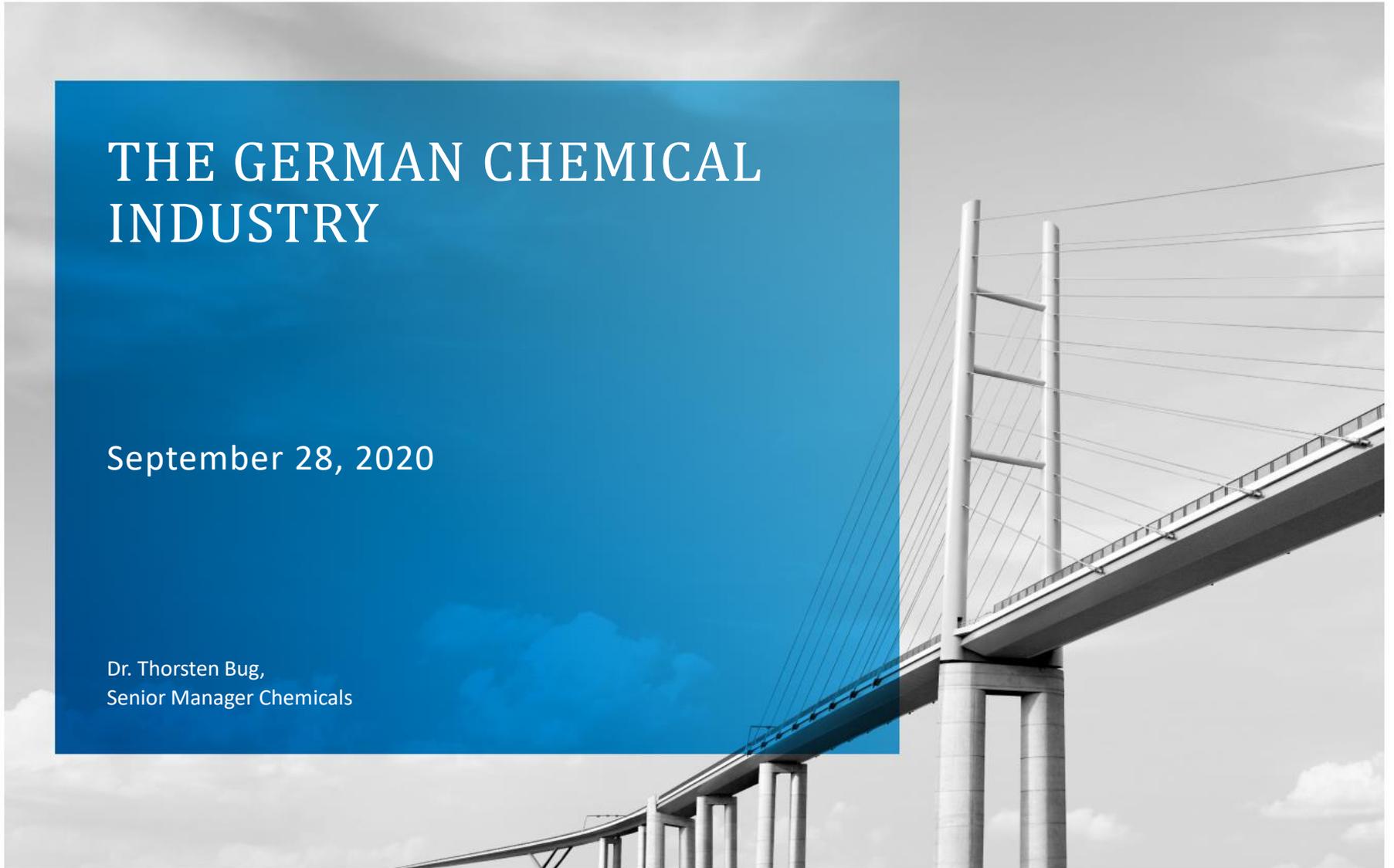


THE GERMAN CHEMICAL INDUSTRY

September 28, 2020

Dr. Thorsten Bug,
Senior Manager Chemicals



Agenda

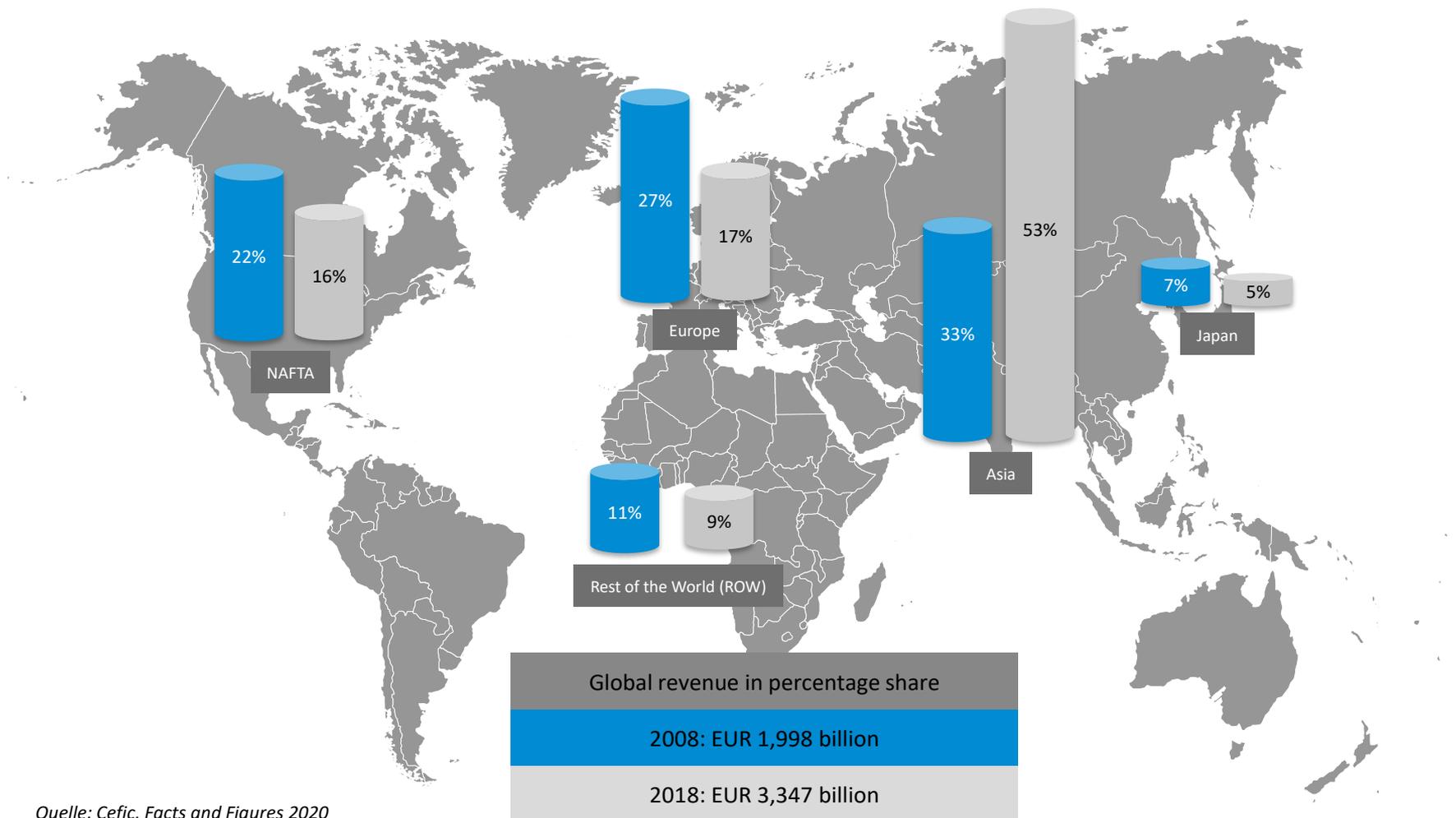
1. **The Chemical Industry Globally**
2. The German Chemical Industry
3. Opportunities for Chemicals Producers in Germany

Main sources:

- *Cefic: The European Chemical Industry Council, Brussels, www.cefic.org*
- *Destatis: Statistisches Bundesamt (engl.: Federal Statistical Office), Wiesbaden, www.destatis.de*
- *VCI: Verband der chemischen Industrie (engl.: German Chemical Industry Association), Frankfurt/Main, www.vci.de*

