DSM Engineering Materials

NUTRITION · HEALTH · SUSTAINABLE LIVING

DSM

DSM Engineering Materials

A global engineering materials player with a broad range of value-adding polyamides and polyesters

- DSM Engineering Materials is a global engineering materials player with a broad range of value-adding, high performance polyamides and polyesters (€ 1.2 bn in sales in 2020)
- DSM is a world leader in high-performance sustainable thermoplastics used in automotive, electrical & electronics, building & construction, medical, food packaging and consumer goods
- Our materials enable lighter, stronger and more durable products - which in turn makes people's lives safer, more convenient and healthier – and all while helping to tackle carbon emissions
- We are well positioned as one of the leaders in 'thinnovation' - the trend for creating smaller, lighter, greener and safer working parts in electronic devices

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Products

- Broad range of high-quality materials portfolio with value-adding, high performance polyamides, polyesters and polyphenylenesulphide
- Global leadership positions in many of its products, such as Stanyl®, Akulon® PA6 and Arnitel®

Markets – Strong Focus

Key industries:

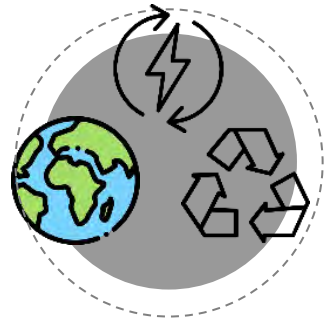
- Automotive: reduce fuel consumptions & emissions via weight / friction reduction, electrification and connectivity, safety and comfort
- Electrical & electronics: improve functionality, miniaturization and process efficiency; address e-waste issue

	Automotive	Electronics	Consumer Goods
Applications	• Powertrain • Air/turbo management • Safety components • Electronics & lighting • Interior/exterior	• Connectors • Frames & casings • Wire & cable • Power distribution • Electrical components • LED lighting	• Furniture, white goods, food packaging, and sporting equipment.

Solutions

Work in close collaboration with customers to develop breakthrough innovative solutions:

- Low emission
- Halogen-free
- Eco-efficiency
- Recycle-based
- Bio-based



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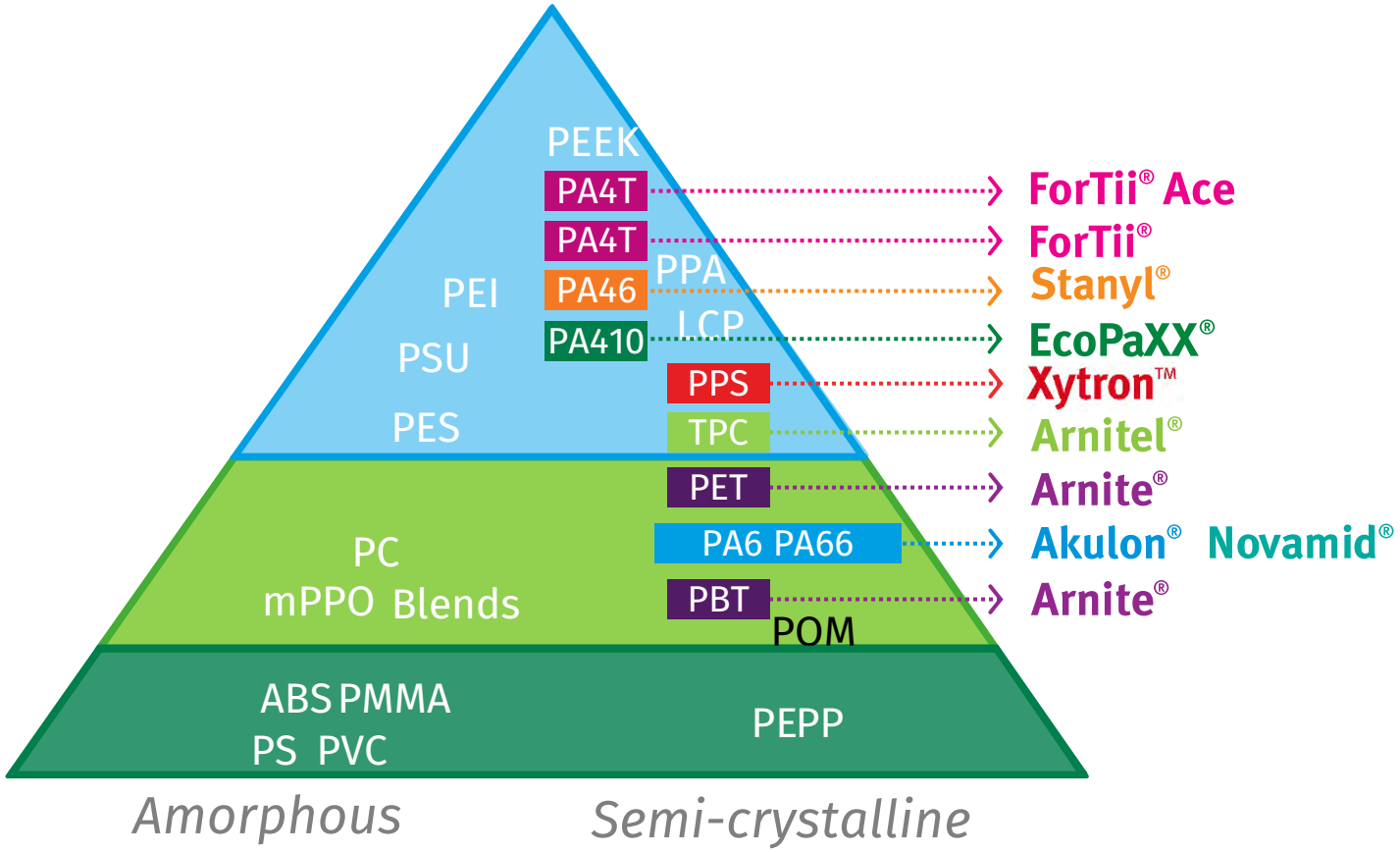
A broad Advanced Material Solutions Portfolio



