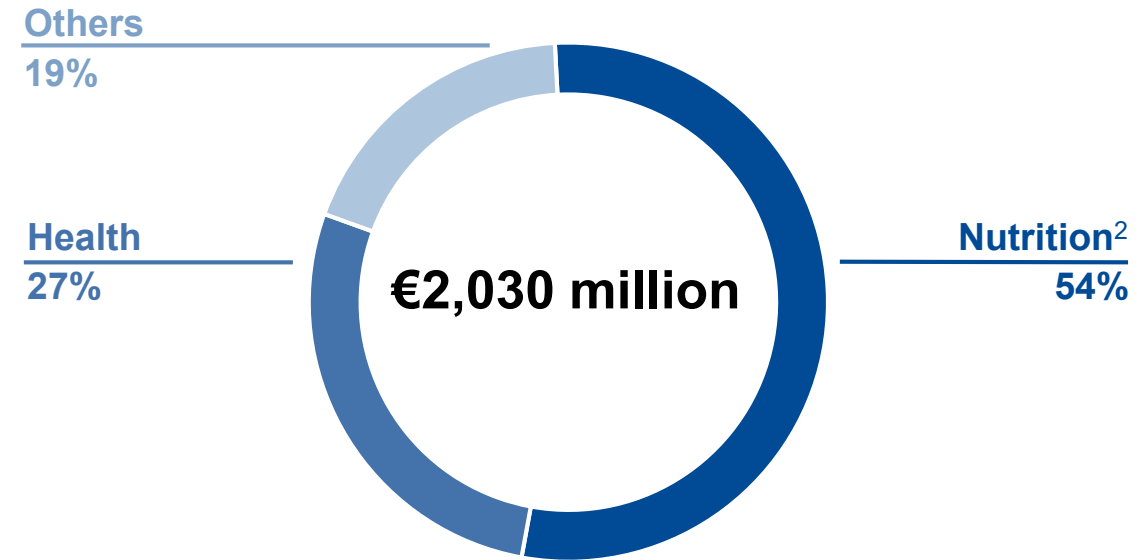
² Additional sales with enzymes are generated in animal nutrition and the Care Chemicals division