Global chemical revenue

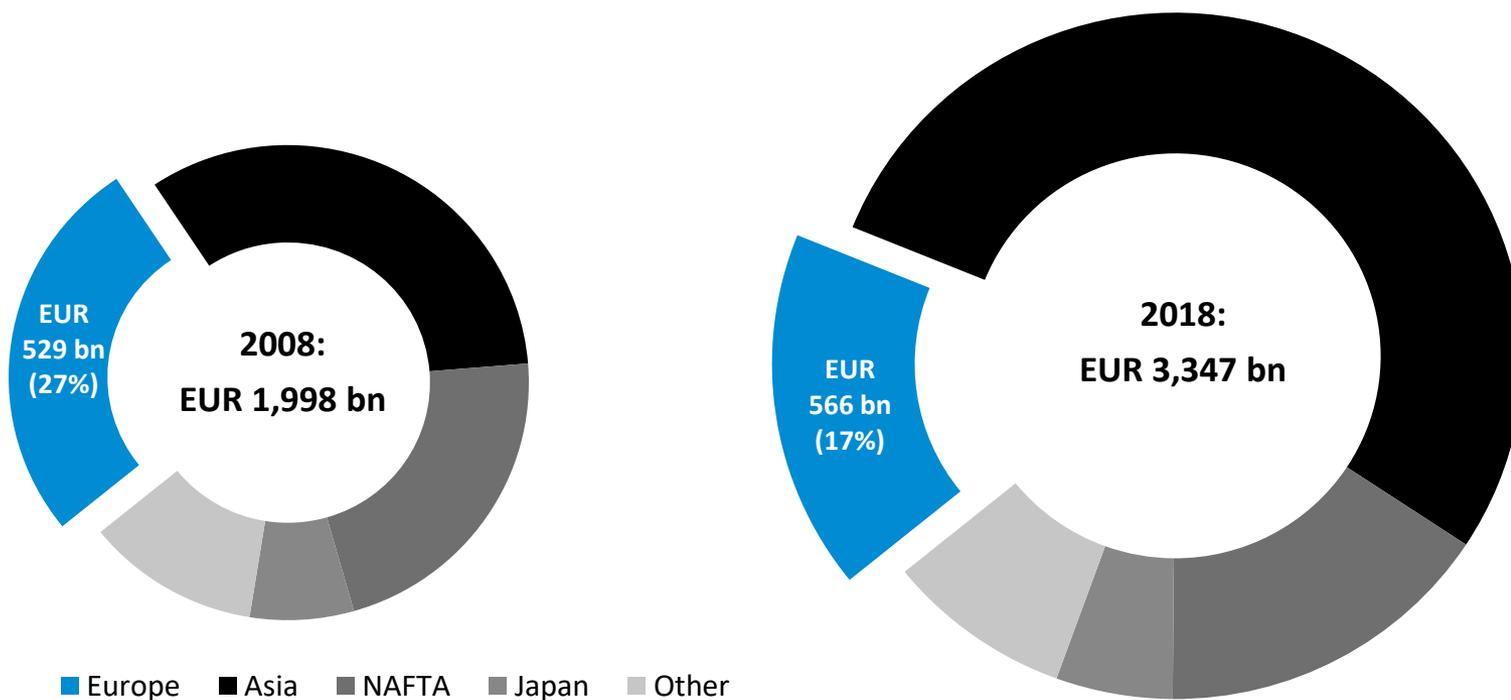
Market shares from NAFTA, Europe and Japan are progressively moving to Asia.



Quelle: Cefic, Facts and Figures 2020

Global Chemical Revenue

Despite the Asian market growth in recent years, Europe continues to be a relevant chemicals market.