DSM is a leading innovator in high-performance plastics

Global market leading positions with:

- Stanyl® PA46 in High Temperature Polyamides as PA46, PA4T, PPA
- Arnitel® TPC in Thermoplastic Elastomers
- Akulon® PA6 in Injection and Blow Molding and Flexible Food Packaging Film Extrusion

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Materials Portfolio

Product		Strengths
Stanyl®	PA46	▪ Excellent high-temperature mechanical properties ▪ Excellent wear and friction behavior ▪ Superior melt flow
ForTii®	PA4T PPA	▪ Best mechanics <160°C ▪ Highest peak temperature performance ▪ High chemical resistance
EcoPaXX®	PA410	▪ 30% lower moisture uptake than PA66 with higher mechanical performance ▪ Excellent surface finish ▪ 72% bio-based
Xytron™	PPS	▪ Dimensional stability ▪ Heat aging performance up to 240C ▪ Extreme Chemical resistance

Product		Strengths
Arnitel®	TPC	▪ Range of hardness varying from 85 shore A up to 72 shore D. ▪ High temperature resistance within the TPE family, up to 170C.
Arnite®	PET PBT	▪ Applicable in high precision components ▪ Good electrical properties
Akulon® Novamid®	PA6 PA66	▪ True workhorse materials with good balance between mechanical properties and toughness ▪ Easy processability

DSM Engineering Materials - Applications

Automotive

Our portfolio of tough yet lightweight materials are driving manufacturers to produce automotive components that are extremely light, reduce engine friction, and can operate in extreme environments – particularly at very high temperatures

Building & construction

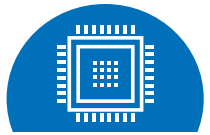
Our broad portfolio of materials cover a broad range of applications, from water management systems to roofing membranes to heating systems and window systems

Consumer Goods

Our portfolio of engineering materials are developed with the knowledge that technology and innovation go hand-in-hand. They're used across a broad range of consumer goods, including appliances, furniture, white goods, flexible food packaging, and sporting equipment

Electrical Applications

Developing electrical components and products that are compliant with the regulation, are kind to the planet and deliver on all the major trends – from smart electricals to quest for safe ingredients – and all while managing costs as efficiently as possible



Electronics

Designers and engineers at the world's leading electronics brands rely on our expertise and materials to develop next-generation devices. They challenge us to transform their design vision into reality with innovative, advanced materials for frames and enclosures, connectors, cables, wearable straps, and automotive electronics devices

DSM Engineering Materials - Applications

Industrial Equipment

Industrial equipment is driven by multitudes of mechanical parts such as gears, bearings, valves. As we continue to develop new and better engineering materials, we are helping our customers develop mechanical parts that are higher quality, safer, more sustainable, and more cost-efficient

Medical

Our broad portfolio of materials enables manufacturers of medical devices, fabrics and packaging to design for the future, developing new, innovative options that perform better than what was available before

Renewable Energy

Our materials meet the high demands needed to set new standards in design, comfort and ease of use, as well as accelerating the quest to drastically cut energy use

Transportation Industry

Transportation by truck, train and airplane is essential to running the world. Improving transportation by making it smarter, safer, lighter, and greener is a key focus for the industry and governing bodies. Our high-performance plastics, coupled with the knowledge and resources behind them, are helping manufacturers change the way they think about application design