Serving attractive end consumer markets in all regions

Sales by region¹ 2020



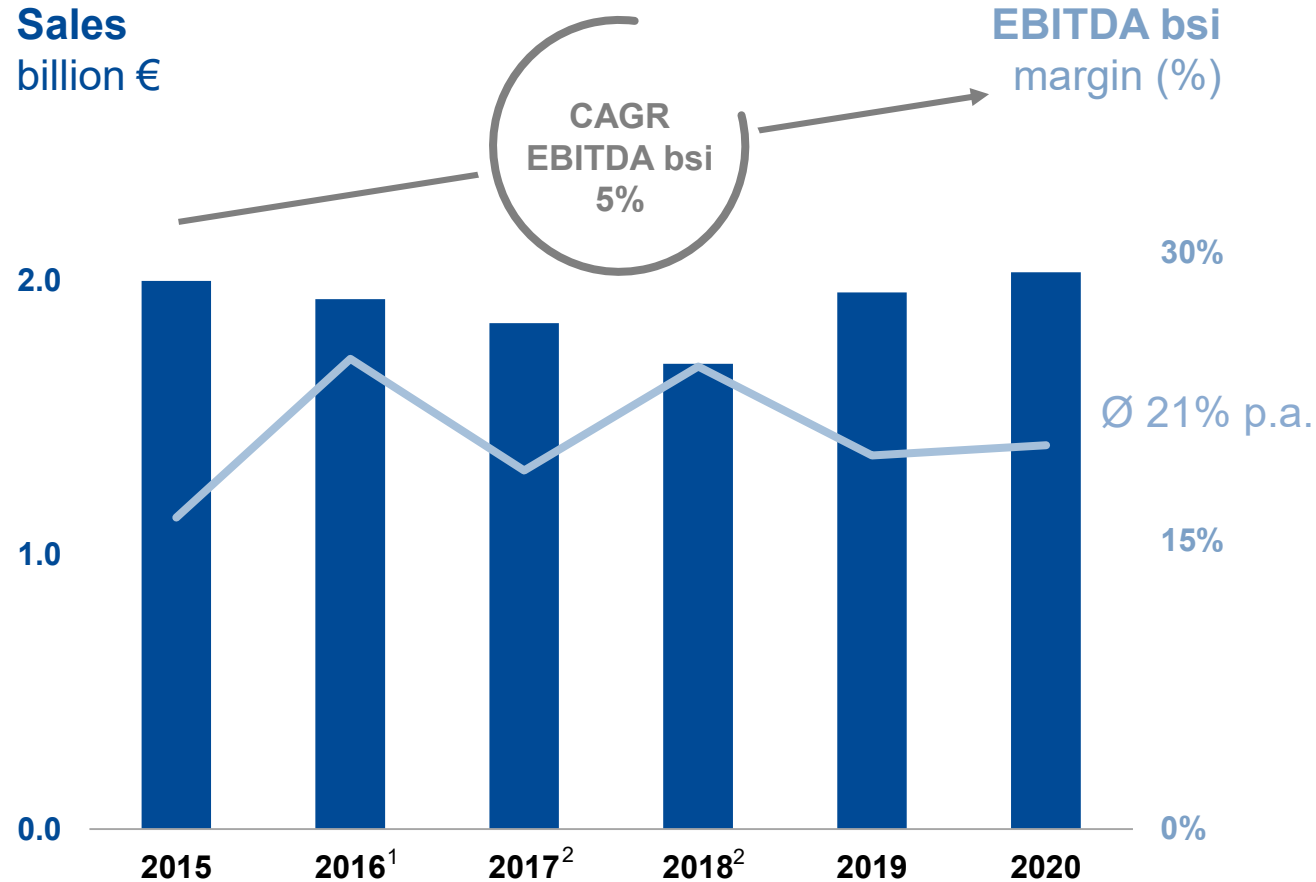
Sales by direct customer industry 2020



¹ By location of customer

² Aroma ingredients business is included in the customer industries nutrition and others

Nutrition & Health operates a profitable and growing business



