

DATA AND FACTS AT A GLANCE

Portrait of the German chemical industry



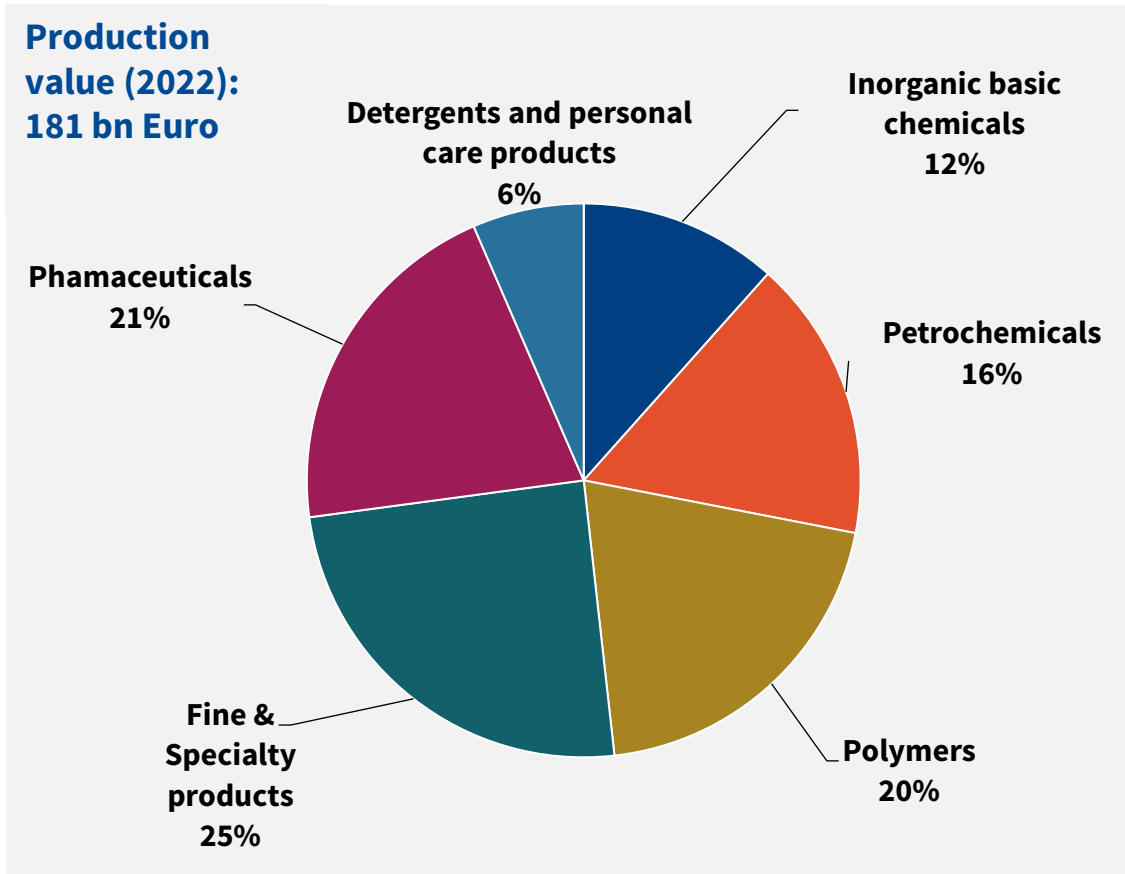
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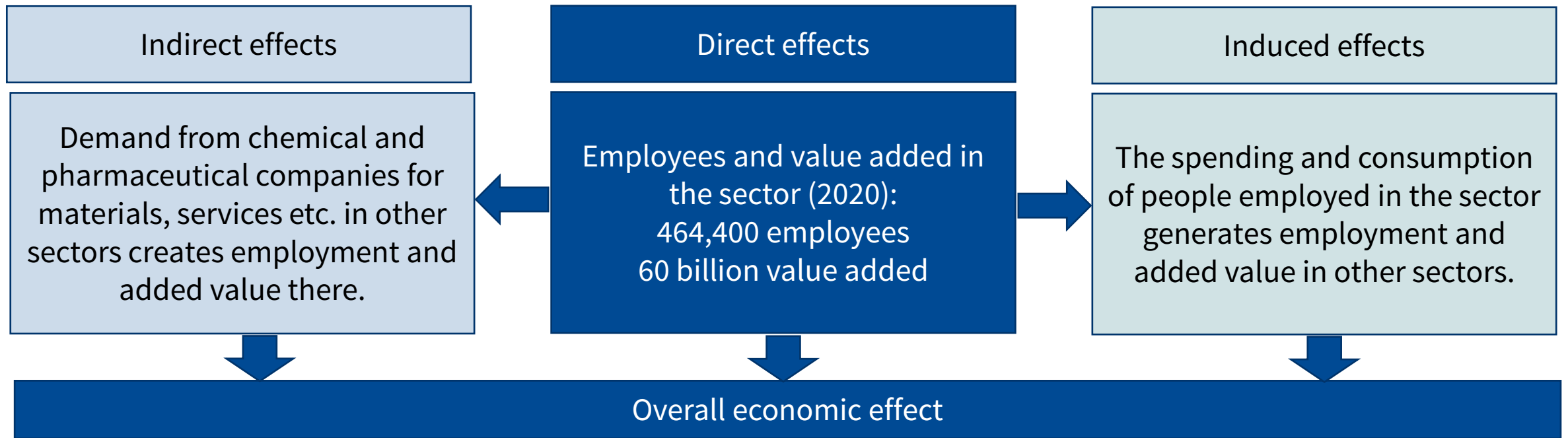
The industry at a glance - key figures 2023



Sources: Federal Statistical Office, VCI

- Wide product range
- Sales: 225 billion euros, of which over 60 % abroad
- Rank 1 in Europe, rank 3 worldwide
- Production growth over the last 5 years: -3.3 % per year
- 479,500 employees, highest figure for 25 years
- Domestic investment in property, plant and equipment: 9.4 billion euros, abroad: 12.7 billion euros
- R&D expenditure: around 15 billion euros
- Share of SMEs (extended definition): 96% of companies, 58 per cent of chemical employees (275,000 employees), 55 per cent of chemical and pharmaceutical sales

Importance of the sector for the economy as a whole

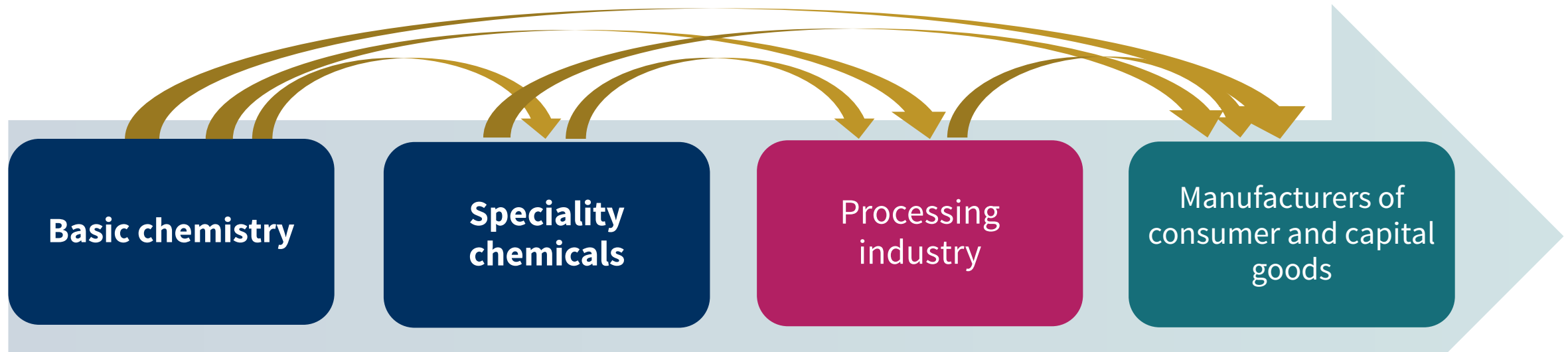


The industry directly contributes around 2 % to Germany's value added.

Every job in companies in the sector **leads to around 2 additional jobs** in the German economy. In 2020, this amounted to around 900,000 people.

Every euro of direct added value generated by companies in the sector **triggers a further 0.8 euros of additional added value** in the German economy. In 2020, this amounted to around 48 billion euros.