DSM Engineering Materials

Value chain driven by application development at leading OEMs and system integrators

DSM high-performance plastics

Monomer | Polymer | Compound | Convertor | System Supplier | OEM | End User

DSM Science, Expertise & Support

Design | Measure Performance | Production Support | Compliance

- Review application requirements
- Analyze datasets
- CAE support

- Temperature
- Mechanical
- Chemical resistance
- UL and other global safety standards

- Quality control
- Identify production efficiencies

- Documentation
- Data sheets
- Regulatory affairs statements
- Life cycle analysis

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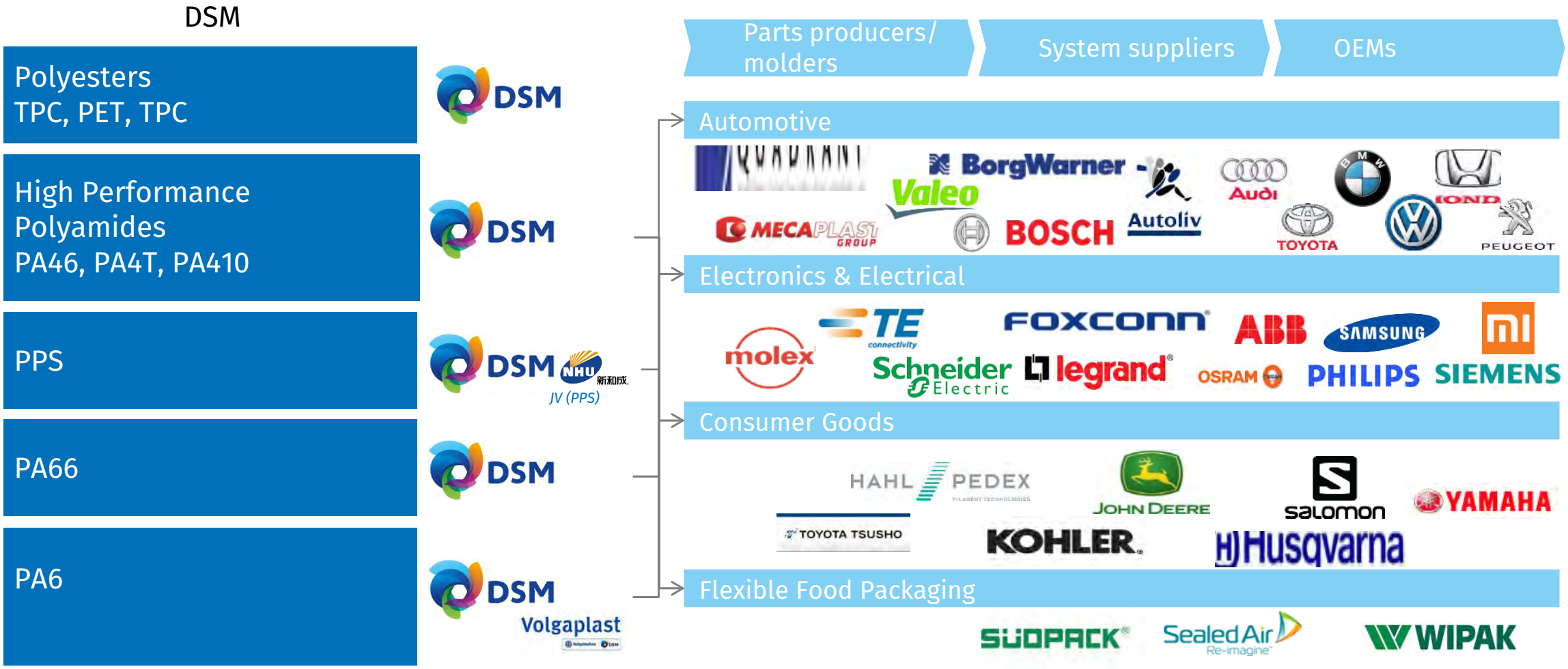
Value chain: Developing applications further down the value chain