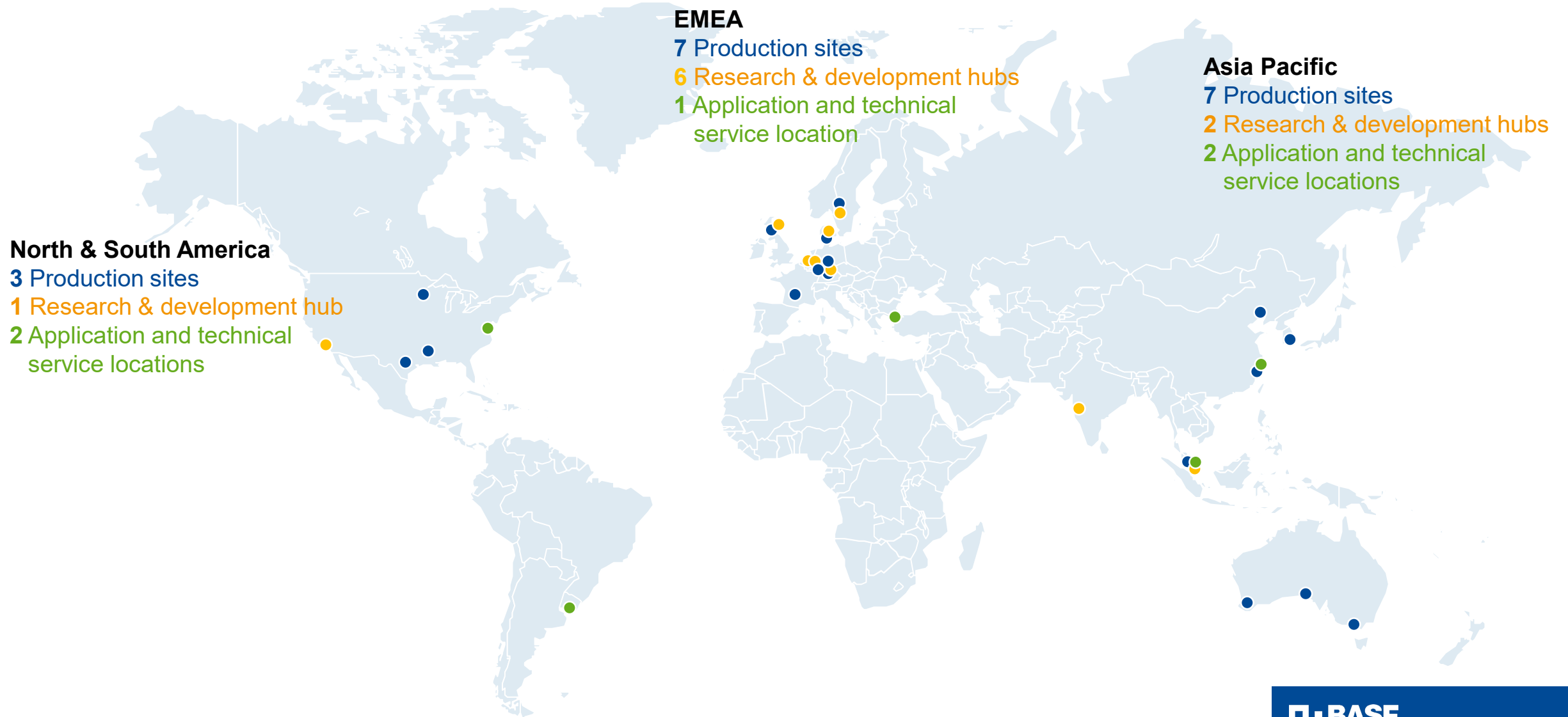
- Continuous and resilient earnings contributor with healthy growth potential
- Low cyclical of relevant markets:³
 - 3x less cyclical than the chemical industry
 - 10x less cyclical than the automotive industry
- From Q4 2017 to Q4 2018, sales growth was impacted by force majeure for key product lines