Chemistry is at the beginning of many value chains



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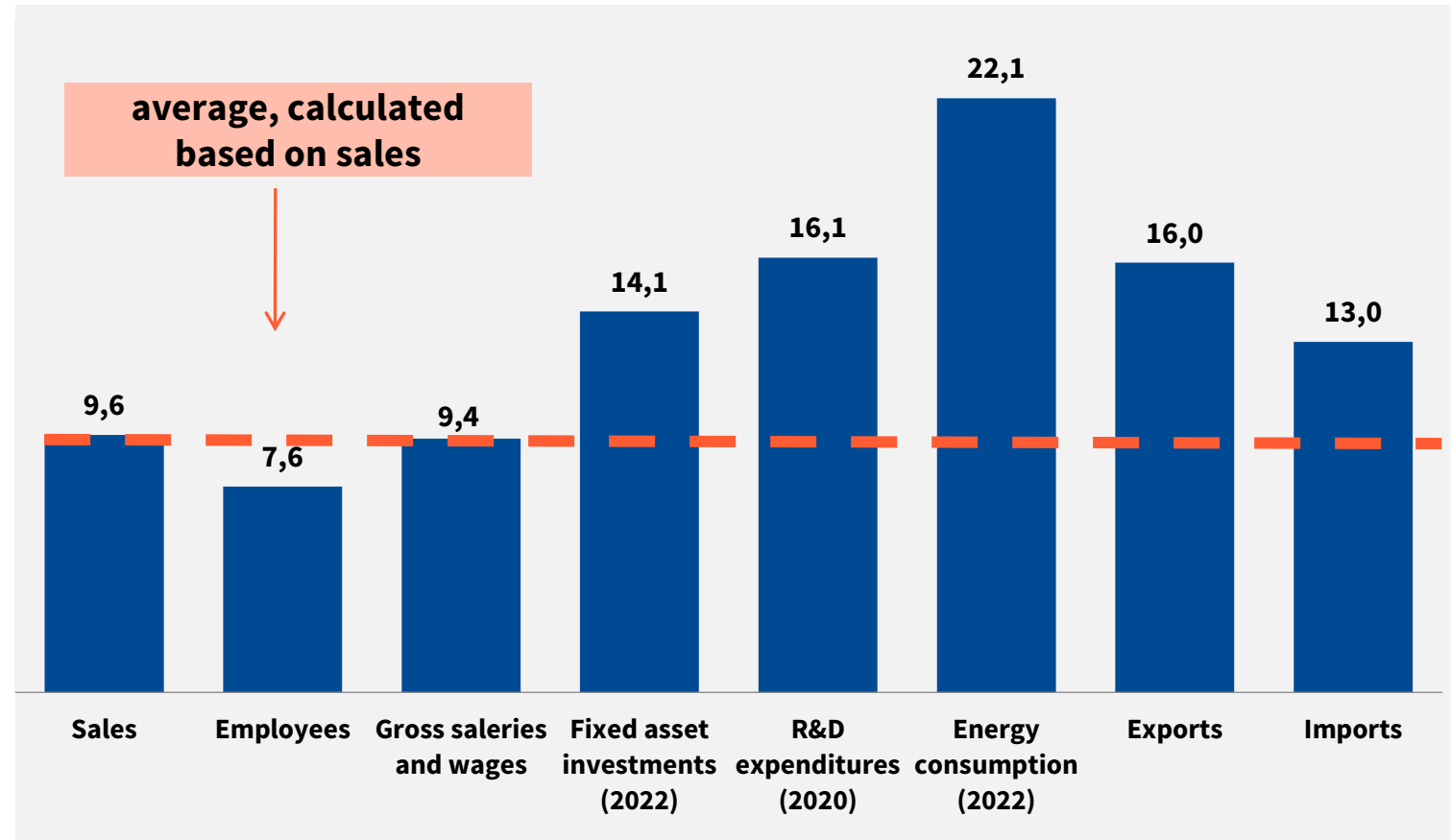
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The sector is at the heart of Germany as an industrialised country

It is capital-, research- and energy-intensive and export-orientated

Key figures at a glance

Share of the sector in the manufacturing industry, 2023



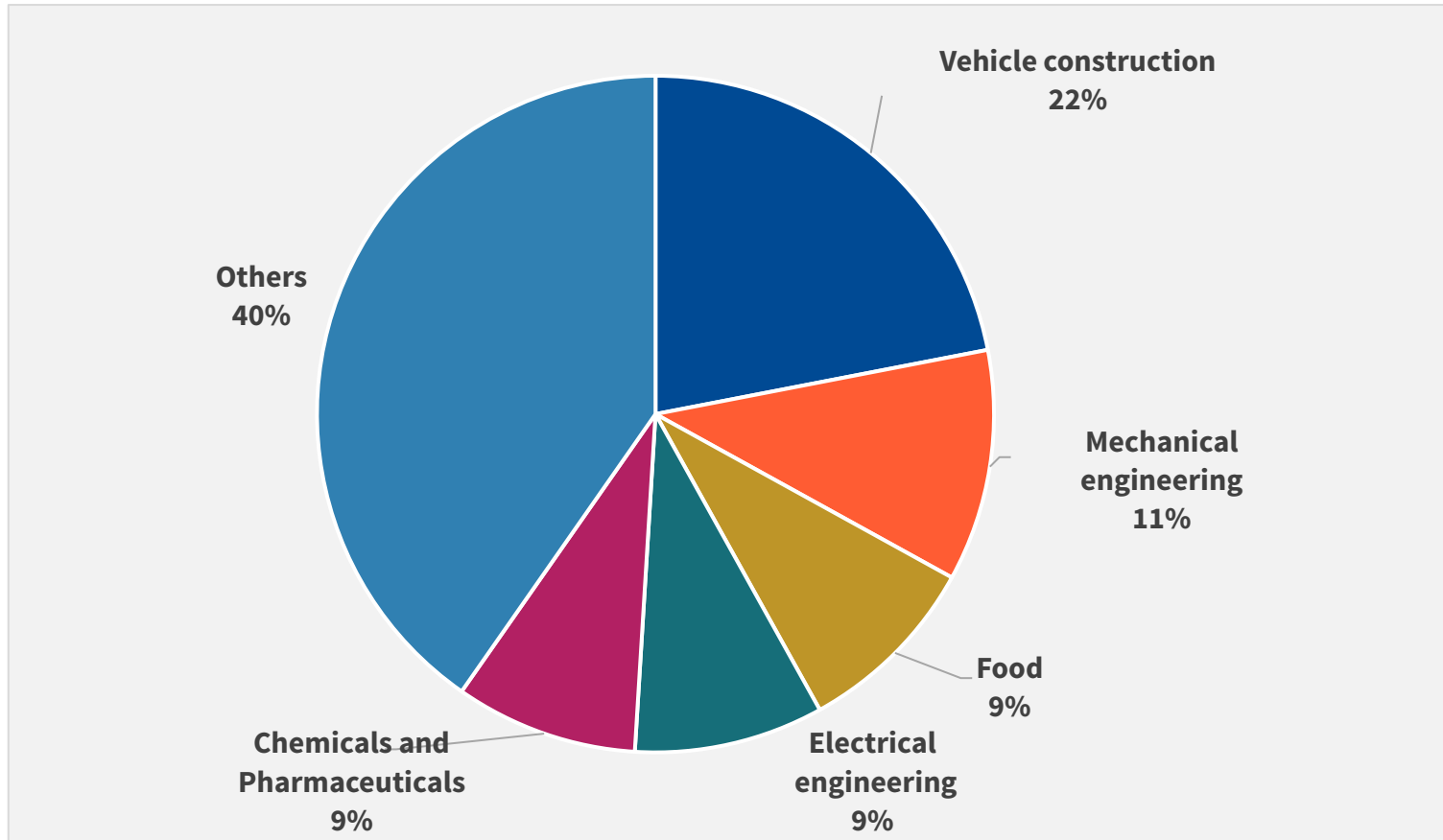
Sources: Destatis, Stifterverband, VCI

- ◆ In 2023, the German chemical and pharmaceutical industry only generated 9.6 per cent of turnover in the manufacturing sector - significantly less than in previous years due to the sharp downturn.
- ◆ Research and development (R&D) and investments are of great importance in the industry.
- ◆ The chemical industry is energy-intensive.
- ◆ The industry is active worldwide and faces international competition.