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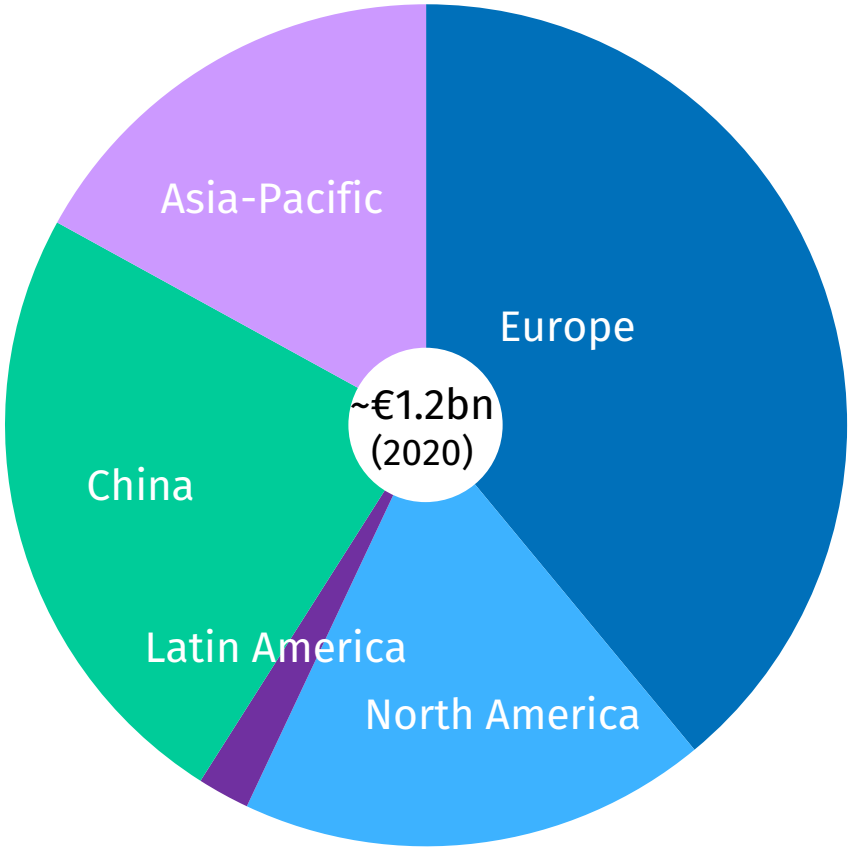
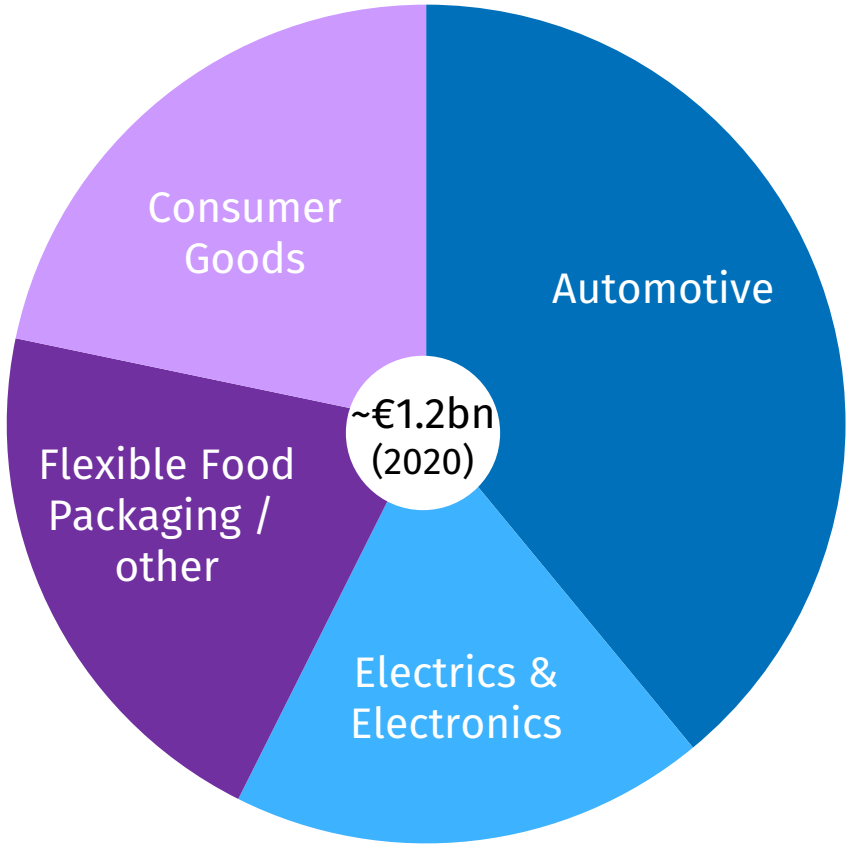
Sales by region and by end-market

Sales by region (%)