¹ 2016: Peak in vitamin prices

² 2017/2018: Force majeure on citral and isoprenol based aroma ingredients, vitamin A, E and several carotenoids, with a significant sales reduction in aroma ingredients, animal and human nutrition

³ Compared with actual market growth

Nutrition & Health's global asset footprint

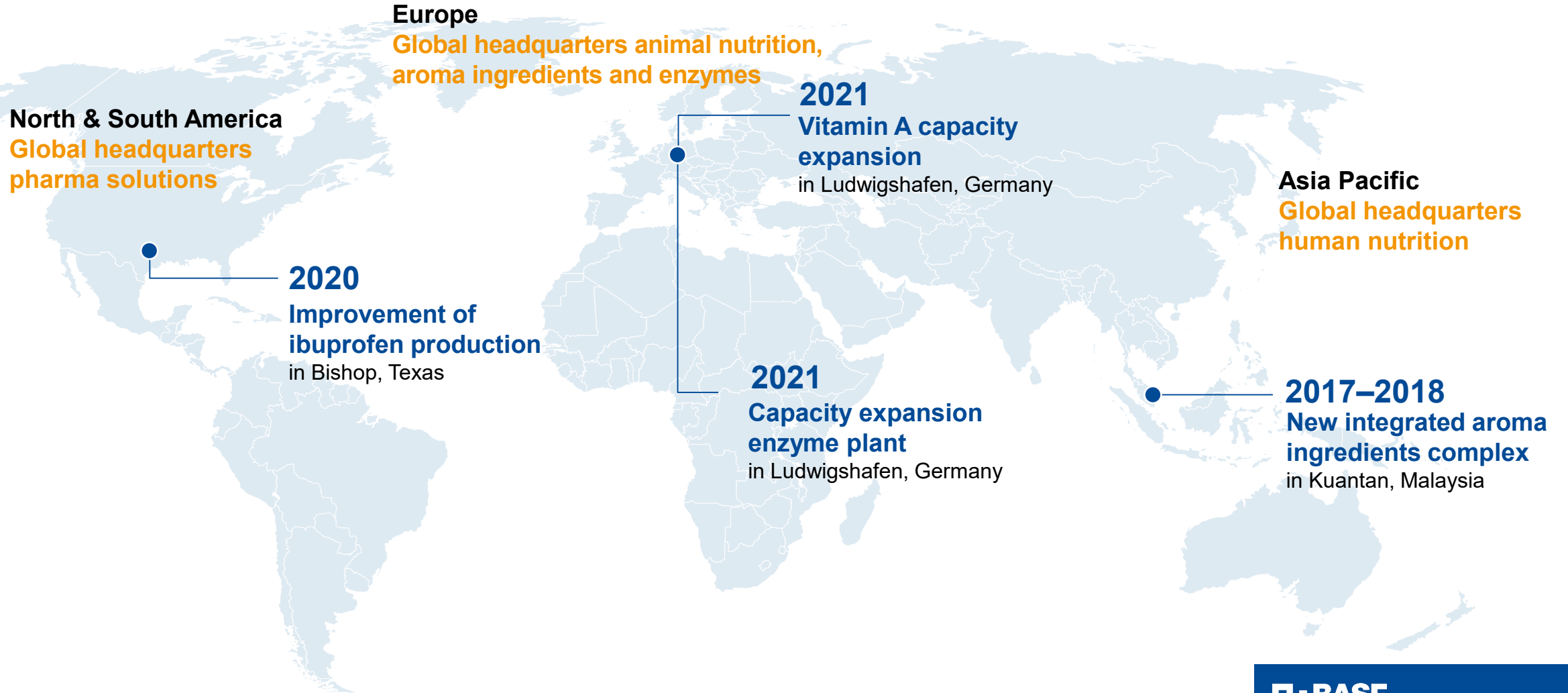


North & South America
3 Production sites
1 Research & development hub
2 Application and technical service locations

EMEA
7 Production sites
6 Research & development hubs
1 Application and technical service location

Asia Pacific
7 Production sites
2 Research & development hubs
2 Application and technical service locations

Continual investment and improvements to global assets to ensure customer and market proximity



Our ambition is to innovate sustainably, invest world-class and grow responsibly

Sustainability

We enable solutions to reduce CO₂ emissions and to fight malnutrition

Innovation

We deliver targeted innovations for our customers

Digitalization

We strengthen our position as a digital solution provider to our target industries

Asia Pacific

We meet new consumer demands in our largest growth market

Collaboration

We support our customers with differentiating solutions

We strive for an effective reduction of CO₂ emissions in cooperation with our customers and partners

Sustainable palm oil

Pharma oleochemicals certified according to RSPO¹ in 2019

- Up to 36% lower CO₂ emissions for key raw material certified palm kernel oil,³ plus positive impact on biodiversity and social aspects
- >10% reduction of Product Carbon Footprint of oleo excipients⁴

Renewable feedstock

Biomass balance product offerings save fossil resources

- Up to 20% lower CO₂ product emissions through certified⁵ renewable feedstock
- Scalable, drop-in solution and identical performance

Renewable energy²

Pilot more sustainable product offerings with renewable energy

- Up to 20% lower CO₂ emission for selected pilot products through renewable energy credits
- Certification and pilots starting 2021



¹ Roundtable on Sustainable Palm Oil; ² For selected pilot products; ³ Source: Consultant 2.0, www.LCA-net.com/club/palm-oil/; ⁴ Due to varying content of palm kernel oil in our pharma oleochemicals, the actual carbon footprint varies by product and can be calculated (incurring additional costs) on demand; ⁵ REDcert-EU and ISCC-EU

We will continue to help fight malnutrition worldwide

Call for action

- Reduce vitamin A deficiency in developing countries
- Improve eye health, immune system, child and maternal health
- Fortification of staple foods to fight nutrient deficiencies in all ages

Impact

- Active in more than 42 countries
- Served 750 million people at risk of vitamin A deficiency since 2003
- Target to serve 3 billion people at risk of vitamin A deficiency by 2050



BASF partners

ANF4W A+ gain WFP Scaling Up NUTRITION BILL & MELINDA GATES foundation



Creating value in aroma ingredients through smart acquisitions delivering targeted innovations for our customers

Fermentation-based aroma ingredients market to grow by +10% p.a.¹

>€500 million accessible market²

- Strong R&D pipeline linked to customer projects
- Established customer relationships with key flavor and fragrance players
- Fermentation scale-up expertise