The sector ranks fifth among industrial sectors in Germany

Share of turnover in the manufacturing industry

In per cent, 2023



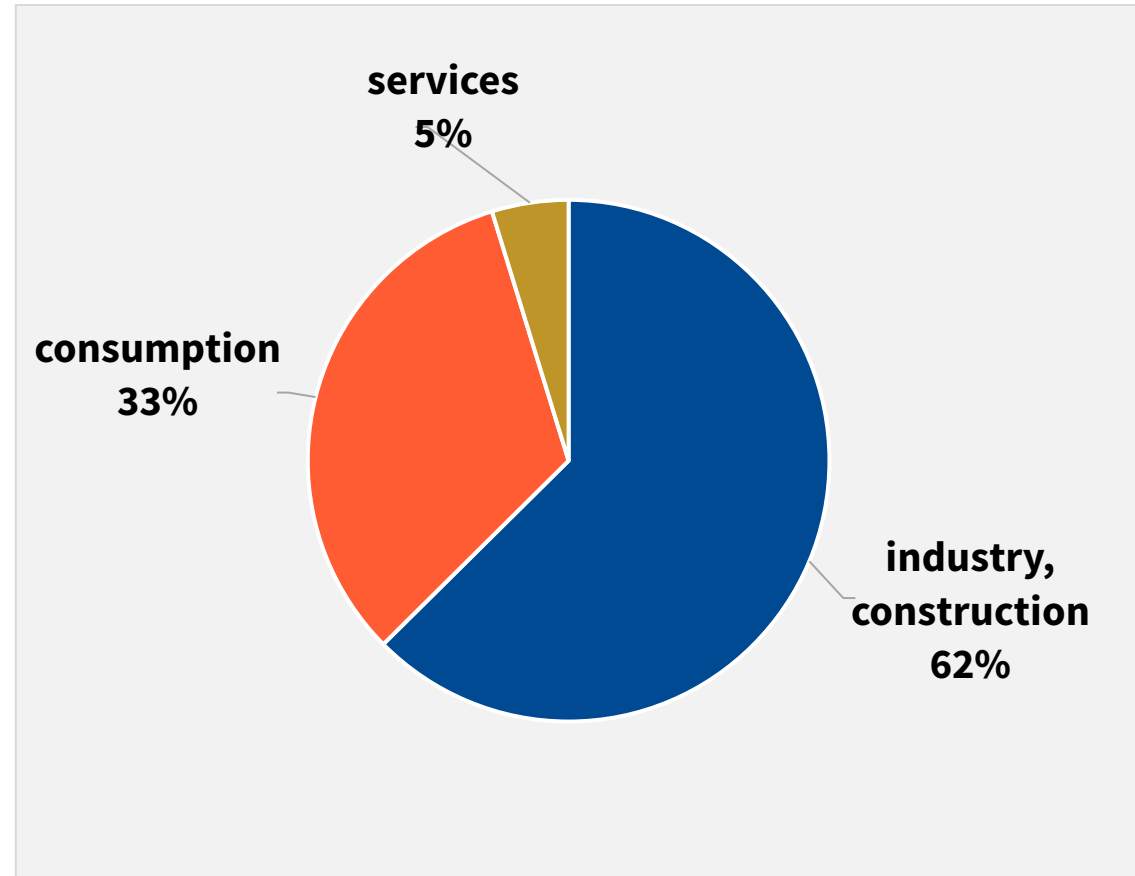
Sources: Destatis, VCI

- ◆ In 2023, the German chemical and pharmaceutical industry only generated 9.6 per cent of turnover in the manufacturing sector.
- ◆ For the first time, the sector slipped to fifth place - after vehicle construction, mechanical engineering, the food industry and electrical engineering.
- ◆ However, the gap between the food industry and the chemical and pharmaceutical industry is small.

Domestic production is further processed within the industry

Sales structure of the chemical-pharmaceutical industry in Germany

2020

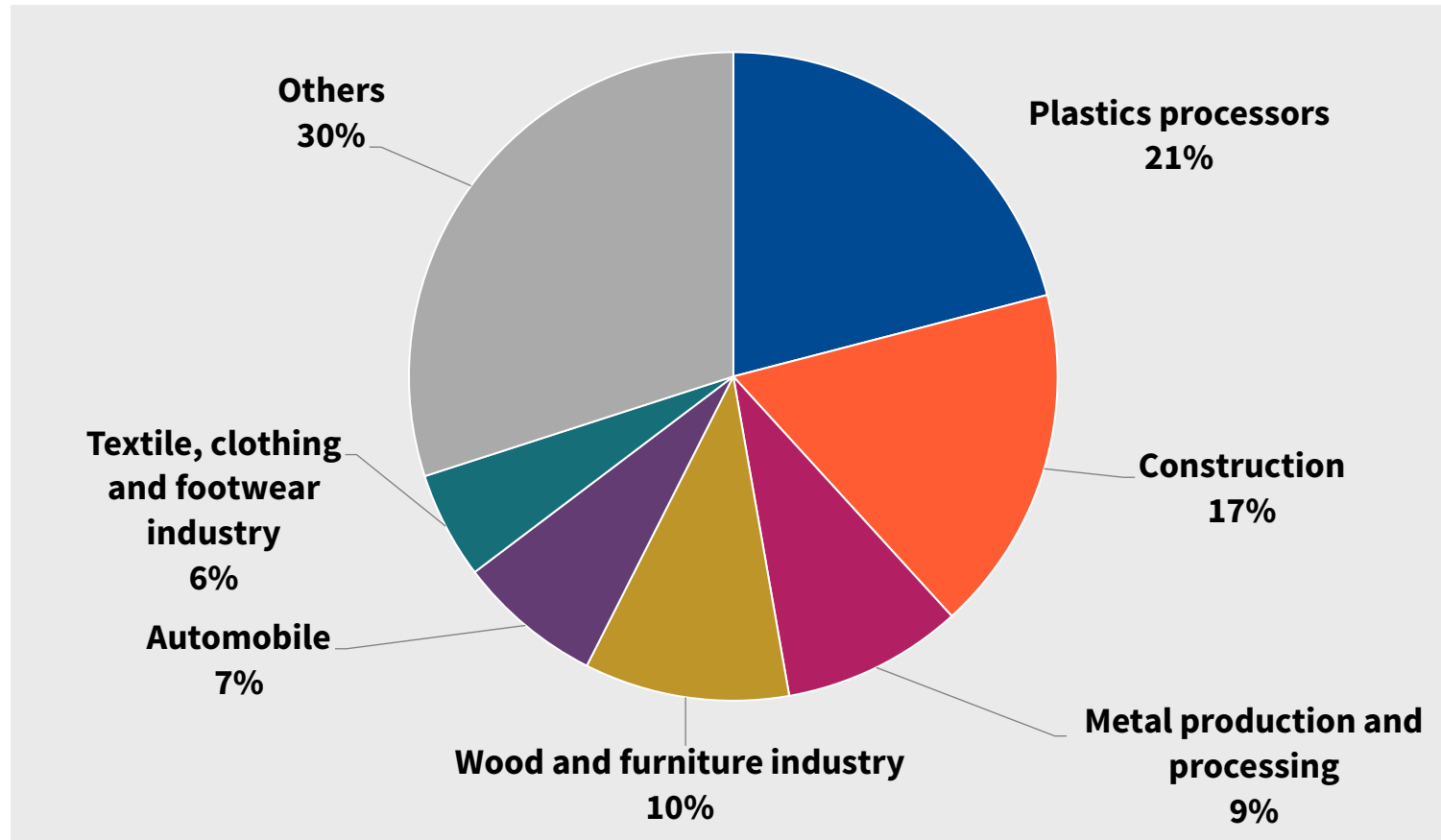


Source: Destatis, VCI

- ◆ In Germany, one third of domestic production goes directly to consumption and 5 per cent to the service sector.
- ◆ Over 60 per cent of production is further processed within the industry (excluding pharmaceuticals, the proportion rises to 83 per cent).
- ◆ Due to the high vertical integration of the industry, further processing mainly takes place within the chemical and pharmaceutical industry. The chemical industry itself is its best supplier and customer.

Main customers for chemical products in Germany: plastics processors

Chemical and pharmaceutical industry sales to other industrial sectors
2020, excluding deliveries to the chemical industry, DL, consumption and abroad



Source: Destatis, VCI

- ◆ The industry's main customers are plastics processors. Vehicle construction follows in 5th place.
- ◆ However, only direct sales are taken into account here. If indirect deliveries (via plastics processors, the electrical industry, the textile industry and mechanical engineering) are included, around 15-20 per cent of domestic production goes to the automotive industry.

