

Data, Digitalization, Decarbonization – Do Disruptions Damage Durability?

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| VP Sustainability & Intelligence

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Data, Digitalization, Decarbonization

– Do Disruptions Damage Durability

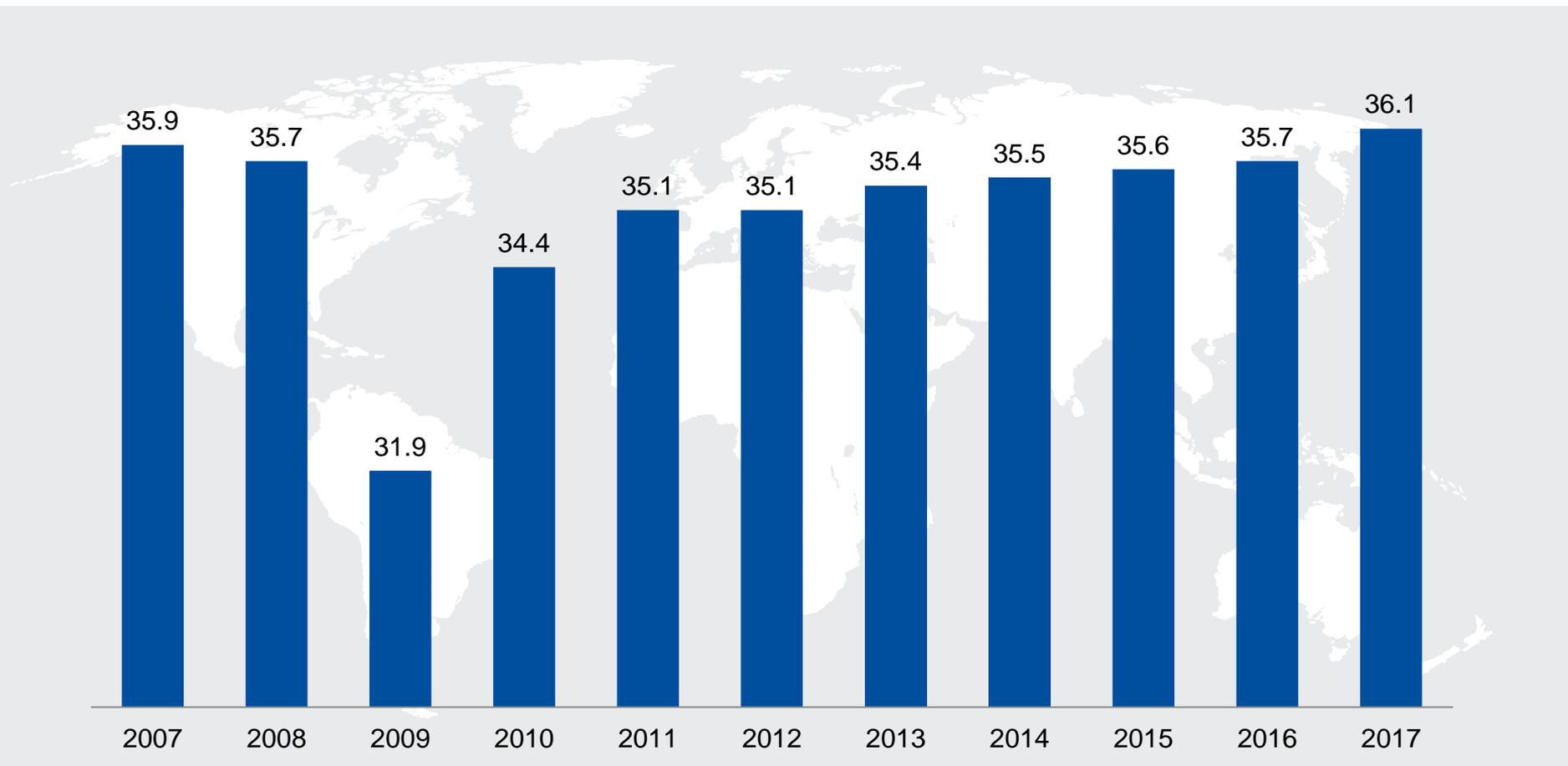
01 | **▪Data**

02 | **▪Digitalization**

03 | **▪Decarbonization**

Data

Development Global Lubricants Demand*

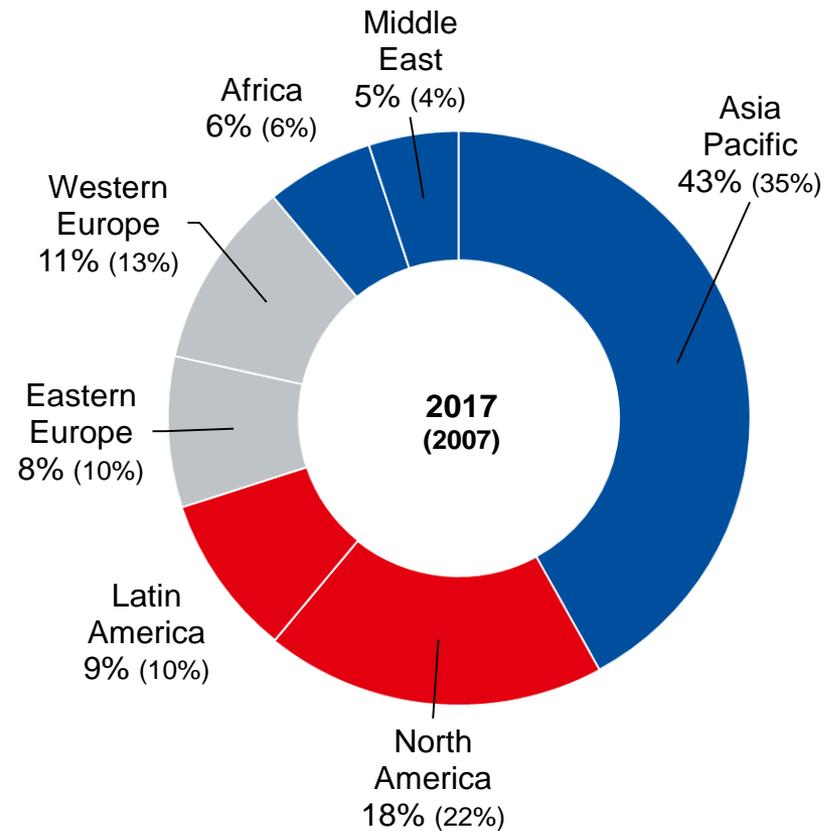
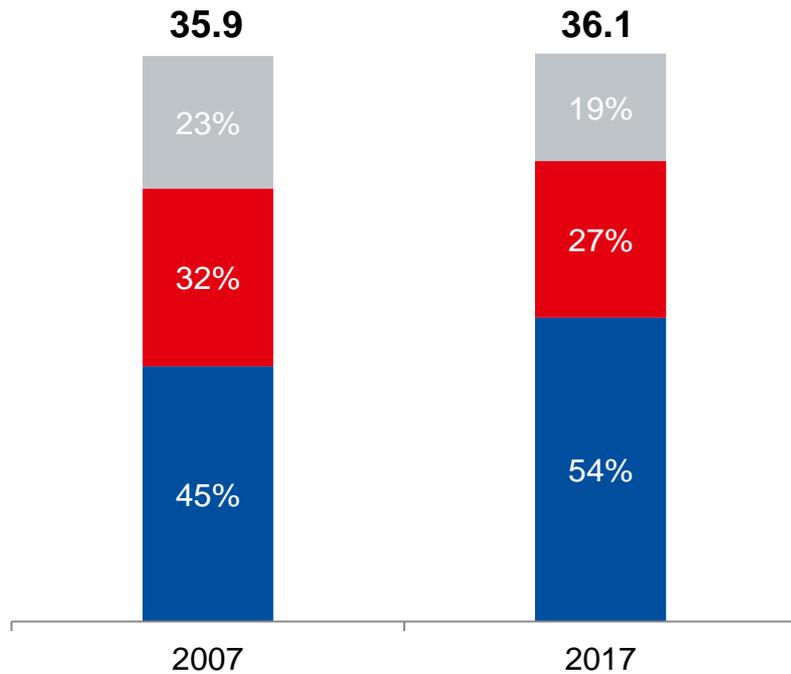