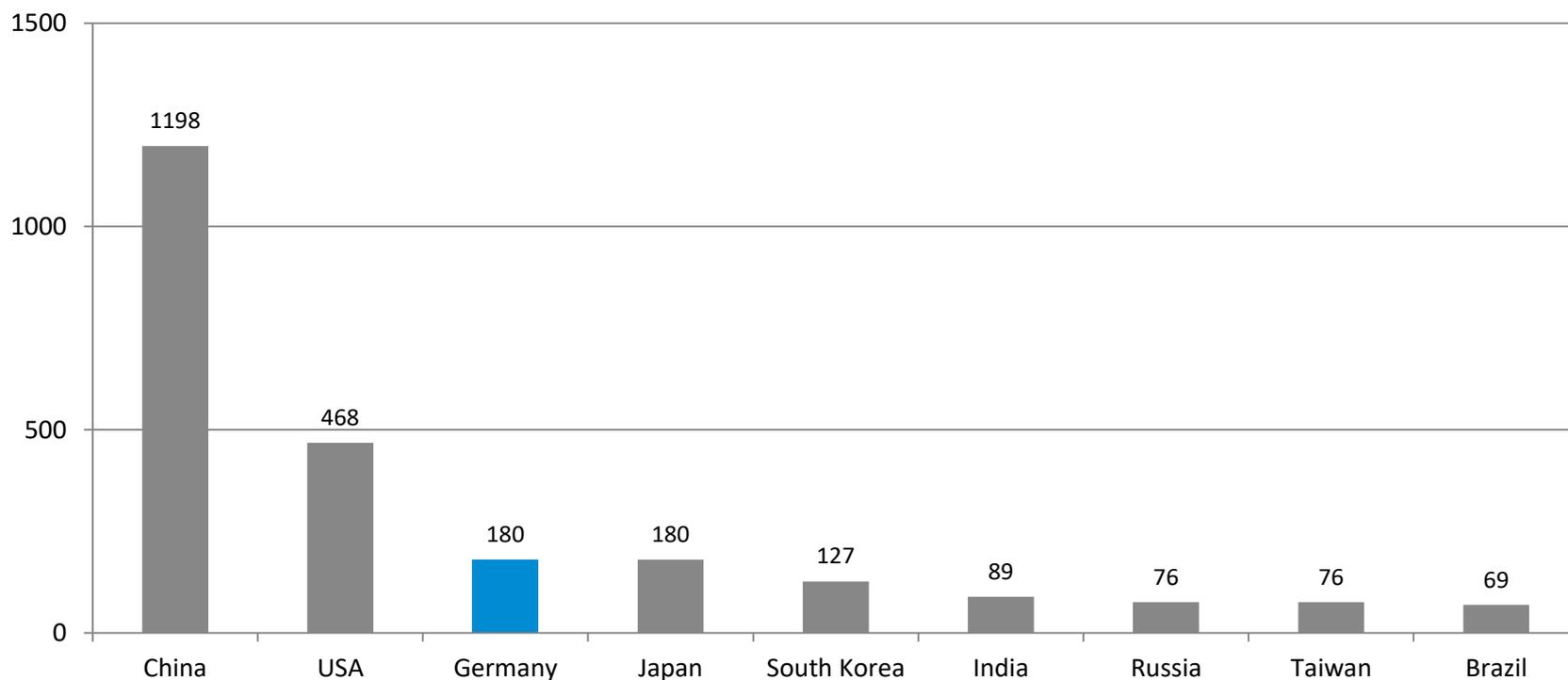


Quelle: Cefic, Facts and Figures 2020

Global Chemical Revenue

Germany is the world's third largest chemical market, being surpassed only by China and the US in terms of revenues.

Chemical Revenue in EUR billion, 2018

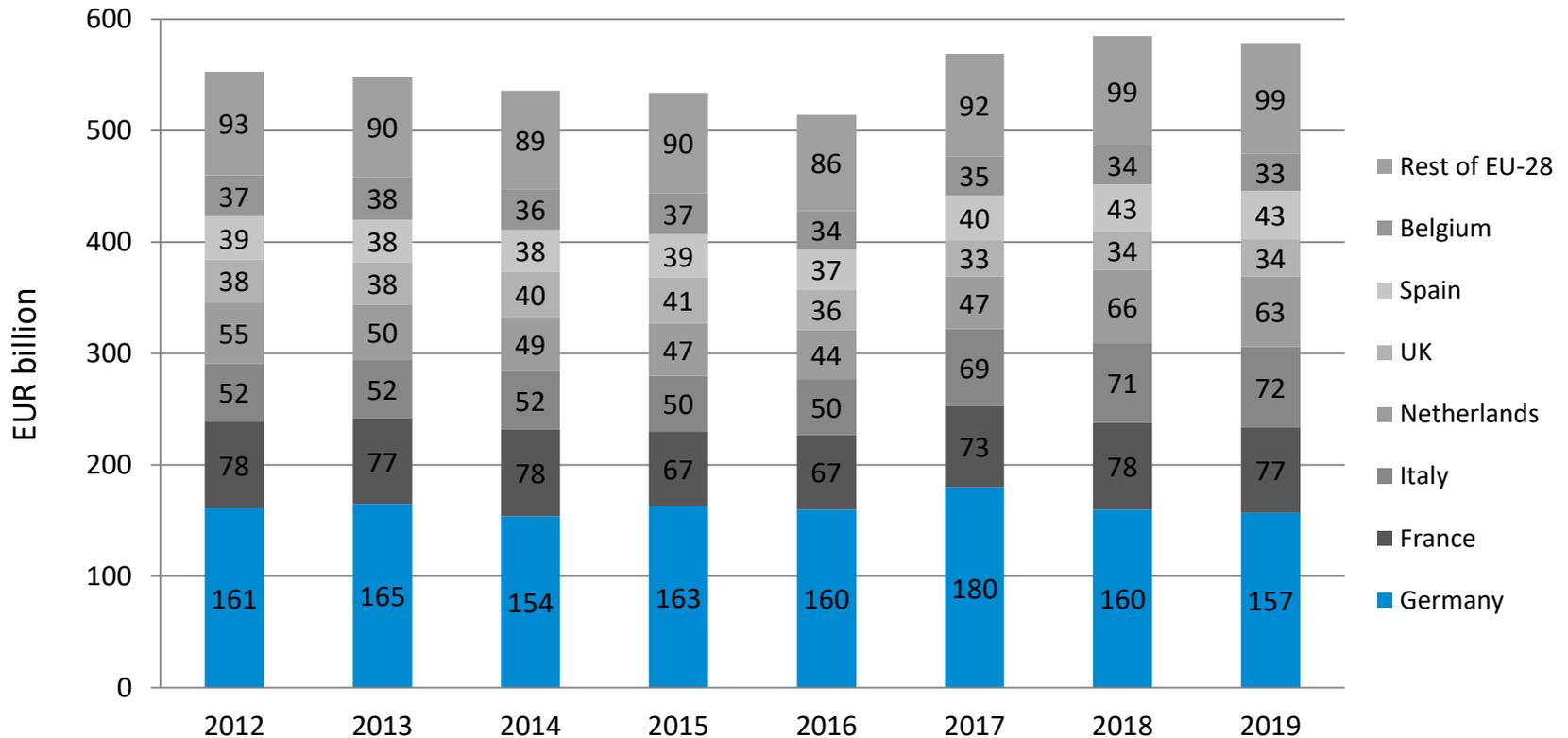


Source: Cefic Chemdelta International 2019

European Revenues

With a share of 27% in 2019, the German chemical industry has consolidated its leading role in Europe during the recent years.