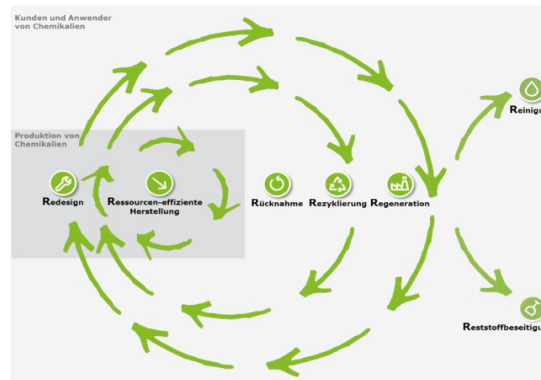
New value creation structures are emerging



Global value chains

Chemistry:

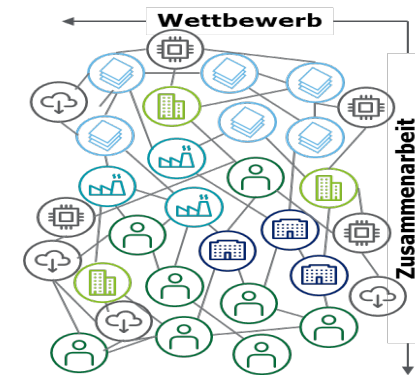
Growth and innovation driver
 At the beginning of global value chains
 Threat of slow growth, erosion of innovation advantages and location disadvantages



Circular economy

Chemistry:

Enabler of the circular economy
 Efficient and climate-friendly production
 An essential part of global value creation cycles



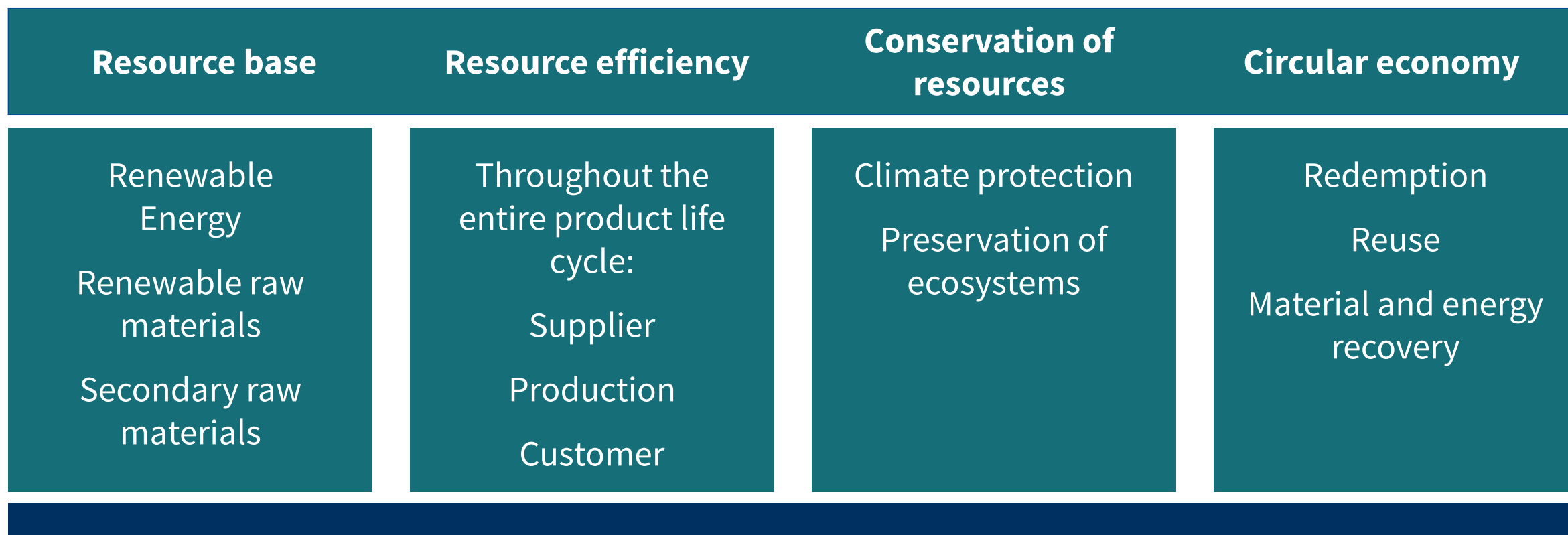
Digitalisation and networking

Chemistry:

exploits the opportunities of digitalisation
 develops new business models
 New distribution of roles in global value creation networks

Chemistry: driving innovation for a circular future

Circular economy



Digitalisation advances the circular economy



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Blockchain solutions to enable the traceability of materials in the value chain



Roman Milert/stock.adobe.com

Digital currencies to incentivise the collection of plastics in developing countries



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Digital platforms for trading high-purity recycled materials

Many global players in the chemical and pharmaceutical industry

The 20 German chemical companies with the highest turnover in 2021

	company	sales (mn Euro)	employees
1	BASF SE	78598	111047
2	Bayer AG	44081	99637
3	Fresenius SE & Co. KGaA	37520	316078
4	C.H. Boehringer Sohn AG & Co.	20618	52000
5	Henkel AG & Co. KGaA	20066	52450
6	Merck KGaA	19687	60348
7	BioNTech SE	18977	3138
8	Covestro AG	15903	17900
9	Evonik Industries AG	14955	33004
10	B. Braun SE	7860	66234
11	Beiersdorf AG	7627	20567
12	Lanxess AG	7557	14866
13	Wacker Chemie AG	6208	14406
14	Symrise AG	3826	11151
15	Stada Arzneimittel AG	3250	12520
16	K+S AG	3213	10711
17	Fuchs Petrolub SE	2871	5976
18	Altana AG	2667	6731
19	Paul Hartmann AG	2302	10628
20	Westfalen AG	1871	1814

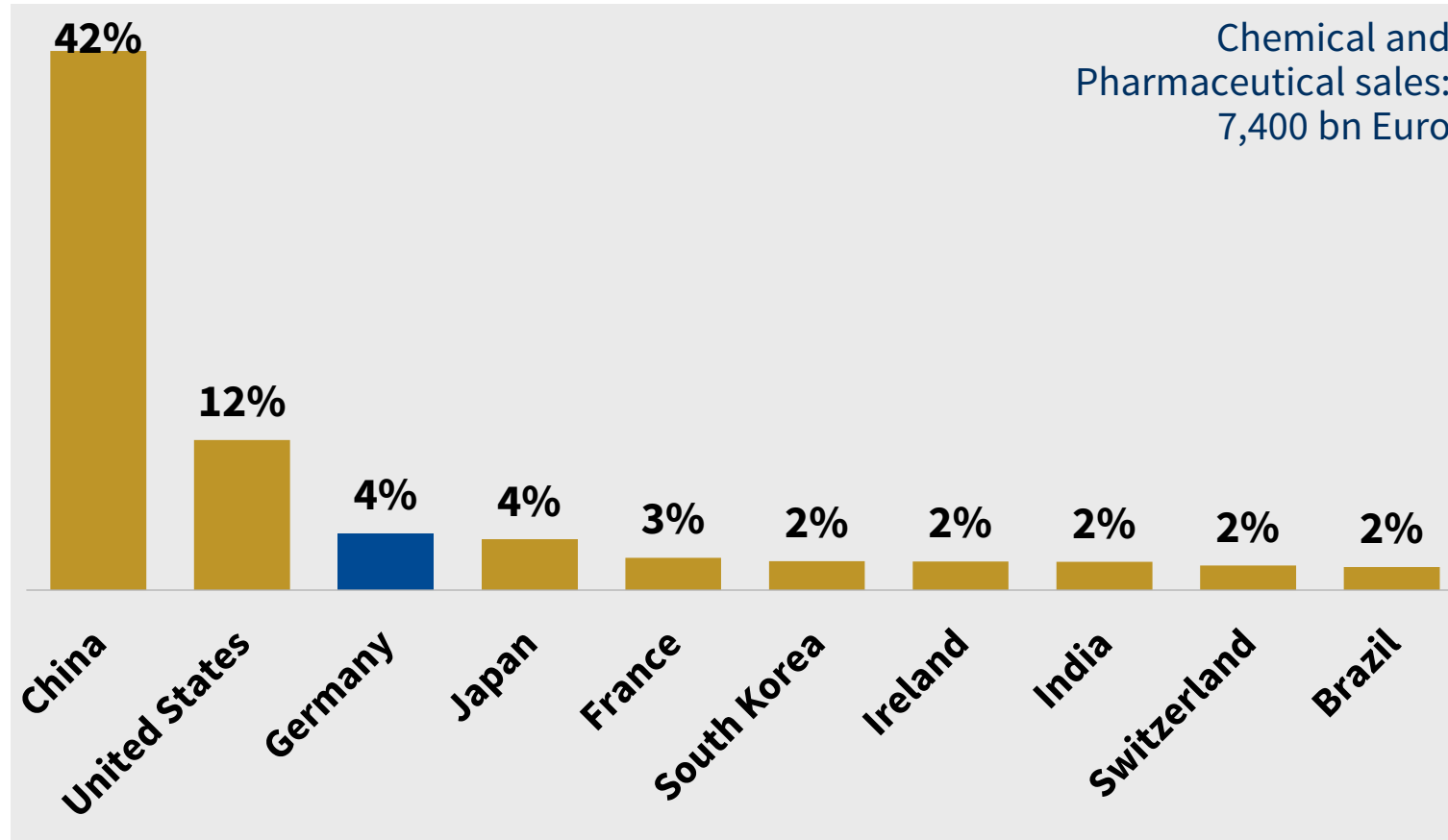
- Many globally active chemical and pharmaceutical companies have their headquarters in Germany.
- Large chemical companies often supply preliminary products that SMEs process into end products. This distinguishes the chemical industry from other sectors.