Data

Development Regional Lubricants Breakdown

Demand (Million Tons)*

■ Asia-Pacific & MEA ■ Americas ■ Europe



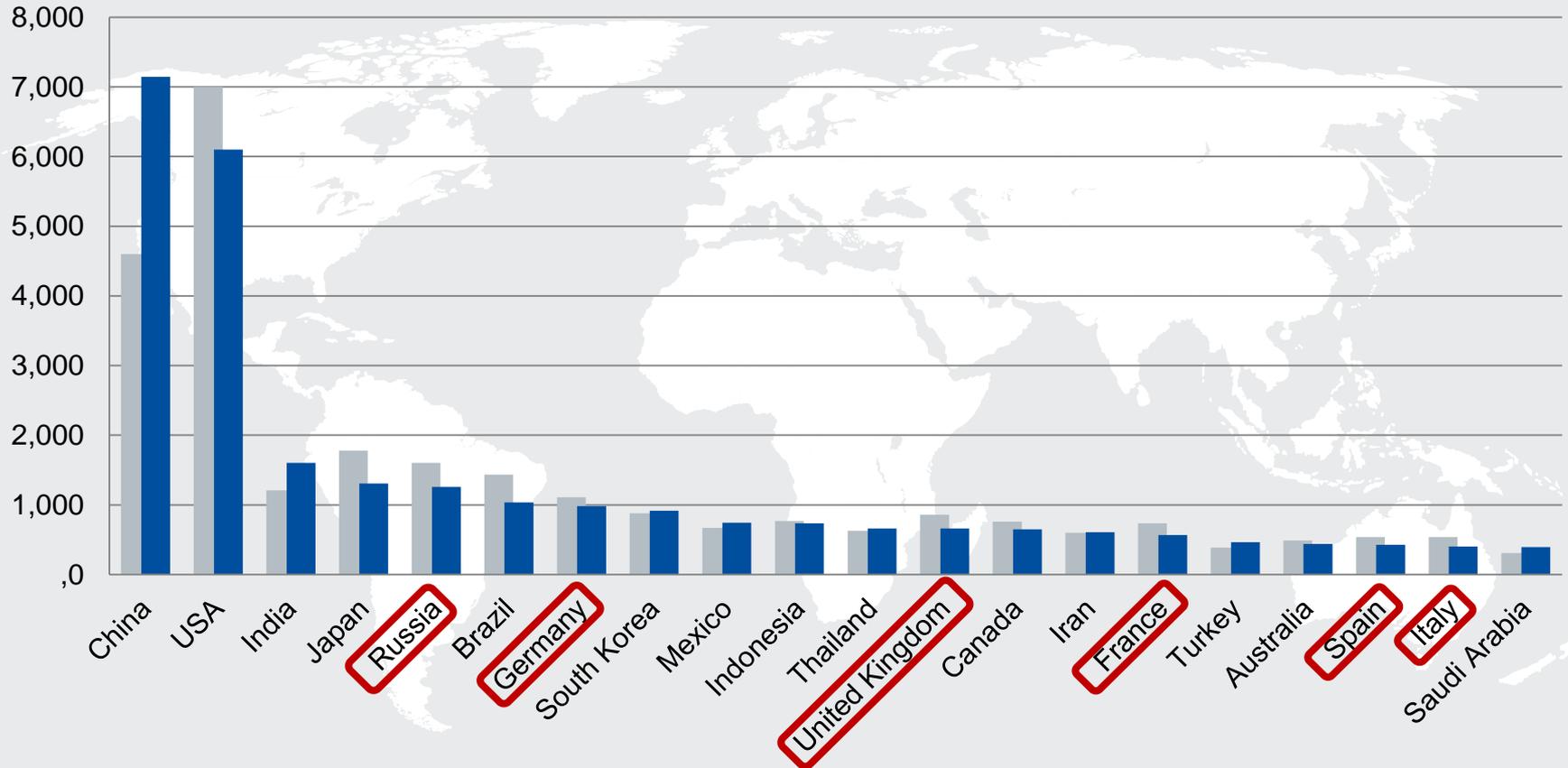
Data

Development Regional Lubricants Demand

	2017 : 2016 *Variance (%)
North America	0.0
Latin America	-2.0
Western Europe	1.5
Eastern Europe	0.5
Middle East	-0.5
Africa	-3.0
Asia-Pacific	3.0
World	1.0