European (EU-28) Chemical Industry Revenues in EUR billion, 2011–2019



Quelle: VCI, Chemiewirtschaft in Zahlen 2020 (Table 60b)

Agenda

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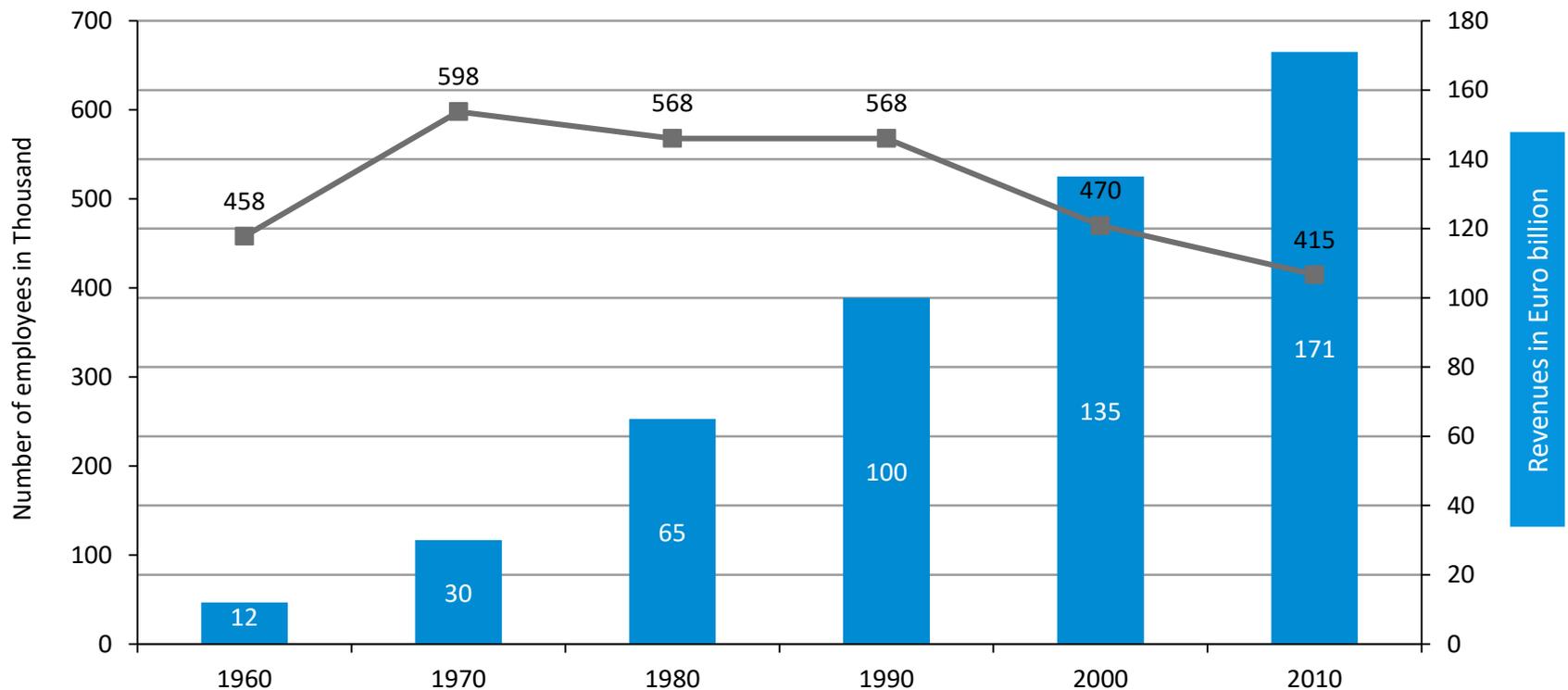
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The History of the German Chemical Industry

Within 50 years, revenues increased by a nominal 5.4 % (real 3.1%) on average a year. This resulted in a 14-fold productivity increase.

Revenues and Number of Employees of the German Chemical and Pharmaceutical Industry, 1960-2010



Quelle: VCI, 2013.