Source: Die Welt (19 July 2021)

Germany in 3rd place - 10 largest countries produce 72 per cent of global sales

TOP 10 chemical and pharmaceutical producers in the world

Share of global chemical and pharmaceutical sales, 2022



- ◆ China leads the international rankings by a wide margin.
- ◆ Germany is gaining slightly on Japan.
- ◆ The remaining countries in the TOP 10 have almost equal shares. There are frequent changes of position here.

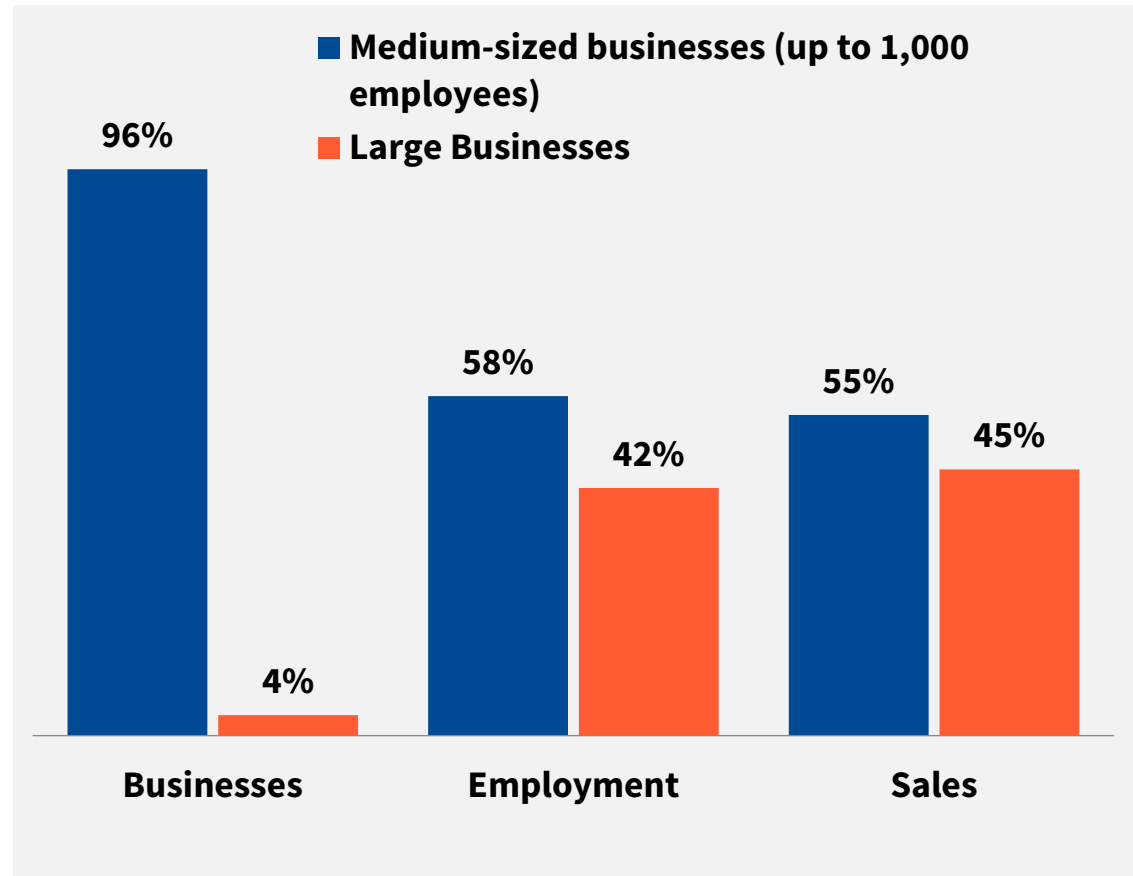
Sources: Chemdata International, VCI

Note: International data differs from Destatis data.

96 per cent of companies are SMEs

Size structure of the chemical-pharmaceutical industry

Number of companies, employees and turnover by size category, 2022, shares in per cent



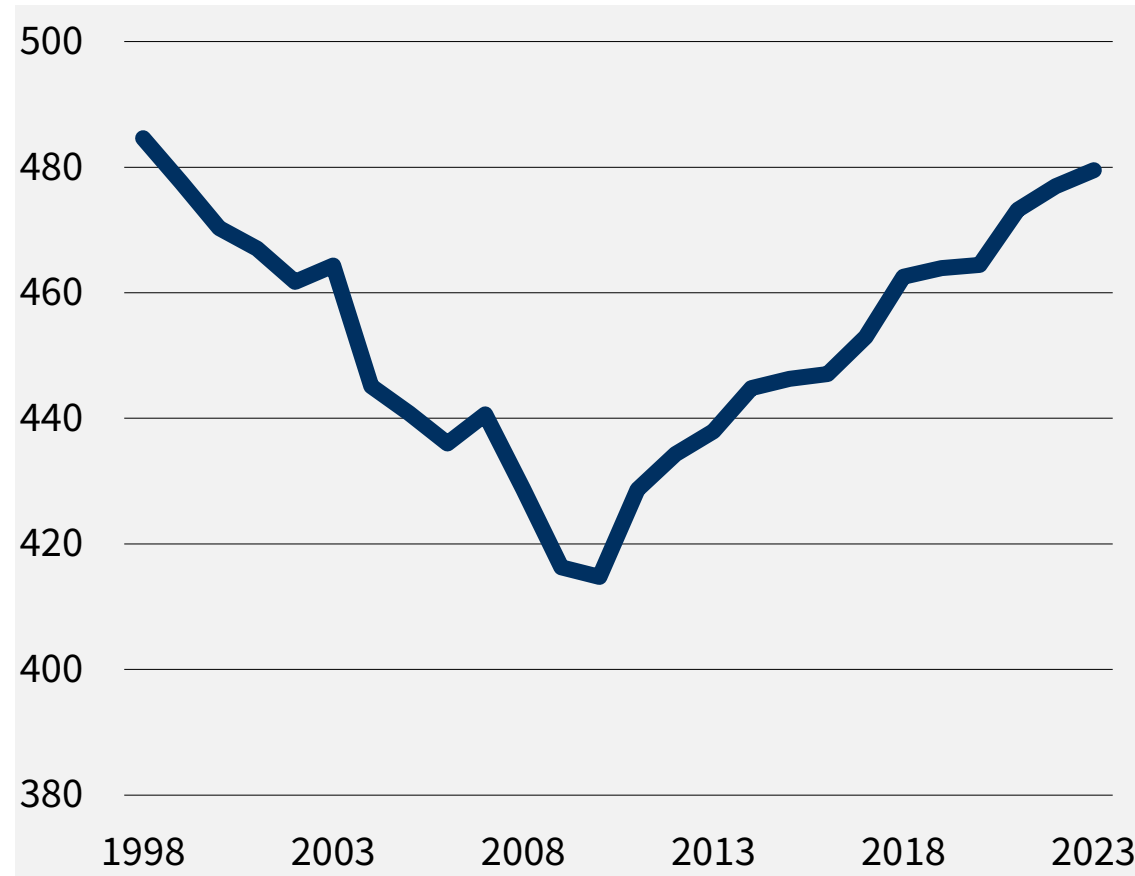
Sources: Destatis, VCI

New definition of SMEs: by company, up to 1000 employees

- ◆ Almost all companies in the chemical and pharmaceutical industry are SMEs.
- ◆ In 2022, this figure was around 2,000 companies.
- ◆ With a good 275,000 employees, they employ almost 60 per cent of the sector's workforce.
- ◆ SMEs generate 55 per cent of chemical and pharmaceutical sales.
- ◆ The production of basic chemicals is the domain of large companies. Medium-sized companies then process these products into application-orientated fine and speciality chemicals, polymers and consumer chemicals.