Data

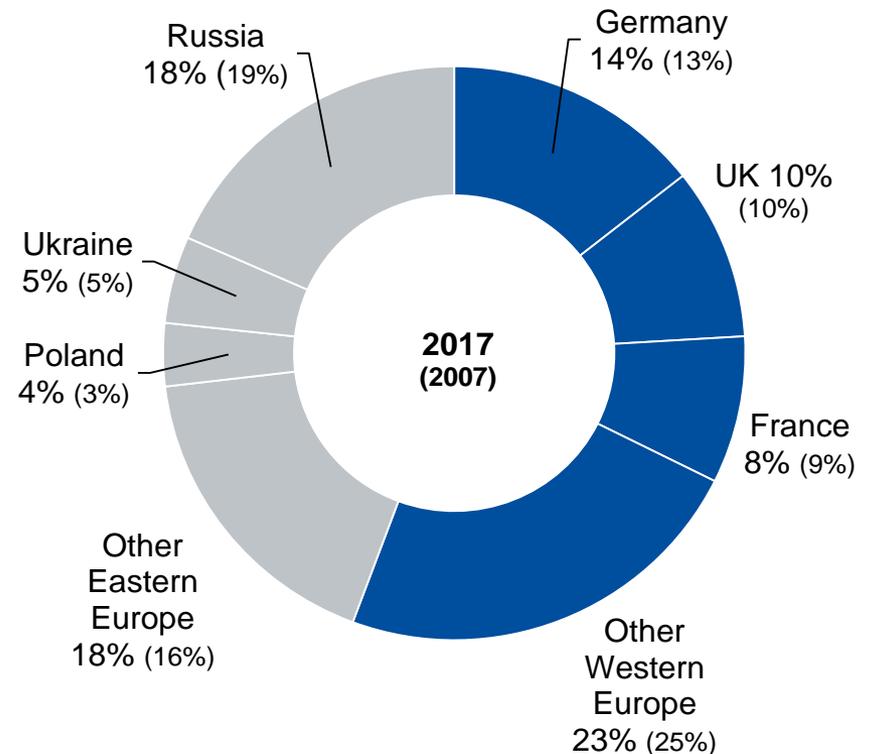
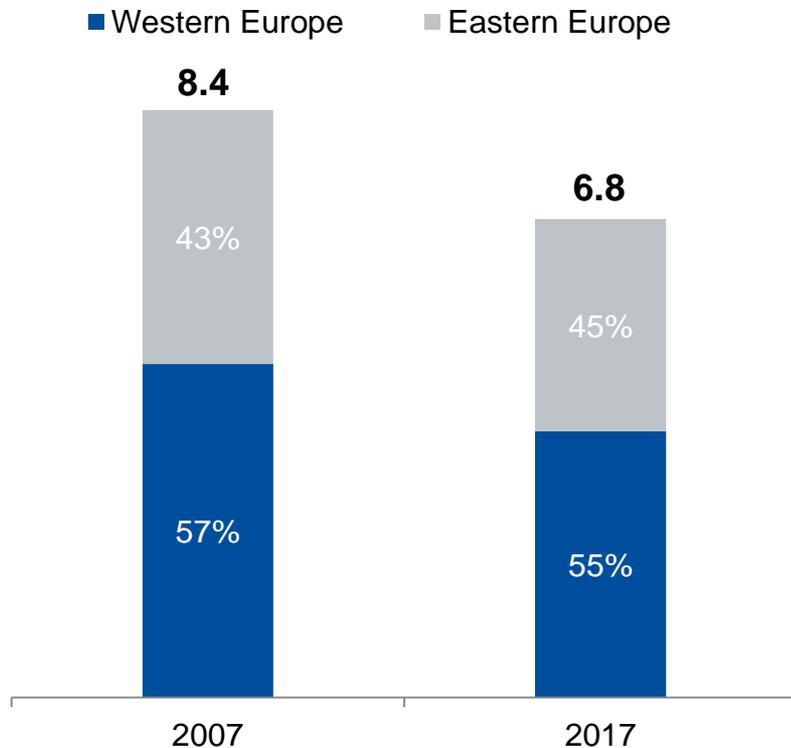
Ranking Top 20 Lubricant Countries*



Data

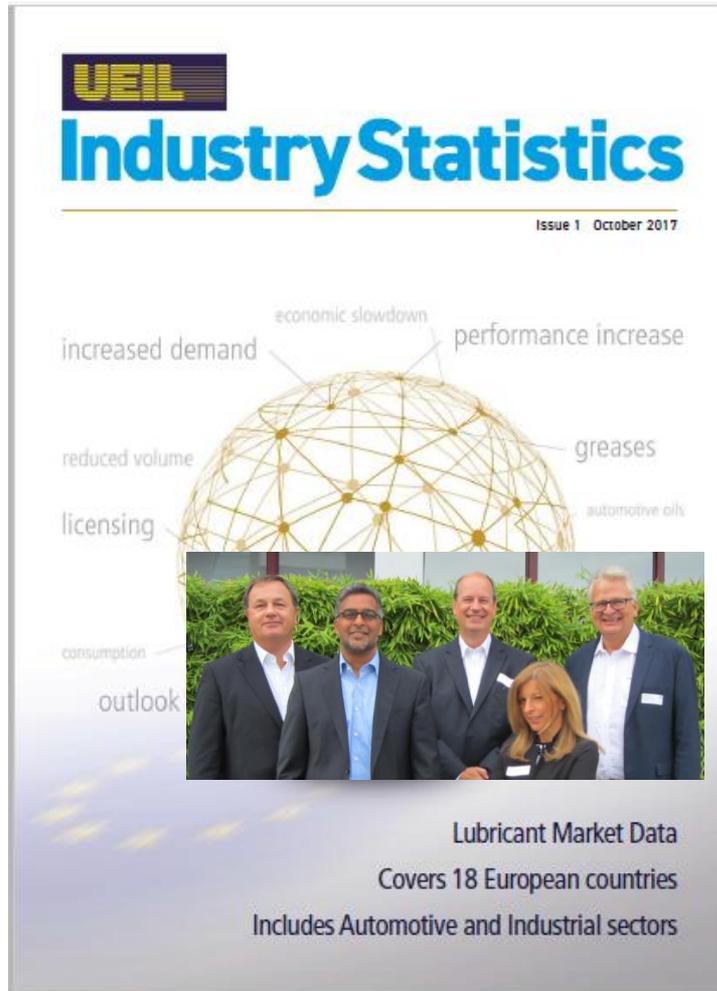
Development European Lubricants Breakdown

Demand (Million Tons)*



Data

UEIL Industry Statistics Committee



UEIL
Industry Statistics

Issue 1 October 2017

economic slowdown
performance increase
increased demand
reduced volume
licensing
consumption
outlook
greases
automotive oils

Lubricant Market Data
Covers 18 European countries
Includes Automotive and Industrial sectors

Country Data Collection Categories

The coloured categories indicate the allocation of those categories to the summaries on the country pages. Blue is Automotive; green is Industrial/Other.