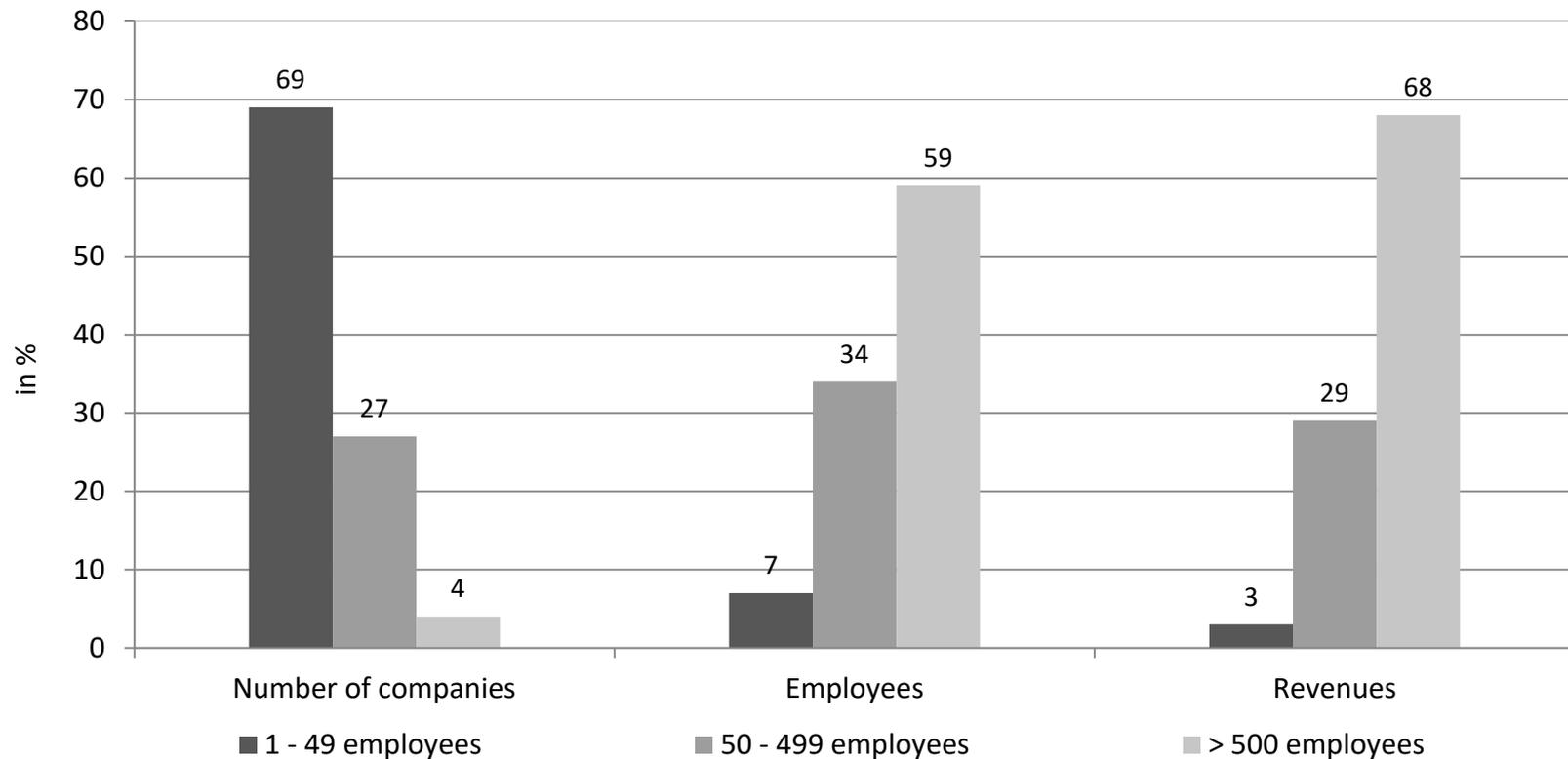
Details: 1960 without Saarland. From 1964 on including West-Berlin; 1970, 1995, and 2008 new Classification.

From 1991 Germany reunified.

German Chemical Companies Structure

The industry is “dominated” by small companies, whereas the lion’s share of revenues are raised by large corporations.