Rising employment figures over the past 13 years

Employees in the chemical and pharmaceutical industry in 1000



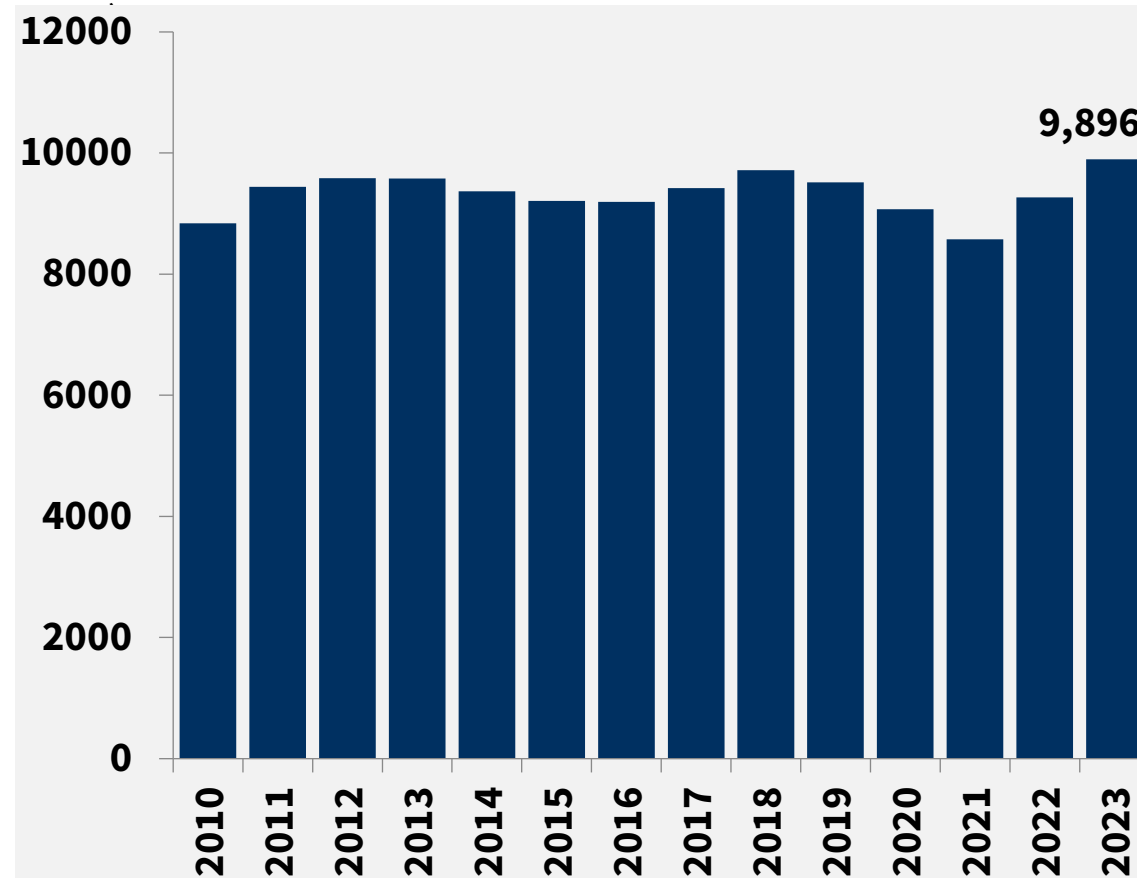
Source: Destatis

- The German chemical industry is the sixth largest employer in Germany.
- The sector offers secure and well-paid jobs and has increased employment in recent years (+65,000 employees since 2010).
- With an average of over 69,000 euros in 2023, salaries in the sector are a good 23 per cent above the average for the manufacturing sector.

The industry trains

Apprenticeships on offer in Germany

Number of training places in the chemical and pharmaceutical industry + parts of the rubber and plastics industry (delimitation:



Source: BAVC

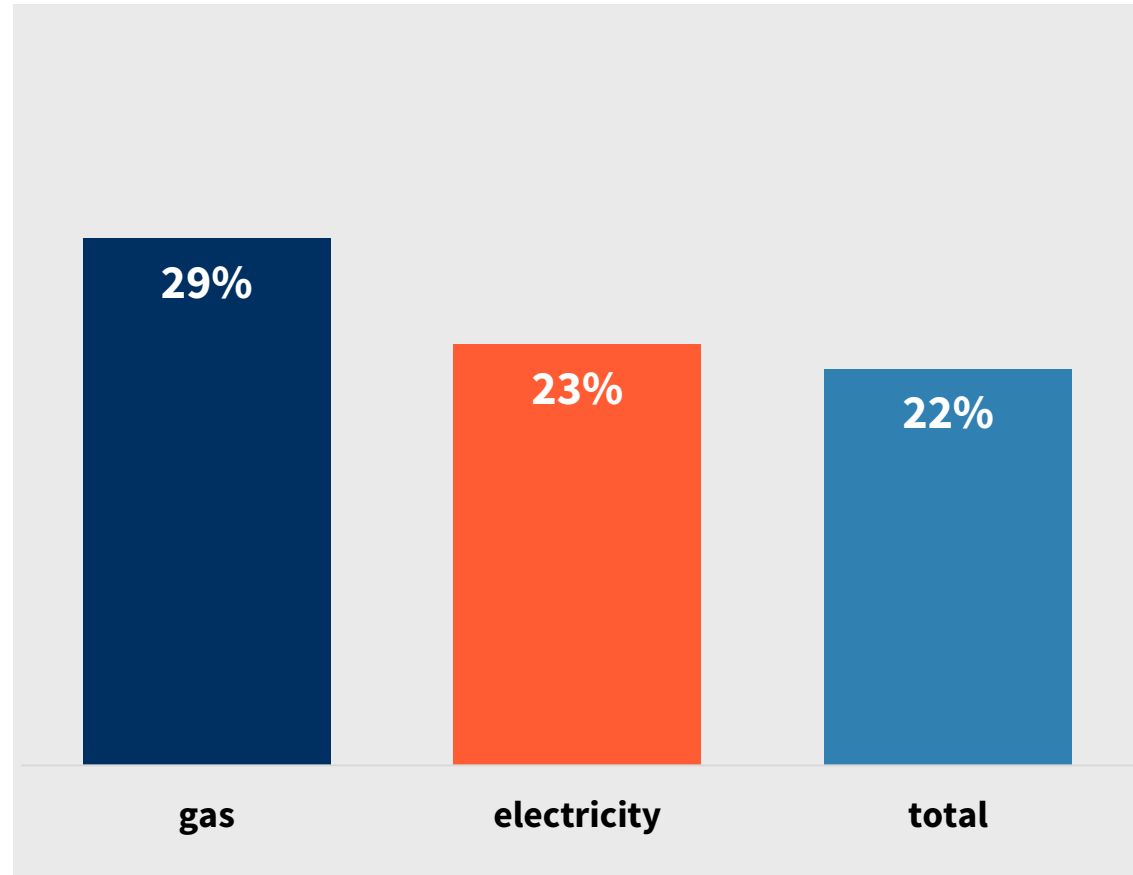
BAVC delimitation including parts of the rubber and plastics industry

- ◆ The chemical industry needs qualified and competent employees for technically demanding jobs. That's why it trains them itself.
- ◆ Despite declining production, falling sales and ongoing uncertainty, the industry invested more heavily in training skilled workers: with 9,896 new training places on offer, the number of training places increased to a record level.
- ◆ After successfully completing their training, over 90 per cent of trainees are taken on (2023: 94 per cent).