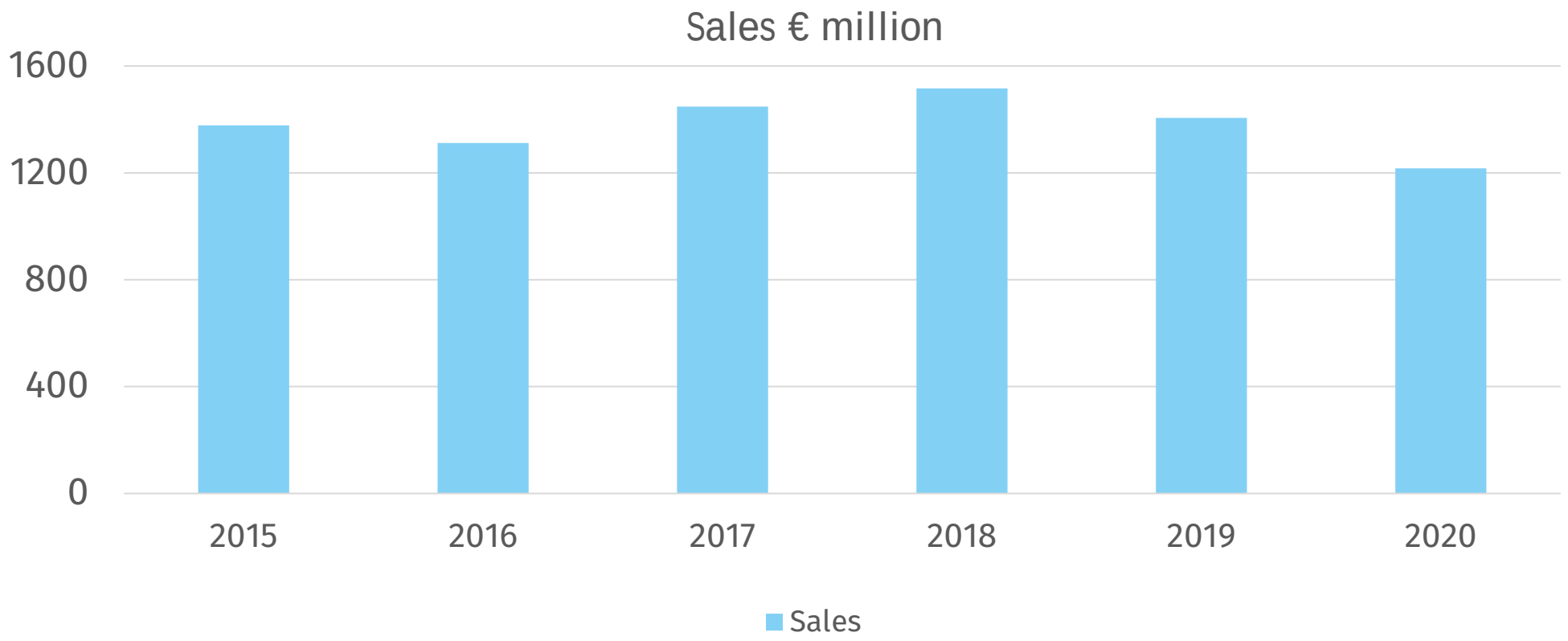


Sales by end-market (%)



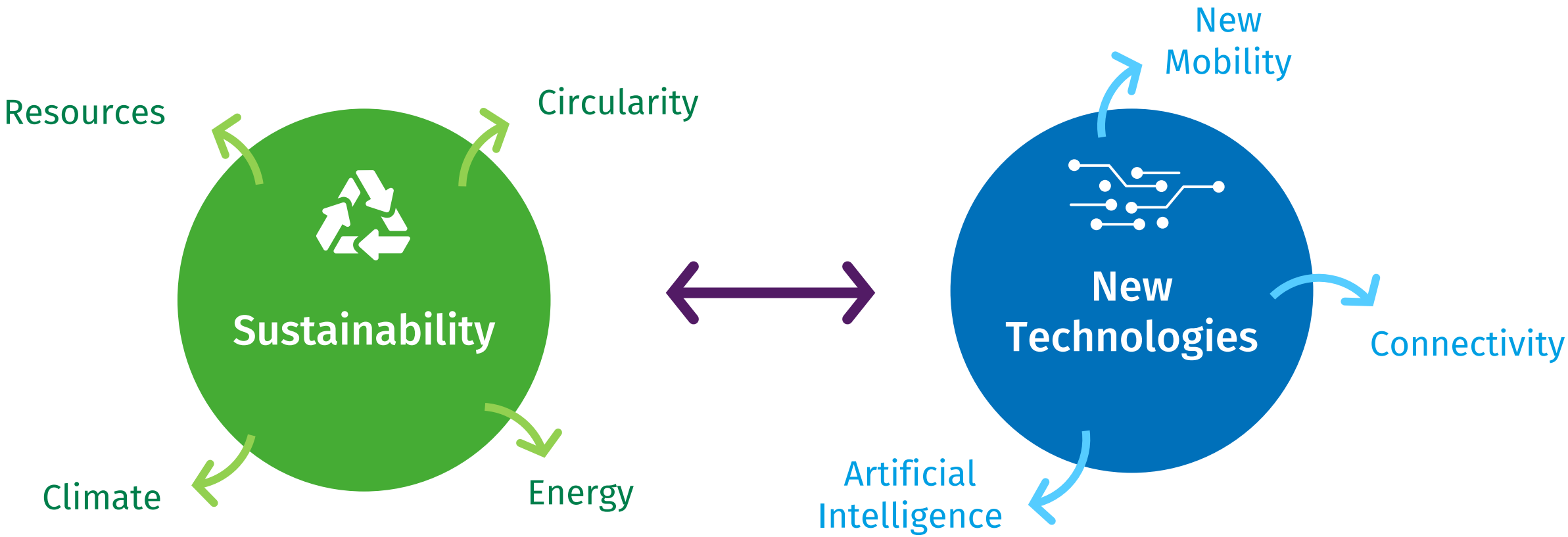
DSM Engineering Materials: €1.2bn in sales in 2020