Acquisition of Isobionics

Product pipeline

2019

Valencene
Nootkatone

2020

Santalol (Isobionics®)
Alpha-Bisabolene

2021

Germacrene D
Alpha-Bisabolol

2022

More to come

Strengthening our position in natural aroma ingredients

Virtual assistant ZoomLab™ strengthens our leading position as a digital solution provider for the pharma industry



3–6 months
development
time saved

>90
countries

>500
completed
projects

>800
active
users

- **ZoomLab™** helps our customers to **save time and resources** in their development pipeline without having to share proprietary information
- Targets all formulators at generic and innovator drug companies worldwide, **with focus on emerging markets**
- **Disruption** of traditional research business model in collaboration **with leading industry partners**
- Accelerated expansion of customer base, building new business opportunities with digital services



Next-generation farming enabled by recently acquired Cloudfarms presents new opportunities for livestock producers

First cloud-based, multi-sited pig production management system

Real-time data registration with a mobile app, allowing **faster decisions** and **better planning** for livestock producers

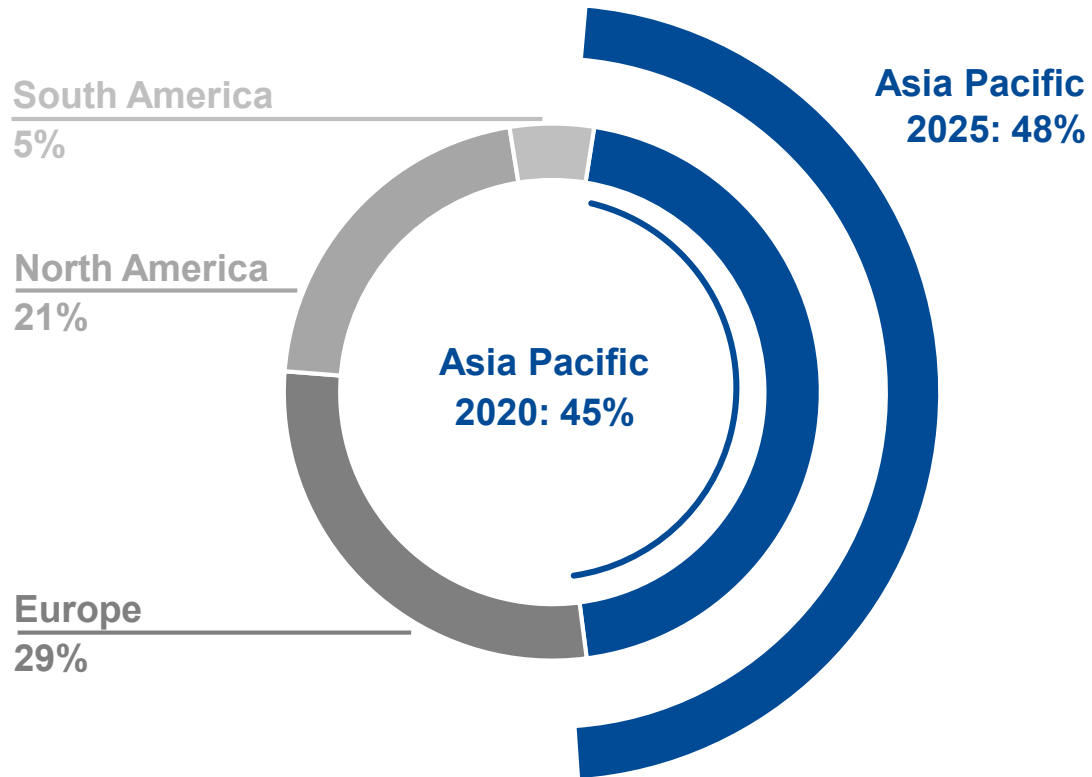
Enabling a closer connection with the value chain

Our mission: shape the digital ecosystem, improving **traceability**, **animal welfare** and **sustainability**