Number of Chemical Companies, Employees and Revenues by Company Size, 2019

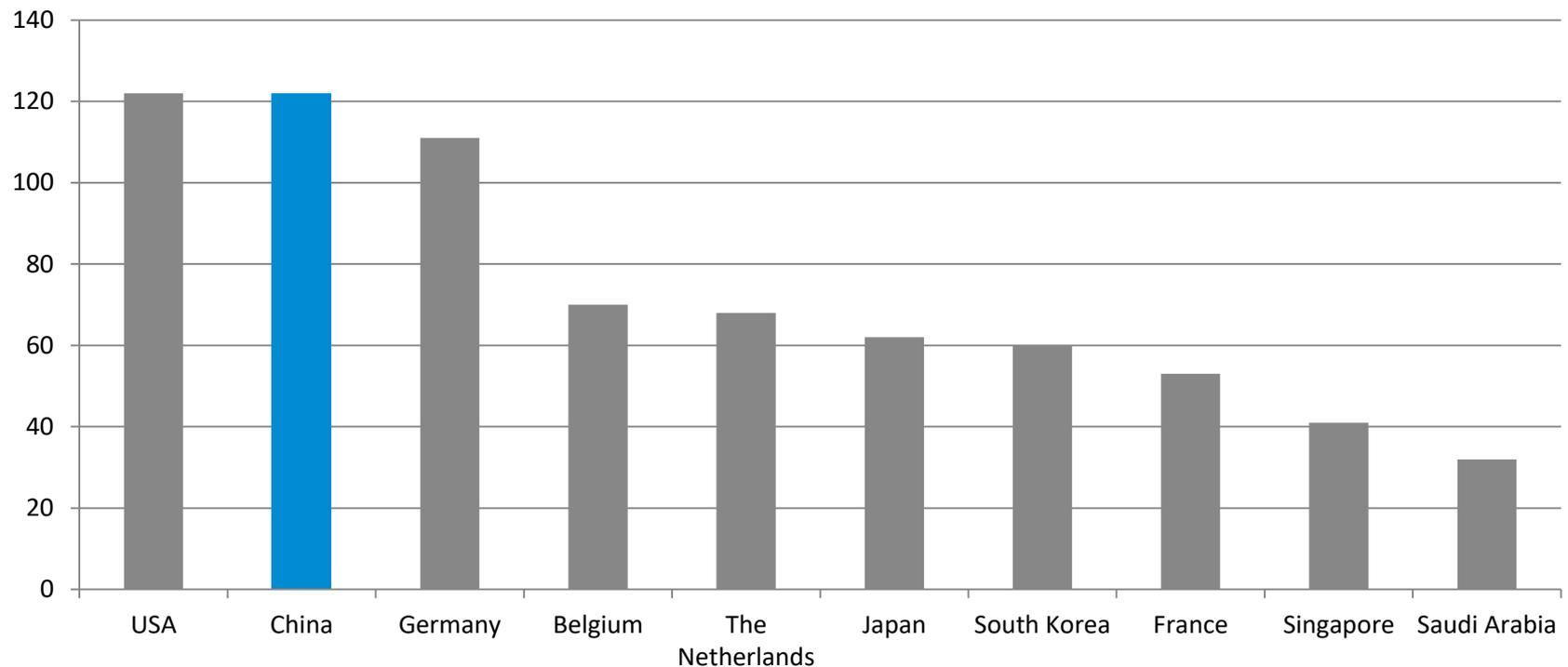


Source: VCI, *Chemiewirtschaft in Zahlen 2020*, Table 18b.

Chemical Exports

In 2019, China has caught up with the US in terms of exports for the first time. Germany is still far ahead of the subsequent strong chemical export nations.

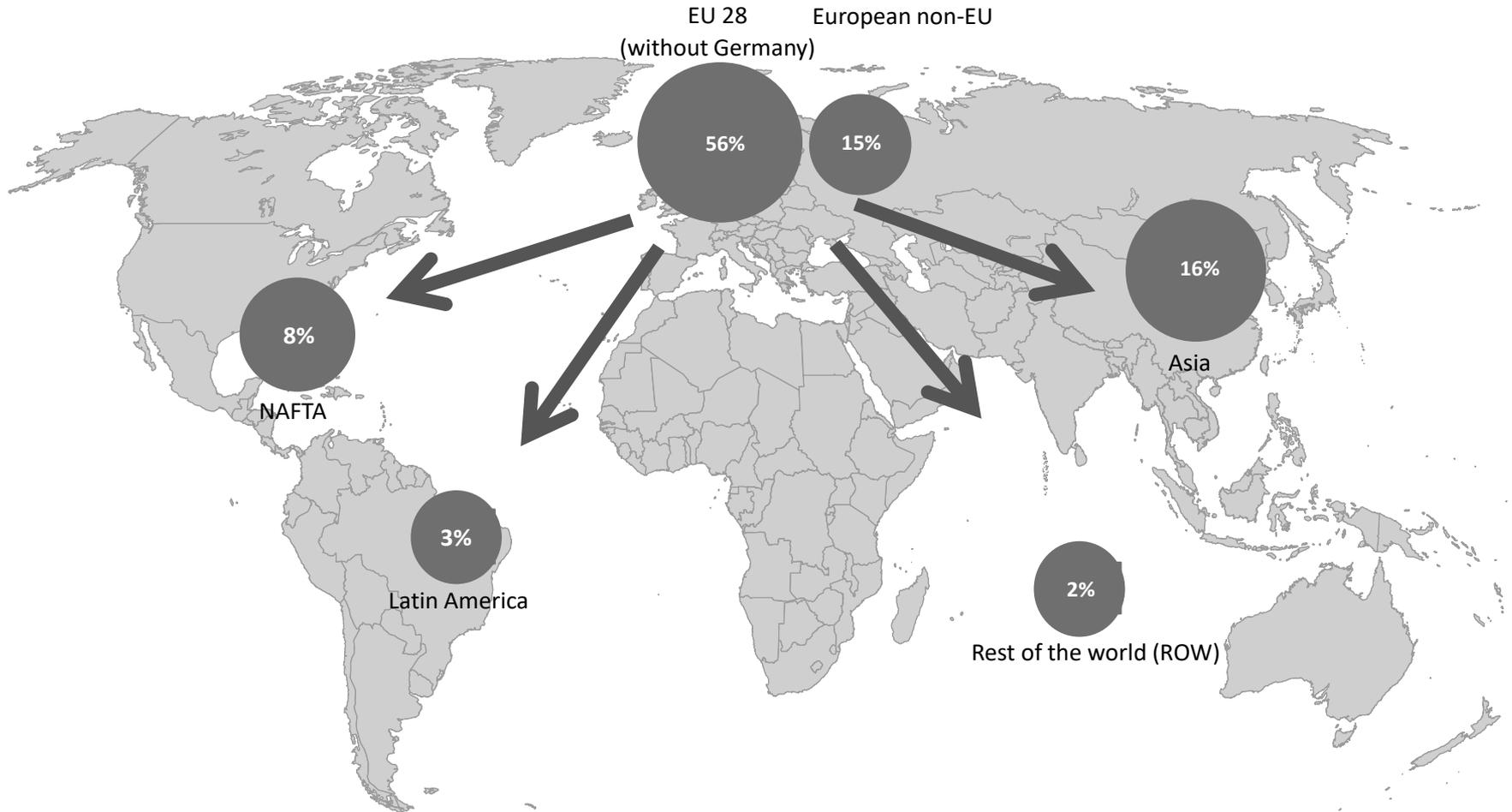
Chemical Exports by Country in EUR billion, 2019



Source: VCI, *Chemiewirtschaft in Zahlen 2020*, Table 61b.