The chemical industry is energy-intensive, but reduces energy consumption and emissions

Shares of the chemical and pharmaceutical industries in manufacturing consumption

Final energy consumption by energy source and total, 2022



Source: Destatis, VCI

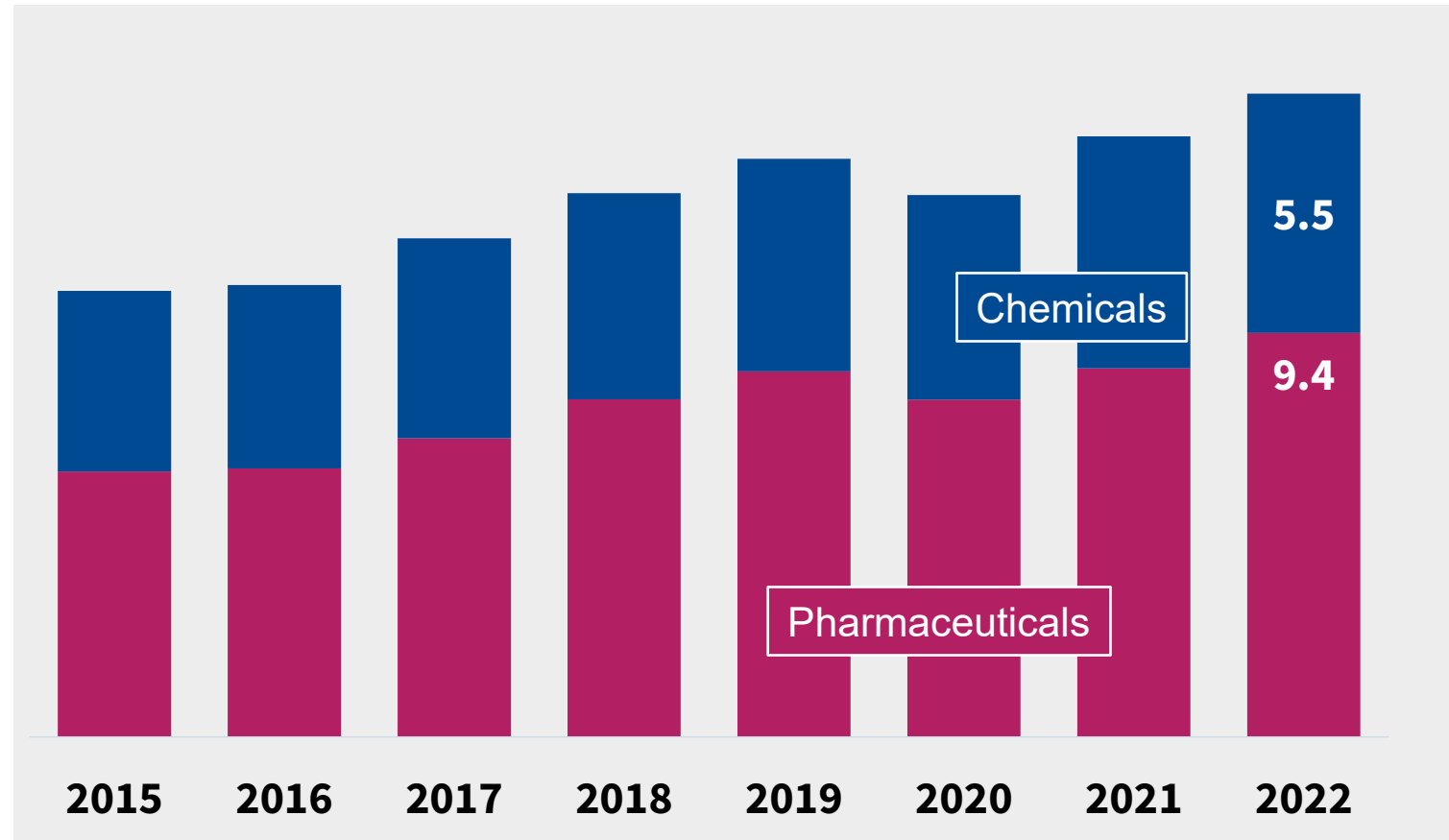
Without material use

- ◆ The chemical industry accounts for a good 8 per cent of energy consumption in Germany and 22 per cent of energy consumption in the manufacturing industry. If the material use of energy sources is added, the sector accounts for over 30 per cent.
- ◆ Since 1990, energy consumption in the sector has fallen by 22 per cent.
- ◆ Overall, the industry is responsible for around 6.5 per cent of CO₂ emissions in Germany. Compared to 1990, the industry has reduced its greenhouse gas emissions by 54 per cent.

The German chemical and pharmaceutical industry is strong in research

Research and development expenses

External and internal R&D expenditure in the chemical and pharmaceutical industry in billion euros

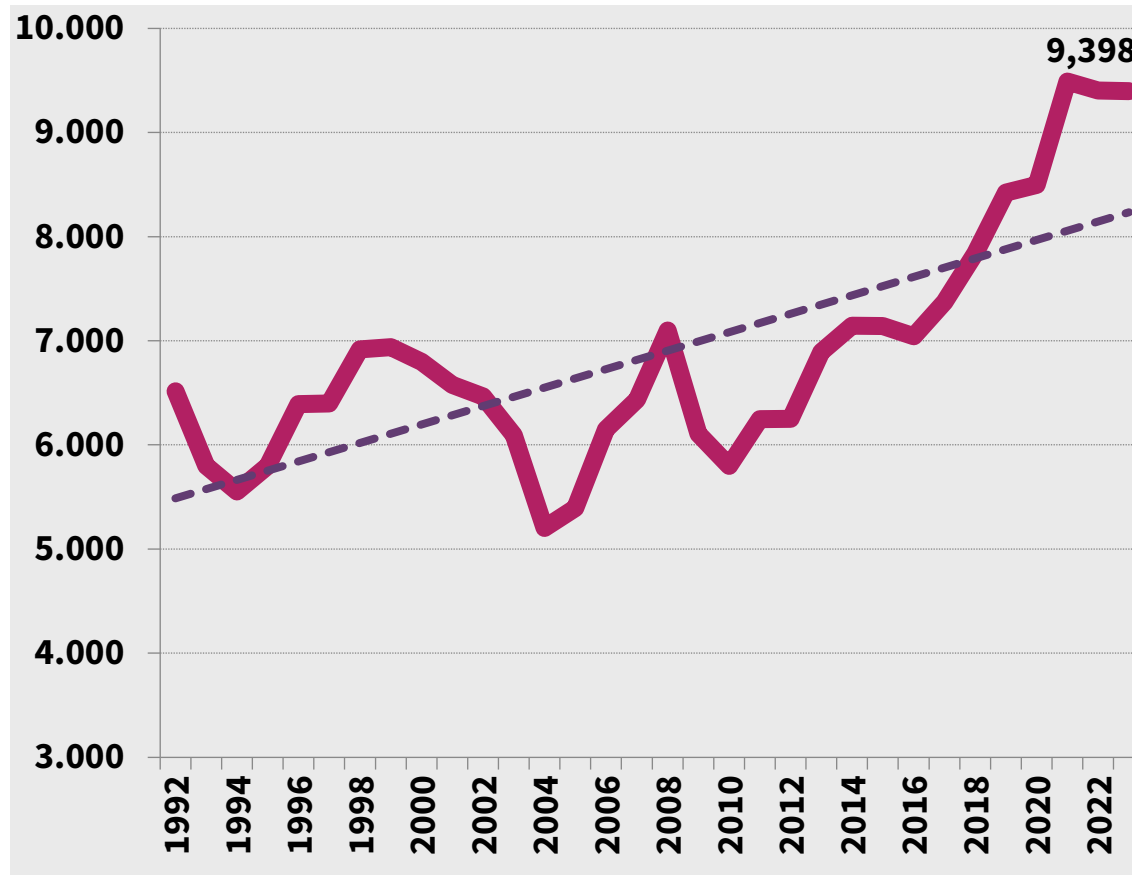


Sources: Stifterverband, VCI

- ◆ The coronavirus measures slowed down research and development. The decline was more than offset in 2021.
- ◆ According to the data now available, the R&D budget could still be increased in 2022 despite the difficult earnings situation.
- ◆ The industry invests around 6 per cent of its turnover in R&D every year.
- ◆ Only the automotive and electrical industries invest more in research and development.