Sales overview



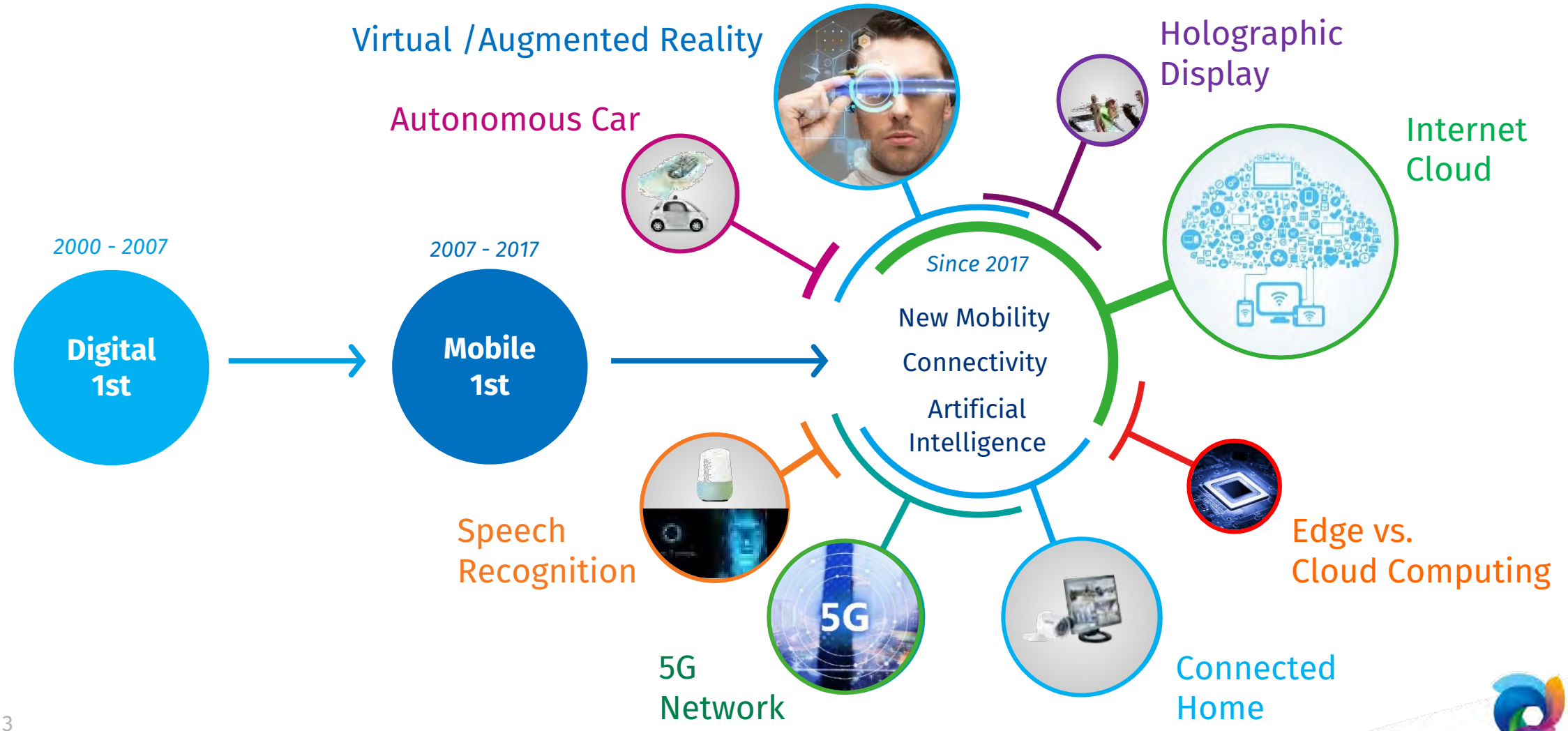
Two Mega Trends are re-shaping our industry

Sustainability and New Technology



Industry Mega Trend: New Technology

Rapid shift to New Mobility, Connectivity & Artificial Intelligence ….