Some countries do not report exactly in line with these categorisations. Where necessary EuropaLub has made editorial judgements.

1) ENGINE OILS	
1 A	Gasoline or diesel engine oils for passenger cars
1 A1	First fill gasoline or diesel engine oils for passenger cars
1 B	Diesel engine oils for commercial and industrial vehicles
1 B1	First fill diesel engine oils for commercial and industrial vehicles
1 B2	Multipurpose diesel oils used in farm tractors and construction
1 C	Two-stroke engine oils
1 D	Other engine oils (including aviation engine oils)
2) GEAR OILS AND TRANSMISSIONS	
2 A	Automatic transmission fluids (ATF)
2 B	Automotive gear oils
2 C	Industrial gear oils
2 D	Hydraulic and transmission oils (including fire-resistant fluids)
2 D1	Shock absorber oils
3) GREASES	
3 A1	Automotive greases
3 A2	Industrial greases
4) METALWORKING OILS	
4 A	Quenching oils
4 B	Neat oils for metalworking
4 C	Soluble oils for metalworking
4 D	Rust prevention products
5) HIGHLY REFINED OILS	
5 A	Turbine oils (excluding aviation applications)
5 B	Electrical oils used in transformers (including cable oils)
6) OTHER OILS	
6 A	Compressor oils
6 B	General machine lubricants
6 C	Other industrial oils for non-lubricating purposes
7) PROCESS OILS	
7 A	Process oils (excluding aromatic extracts)
7 A1	Technical white oils
7 A2	Medicinal white oils

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Digitalization

Digit(al)ization

Digitization

- Automation of existing manual or paper-based processes ...
- ... enabled by the change of information ...
- ... from an analogous to a digital format

Digitalization

- Use of digitized technologies and digitized data for
 - generating revenue
 - improving, replacing and/or transforming processes
 - creating an environment to make digital business practices more effective

Digitalization

Digit(al)ization

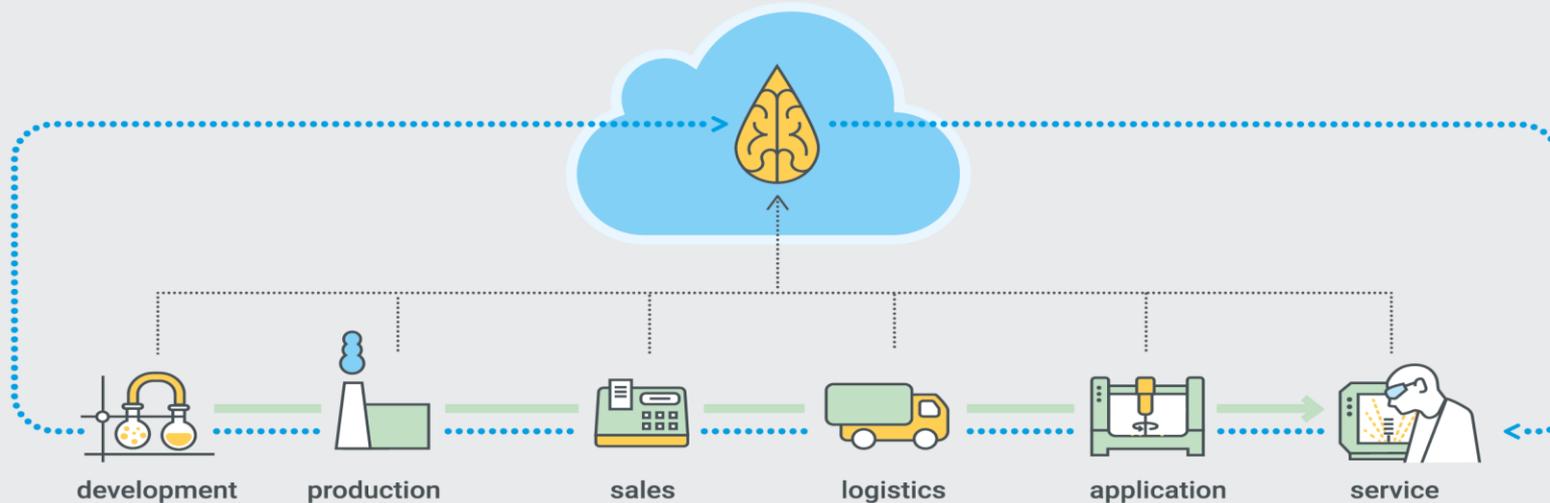


- Automation of existing manual or paper-based processes ...
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Digitalization

Lubricant Value Chain

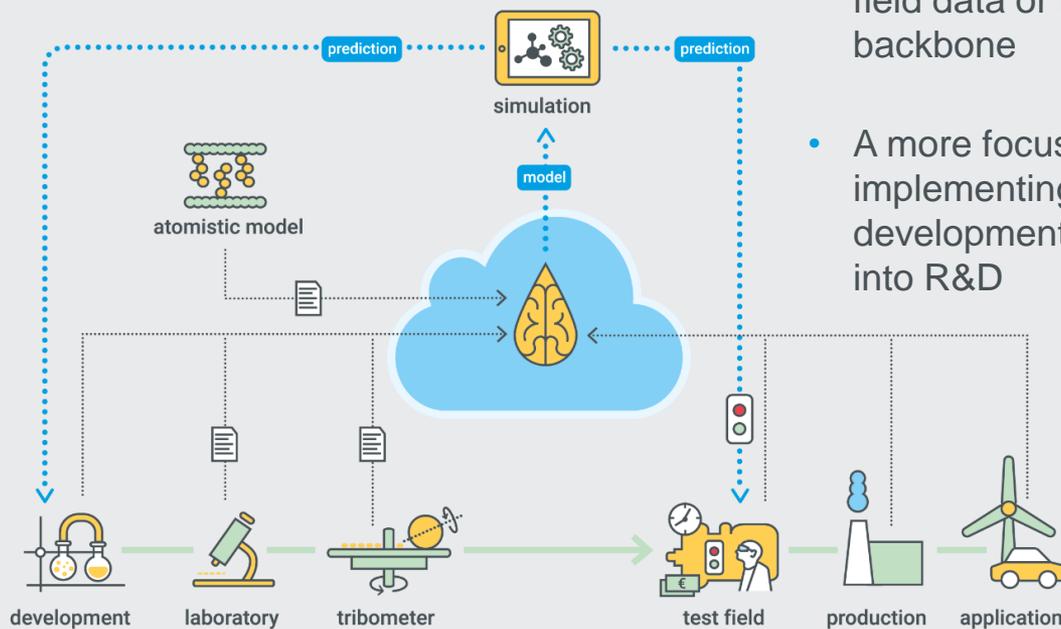


- Data collection throughout the whole value-chain will be widened compared to today's standards
- Direct and automated usage of information generated at a later step of the process will affect all steps before
- An extended exchange in between customer and lubricants company will allow for new services and therewith add extra value to business