Asia Pacific holds strong growth opportunities for Nutrition & Health

Food and pharma market¹

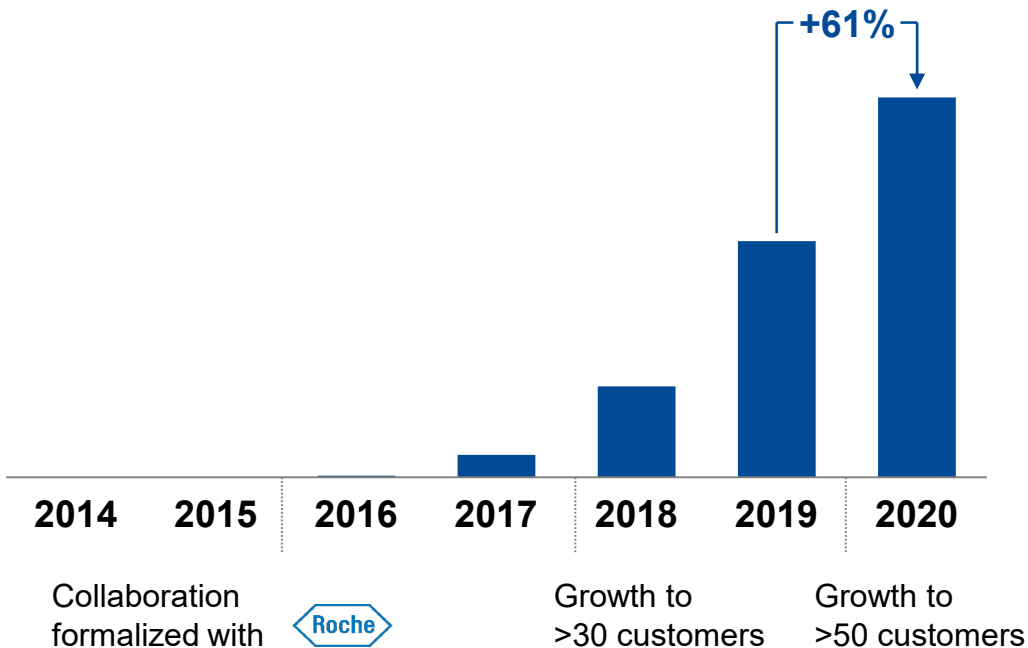
Regional split, value share 2020–2025



- Asia Pacific is the largest food and pharma market today
- **Nutrition & Health with double-digit growth** in Asia Pacific in 2019 and 2020
- High **growth potential** due to large population and increasing living standards
- Health and wellness are driven by calorie-rich diets
- Human nutrition business unit moved headquarters from Germany to Singapore in 2018
 - Strengthened market and customer understanding
 - Better access to local talent
 - Build-up of technical capacities and capabilities

We help our customers to optimize cost and differentiate themselves in the biopharma market

Success story – excipient Kolliphor® P 188 Bio¹ Sales, indexed



>€1 billion market²

Global biopharma ingredients market to grow by +10% p.a.¹

- Broad pharmaceutical formulations expertise
- Global presence to innovate for local needs
- Leading regulatory capabilities
- Leveraging Verbund integration

We are investing to follow a clear growth path in consumer markets, supported by digital and sustainable solutions

Sustainability

- Offer **Product Carbon Footprints** for portfolio
- Enable customers to avoid CO₂ emissions, for example, by using **renewable feedstock**
- Serve **3 billion people** at risk of vitamin A deficiency by 2050

Innovation

- Benefit from R&D pipeline with **>65% share of Accelerator solutions;** supported by dedicated acquisitions
- Grow through **targeted innovations** in high-growth areas such as natural aroma ingredients

Digitalization

- Strengthen our leading position as a **digital solution provider** for the pharma industry
- Shape the digital ecosystem for **livestock farming**, improving traceability, sustainability and animal welfare

Asia Pacific

- Continue on our **growth path** fueled by increasing demand for innovative solutions
- Enhance our **market and customer understanding**, as well as access to local talent

Collaboration

- Support our customers in **differentiating themselves** in end consumer markets
- Pursue partnerships to create **market-oriented solutions**
- Offer digital solutions leveraging our **industry expertise and know-how**



We create chemistry