Industry Mega Trend: New Technology

…. Technology shift asks for new and innovative high-performance plastics

Internal Combustion Engine (ICE) Optimization & Lightweighting of cars

Electrification

Connectivity & Safety Advanced Driver-Assistance Systems (ADAS) & Autonomous

Shared Mobility

→

- Increasing demand for highly functionalized high-performance materials
  - With extreme high mechanical and structural properties at elevated temperatures
  - With increased performance in the fields of EMI shielding, e-friendly stabilization, High Voltage compatibility
- Demand for new applications including radically new designs (thinnovation, miniaturization, simplification)

→

DSM Engineering Materials supports with:

high-performance plastics for automotive and for E&E components as Connectors, Sensors, High Voltage Power Distribution

Strong application and technology support for OEMs and Tiers

Application-specific CAE simulations for mold flow, mechanics, thermal and EMI shielding characteristics

DSM Engineering Materials is ideally positioned for growth

Broad portfolio of high-performance plastics

- Broad range and know-how of high-performance polyamides and polyesters offers solutions for many challenges driving substitution growth
- Broad range differentiator to service increasingly demanding customers

Strong innovation/ R&D capabilities

- Close cooperation with customers to develop breakthrough innovative solutions
- Continuous investments in new technologies
  - Multiple platform launches based on ForTii® technology

Global reach and leadership

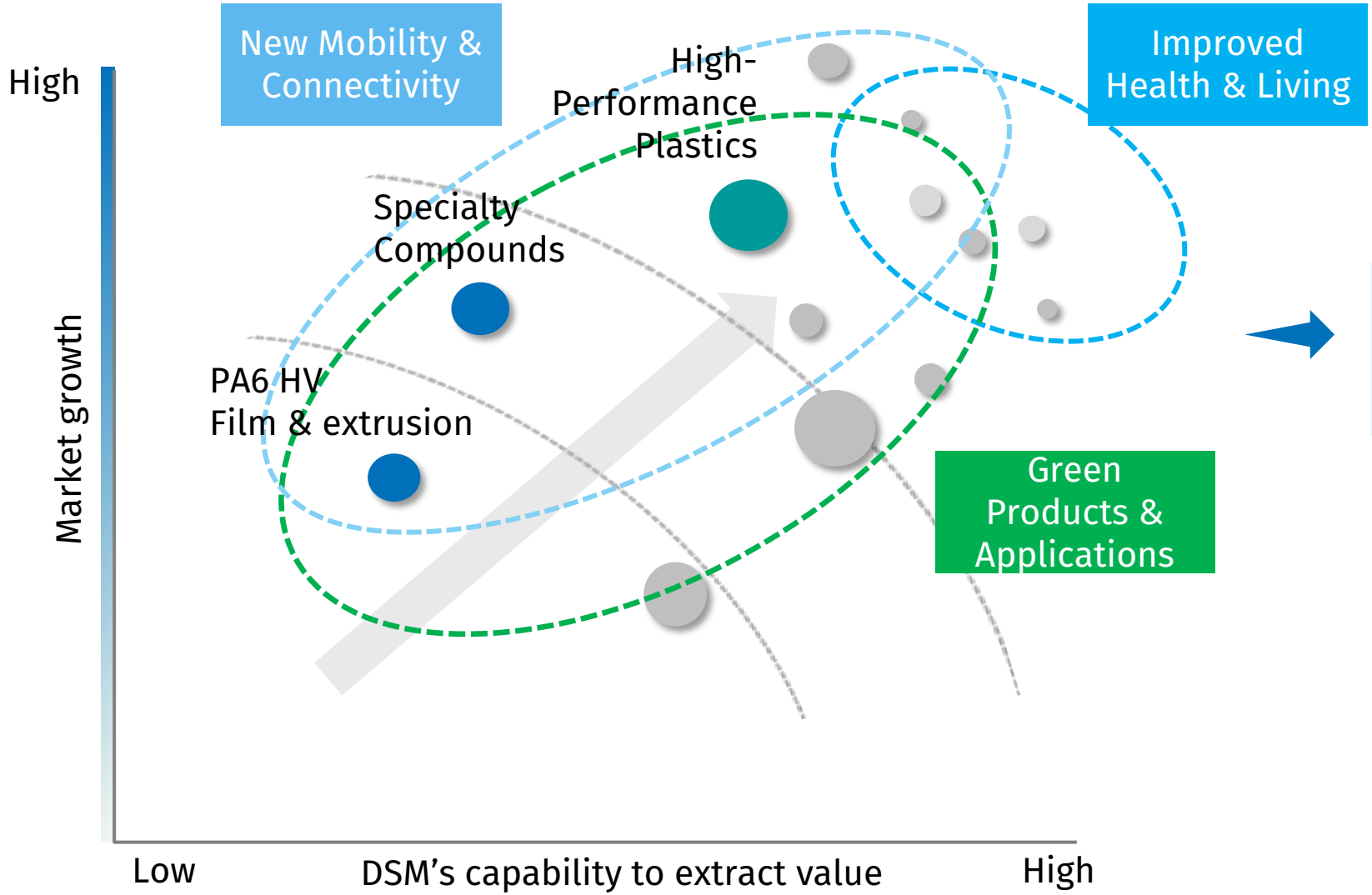
- Global network provides application development capabilities and service for global OEM customers whenever, wherever
  - Increased footprint in emerging economies
  - Very strong presence in China