Digitalization

Lubricant Development Tools

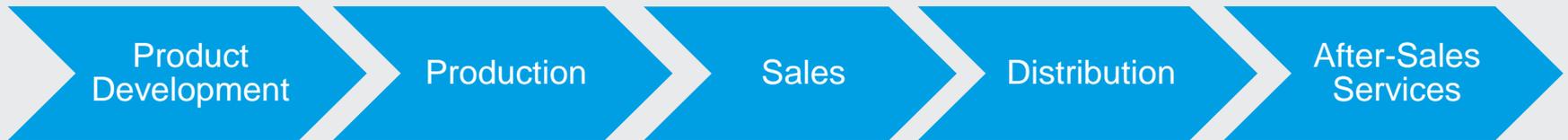
- Transform product development from being empirically-driven to using data and simulation approaches
- In doing so, application related information such as field data or test field results serve as a statistical backbone
- A more focused development will be granted by implementing the later application into product development by introducing simulation approaches into R&D



Digitalization

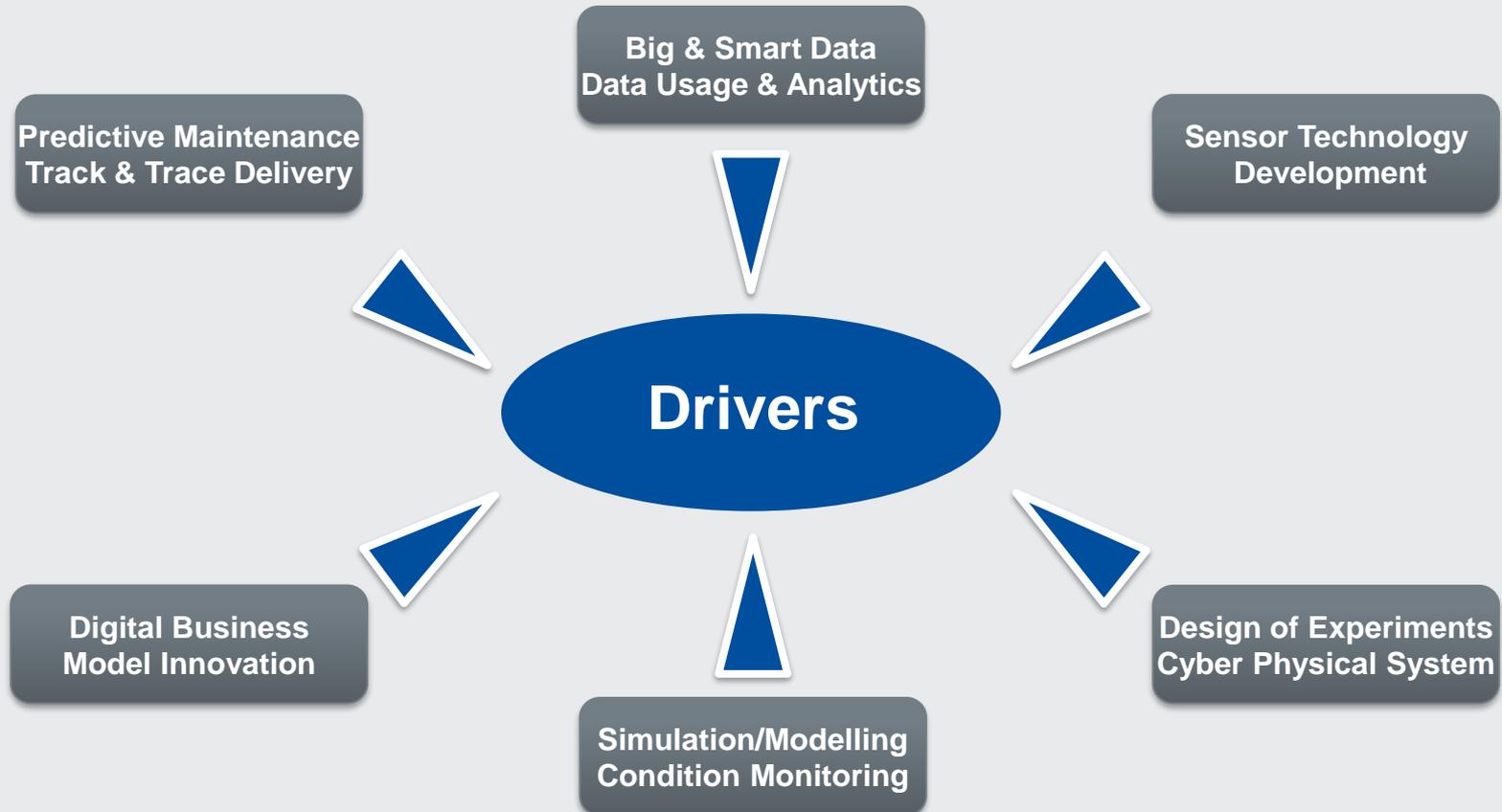
Lubricant Value Creation

- Turn exclusively empirical evidence driven product development into a digitally supported product development
- Apply simulation approaches and design of Experiments (DoE)
- Use data to predict future sales
- Introduce E-Commerce Tools
- Monitor fluids' life and incorporate this information into e.g. product development