Domestic investments are above the long-term trend

Capital expenditure on property, plant and equipment by the German chemical/pharmaceutical industry in Germany in million euros and trend



Sources: Destatis, VCI

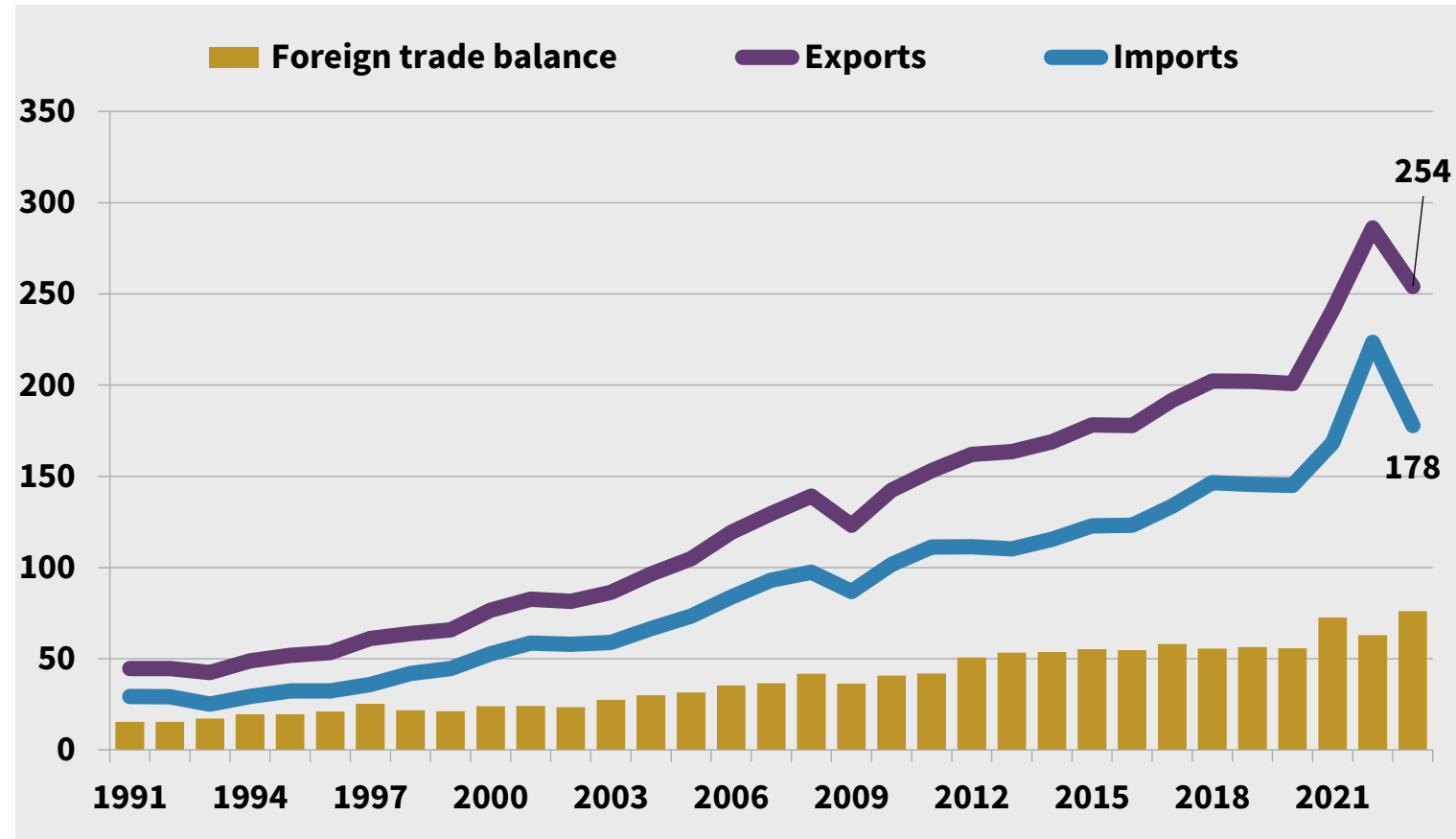
2023 Extrapolation based on target figures

- ◆ Turnaround in investment: Domestic investments have been rising strongly since 2010.
- ◆ The transformation requires investment: According to the "Roadmap Chemistry 2050", additional investments totalling over 60 billion euros will be required by 2050.
- ◆ However, the current crisis is again leading to a reluctance to invest.

German chemical industry is strongly export-orientated

German foreign trade in chemical-pharmaceutical products

Exports, imports and foreign trade balance in billion euros



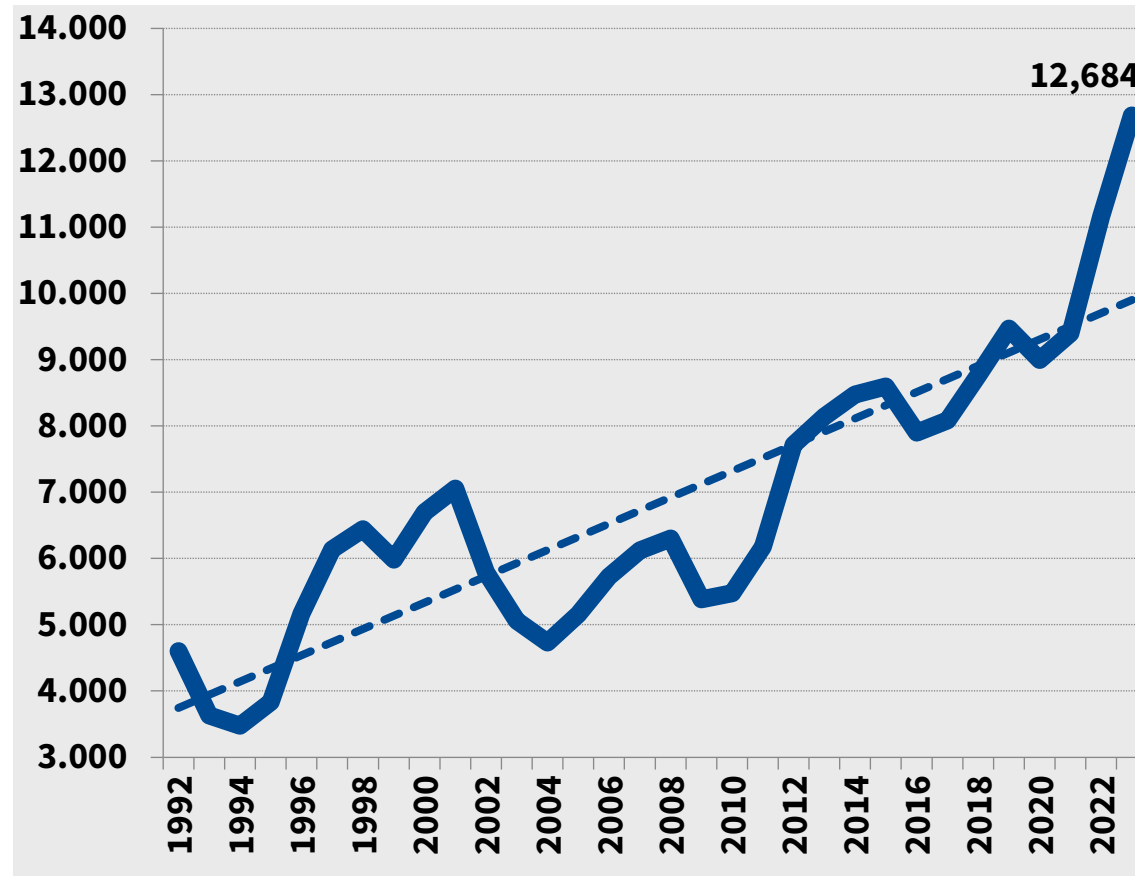
Sources: Destatis, VCI

2023: Estimate based on preliminary data

- ◆ The German chemical and pharmaceutical industry is export-orientated.
- ◆ Exports and imports rose very dynamically in 2022 due to the sharp rise in prices. At the same time, the trade balance decreased slightly compared to the previous year. Import pressure was high.
- ◆ In 2023, trade in chemical and pharmaceutical products declined due to poor demand at home and abroad.

Very dynamic growth in foreign investment

Investments in property, plant and equipment by the German chemical and pharmaceutical industry abroad in million euros and trend



Source: VCI

2023 Extrapolation based on target figures

- ◆ Foreign investment in the German chemical and pharmaceutical industry is highly dynamic. Since 2012, foreign investment has also exceeded domestic investment. The reasons for this:
 - ◆ Globalisation strategy: participation in market growth
 - ◆ More favourable raw material costs abroad
 - ◆ Domestic barriers to investment

Further information

- ◆ Facts and figures on investments in the sector:
[Focus on investments](#)
- ◆ Facts and figures on research and development:
[Germany as a centre of innovation](#)
- ◆ Facts and figures on energy and raw materials:
[Energy statistics at a glance](#)
- ◆ Facts and figures on the global chemical markets:
[Chemical markets worldwide](#)
- ◆ Facts and figures on the industrial location:
[Germany as a centre of industry](#)



VCI contact person



Christiane Kellermann

Senior consultant

Department of Economics

T | +49 (69) 2556-1585

E | kellermann@vci.de