Specified application development

- 75% of business is highly specified by leading global brands (vs. 50% in 2015)
  - Customers as well as resilient income locked in

DSM Engineering Materials - Strategy

Focus on higher-growth, higher-margin applications



- Maintain above market growth
- Drive higher margin businesses

DSM Engineering Materials - Strategy

Continue application-driven growth path while continuously improving operational efficiency

Increased growth

- Focus on capturing growth from macro themes & UN SDGs, well aligned with DSM's strengths in Sustainable Living
- Accelerate growth in High Performance Plastics
- Grow position in PA6 Compounds
- Maximize value in PA6 Extrusion

Enhanced by:

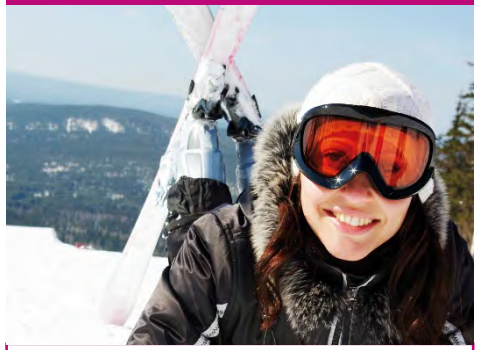
- Commercialization of innovation
- Customer centricity and agility programs
- Continuous operating efficiency improvements

High-Performance Plastics	Focus on highly specified application development for global customers in 'winning' segments in new mobility & connectivity
PA6 Compounds	Continue to grow by leveraging global presence and footprint
PA6 Polymers	Fully utilize assets and supply compound needs

DSM Engineering Materials - On the road to zero emissions

Strong commitment toward Climate & Energy, Resources & Circularity

Sustainable solutions



Enabling our customers to design and manufacture sustainable solutions

Cleaner and safer cars

Safer ingredients in Electronics

Food waste reduction

Bio-based products

Castor-oil based

EcoPaXX®

ForTii® Eco

Rapeseed-oil Based

Arnitel® Eco

Recycled-based products

Fishing nets: recycled-resources based

Akulon® RePurposed

Safer ingredients in our products

Halogen-free flame-retardant grades in PA, PBT, HPM
PVC or PFC-free alternatives

Arnitel XG®

Arnitel VT®

Renewable electricity in our operations

63% purchased renewable electricity

Pune (India) operations powered by own solar field

Geleen (Netherlands) operations by wind energy

DSM Engineering Materials - On the road to zero emissions

Strong commitment toward Climate & Energy, Resources & Circularity

DSM

DSM Engineering Materials

Global footprint to support customers across the globe

DSM Engineering Materials

- Production locations
- R&D locations
- Offices

Safe harbor statement

- This factbook may contain forward-looking statements with respect to DSM's future (financial) performance and position. Such statements are based on current expectations, estimates and projections of DSM and information currently available to the company. DSM cautions readers that such statements involve certain risks and uncertainties that are difficult to predict and therefore it should be understood that many factors can cause actual performance and position to differ materially from these statements. DSM has no obligation to update the statements contained in this factbook, unless required by law

- A more comprehensive discussion of the risk factors affecting DSM's business can be found in the company's latest Annual Report, which can be found on the company's corporate website, www.dsm.com

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