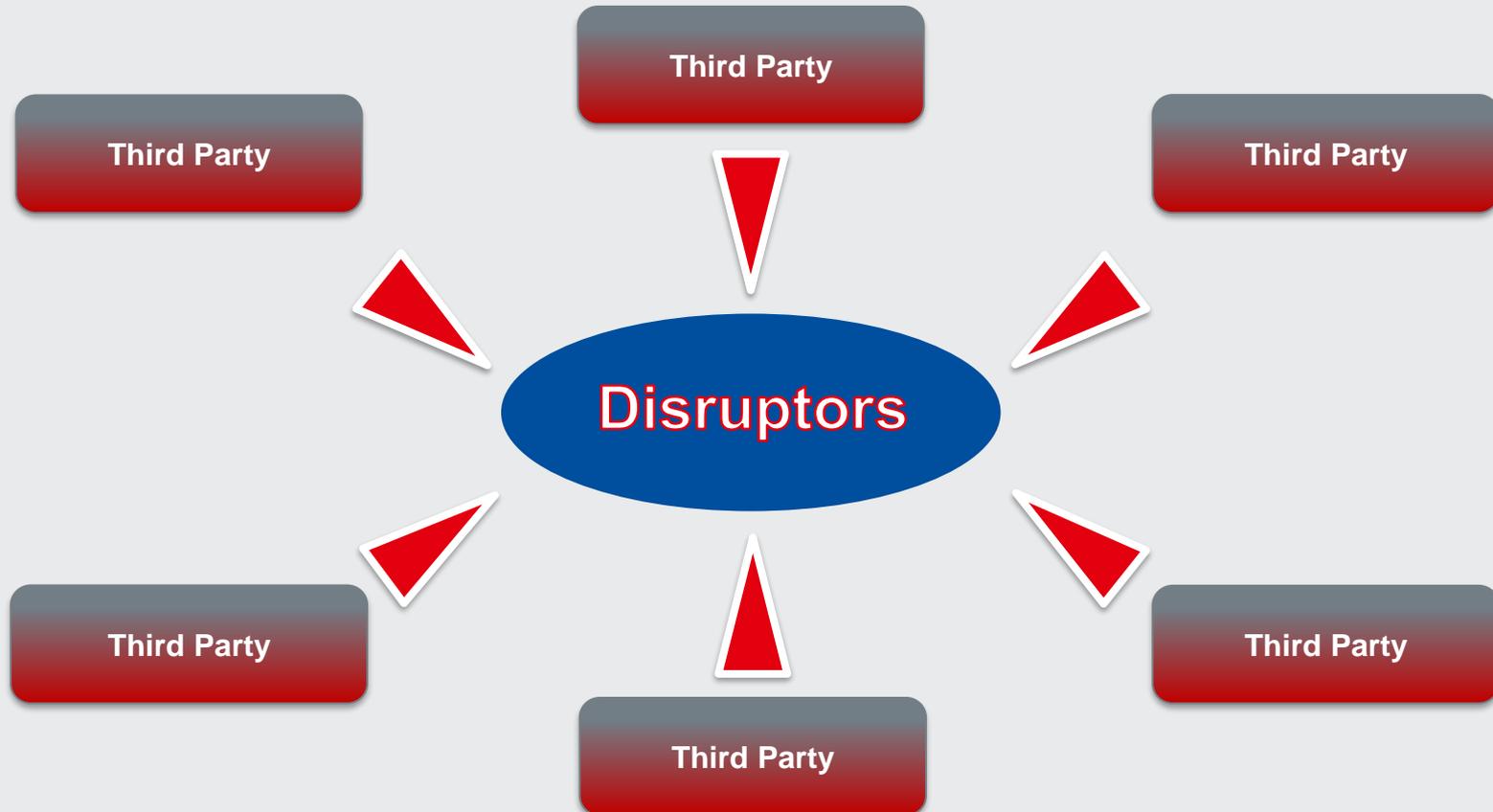


- Use data to enhance the production of lubricants
- Use simulation to optimize the location of production
- Introduce Track & Trace of Deliveries

Digitalization Drivers

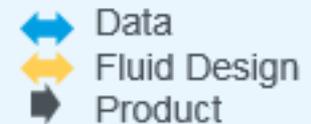
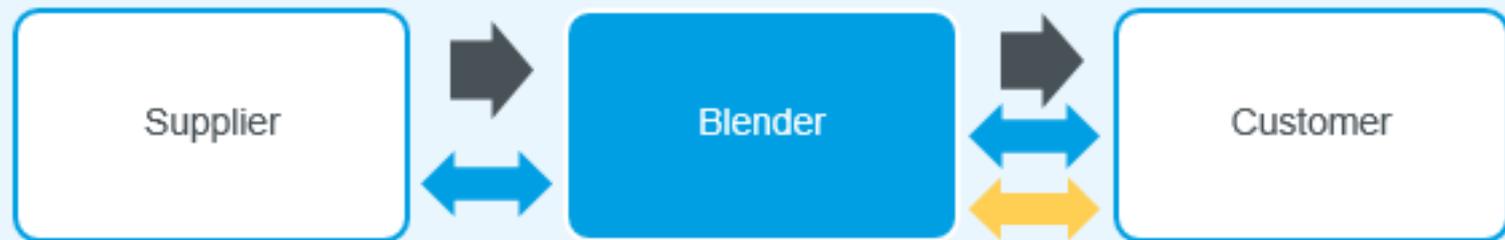


Digitalization Disruptors



Digitalization Today

our today's ecosystem...



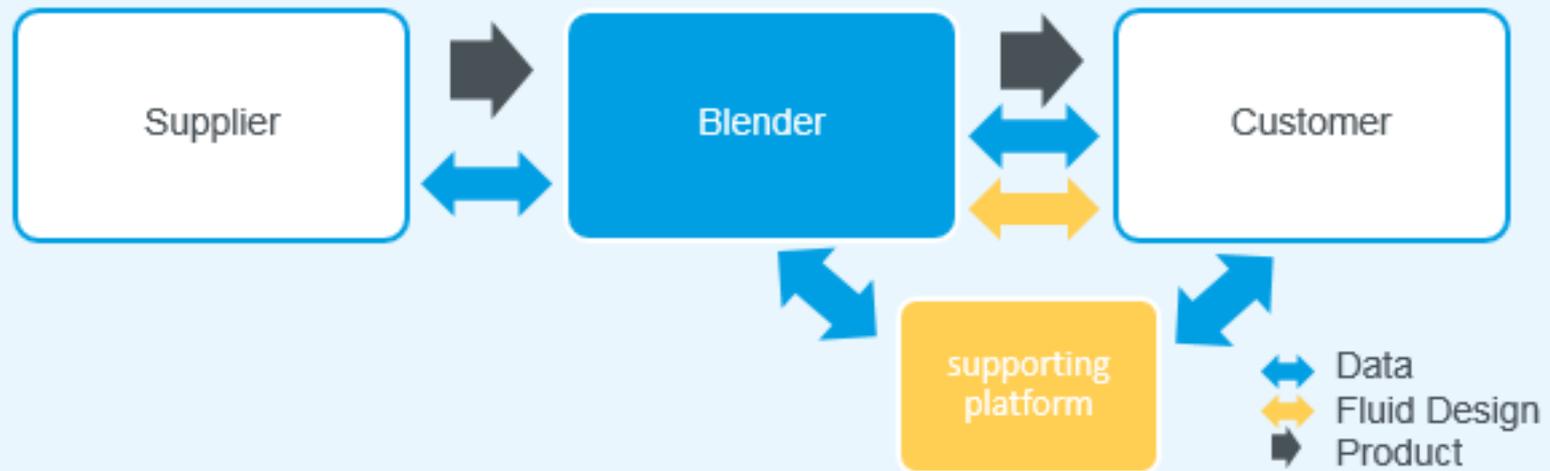
Our today's ecosystem

- We do the development
- We are the owner of the know how
- We are the **lubricants experts**

Digitalization

Tomorrow

...might get supported

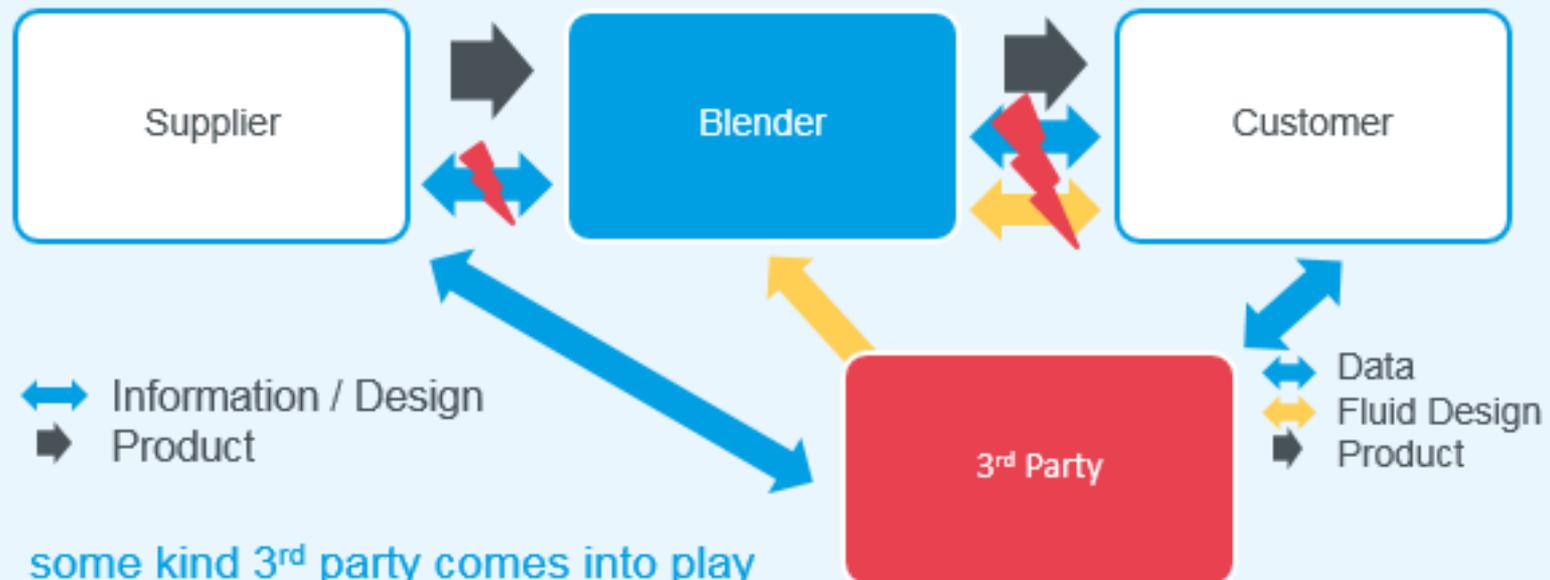


Supporting platforms

- Enhance communication with customers
- Bring a wider view
- Make Blender more visible

Digitalization Threat

...might get disrupted



some kind 3rd party comes into play

- It is not the customer any more who does the specification
- Business becomes data driven
- We are being pushed towards toll blending

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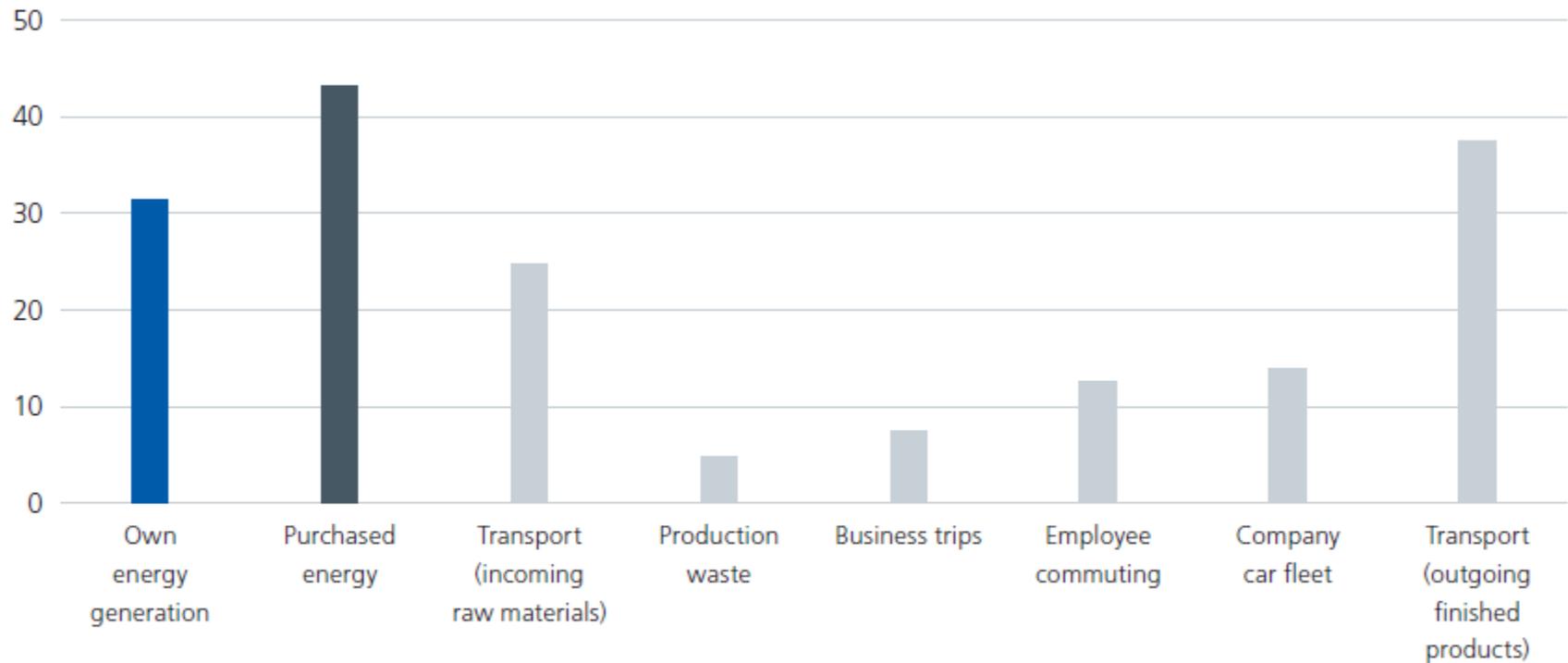
02 | •Digitalization

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Decarbonization

Corporate Carbon Footprint*

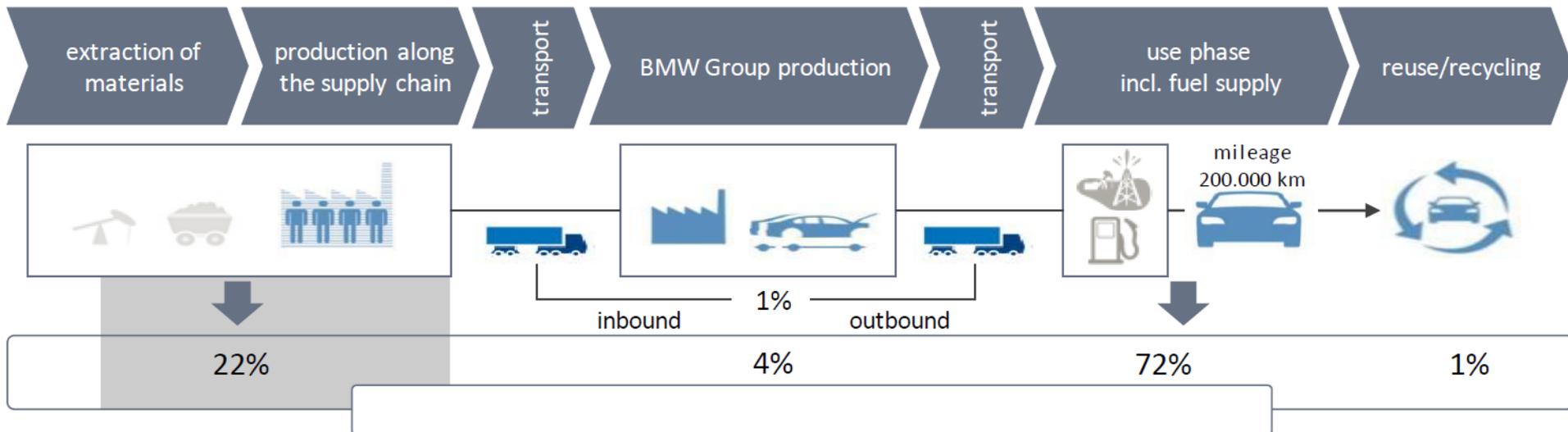
(in kilogramm CO₂e per ton produced)



- Scope 1: Direct emissions through own energy generation
- Scope 2: Indirect emissions through purchased energy
- Scope 3: Indirect emissions along the value chain

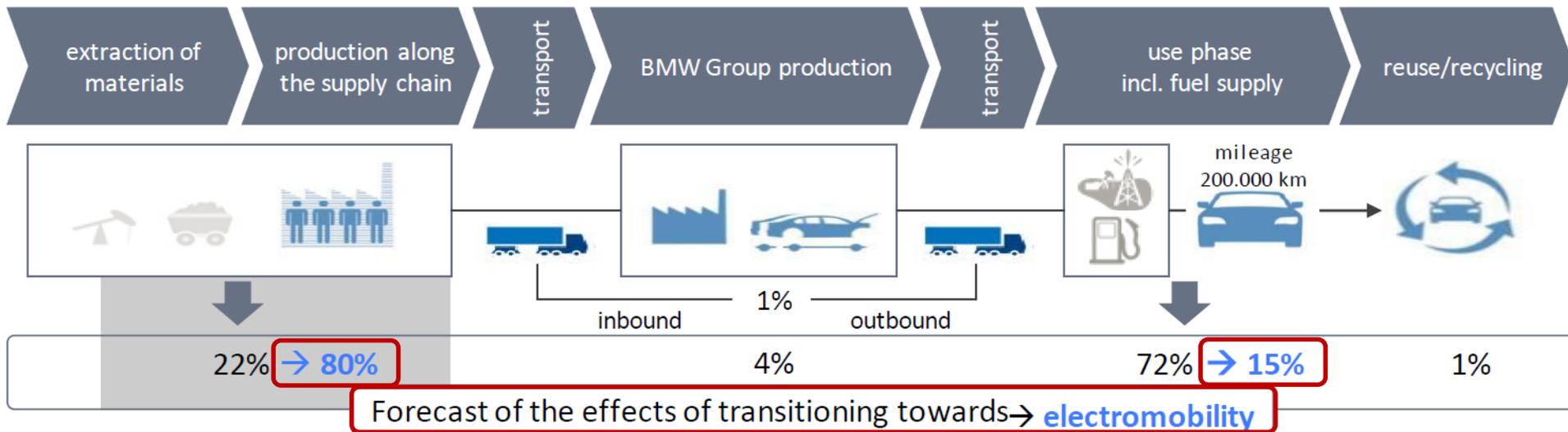
Decarbonization

CO₂-Distribution Combustion Engine



Decarbonization

CO₂-Distribution E-Mobility



Decarbonization

Lubricant Specification



The topic of sustainability is becoming increasingly important. In cooperation with suppliers and customers, FUCHS is working to quantify the term sustainability. The objective is to develop a benchmark that allows our products to be assigned to categories. From this we derive tasks for research and development. We expect the change from qualitative to quantitative assessment of sustainability to bring significant progress. Sustainability will be included in the specifications for lubricants in the future.

Decarbonization Sustainability Initiative

- In 2016, the sustainability initiative **NaSch*** was established as a working group in Germany
- **Members:** AVIA BANTLEON, FUCHS, ROWE, KLÜBER LUBRICATION, ZELLER+GMELIN, German Lube/Oil Associations VSI & UNITI
- **Objective:** Establish sustainability **standards**, **KPIs**, **benchmarks** for the lubricants industry and emphasize its value for society (image campaign)
- UEIL cooperation with NaSch* carrying sustainability forward to the level of the **European lubricants industry**