German Chemical Exports

European countries are dominating German Chemical Exports.

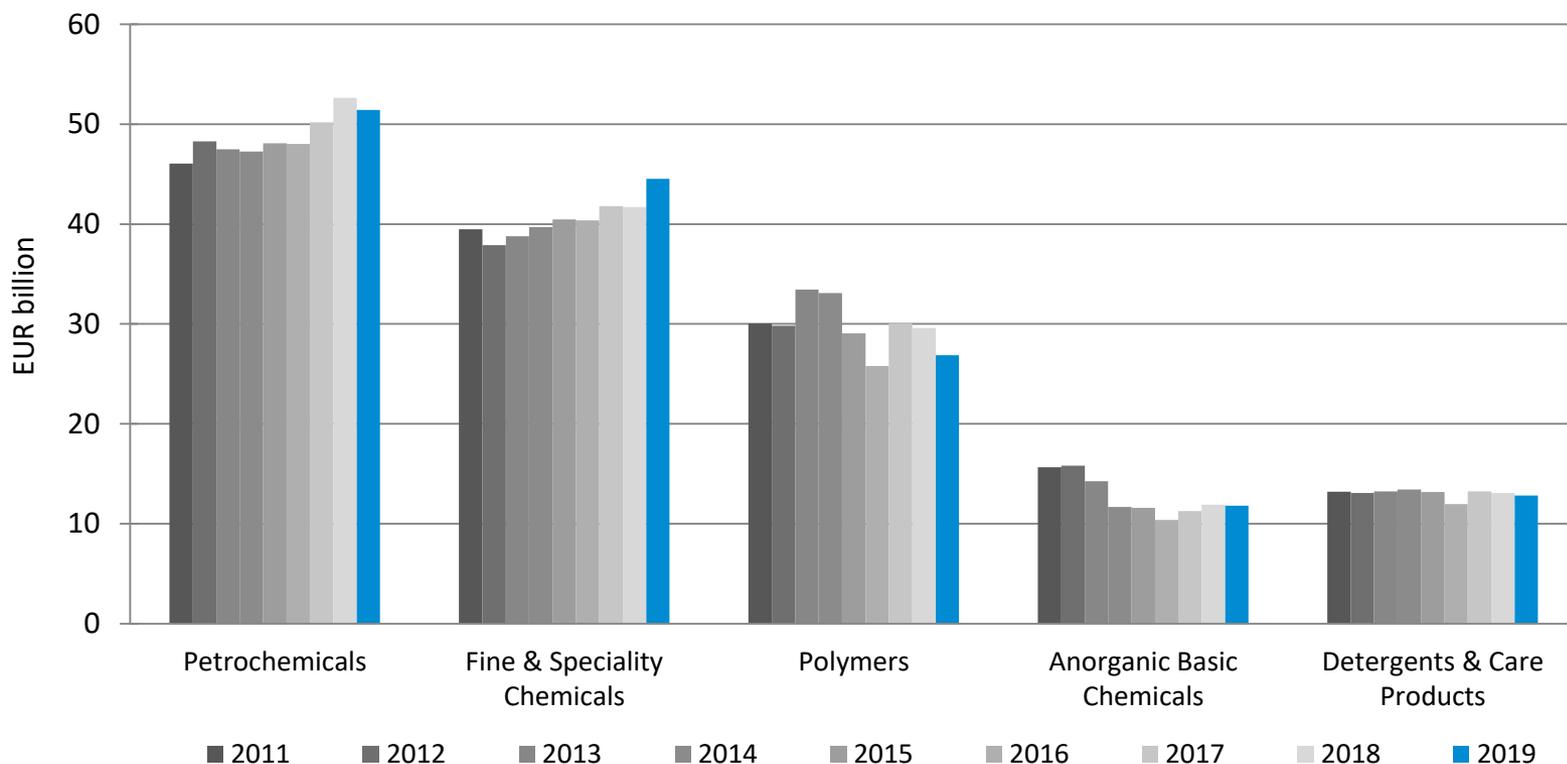


Source: VCI, *Chemiewirtschaft in Zahlen 2020*, Table 42b.

Chemical Market Segmentation

Petrochemicals as well as Fine and Specialty Chemicals continue to constitute the backbone of the German chemical production market.

Chemical Market Segmentation by Revenues in EUR billion, 2011–2019

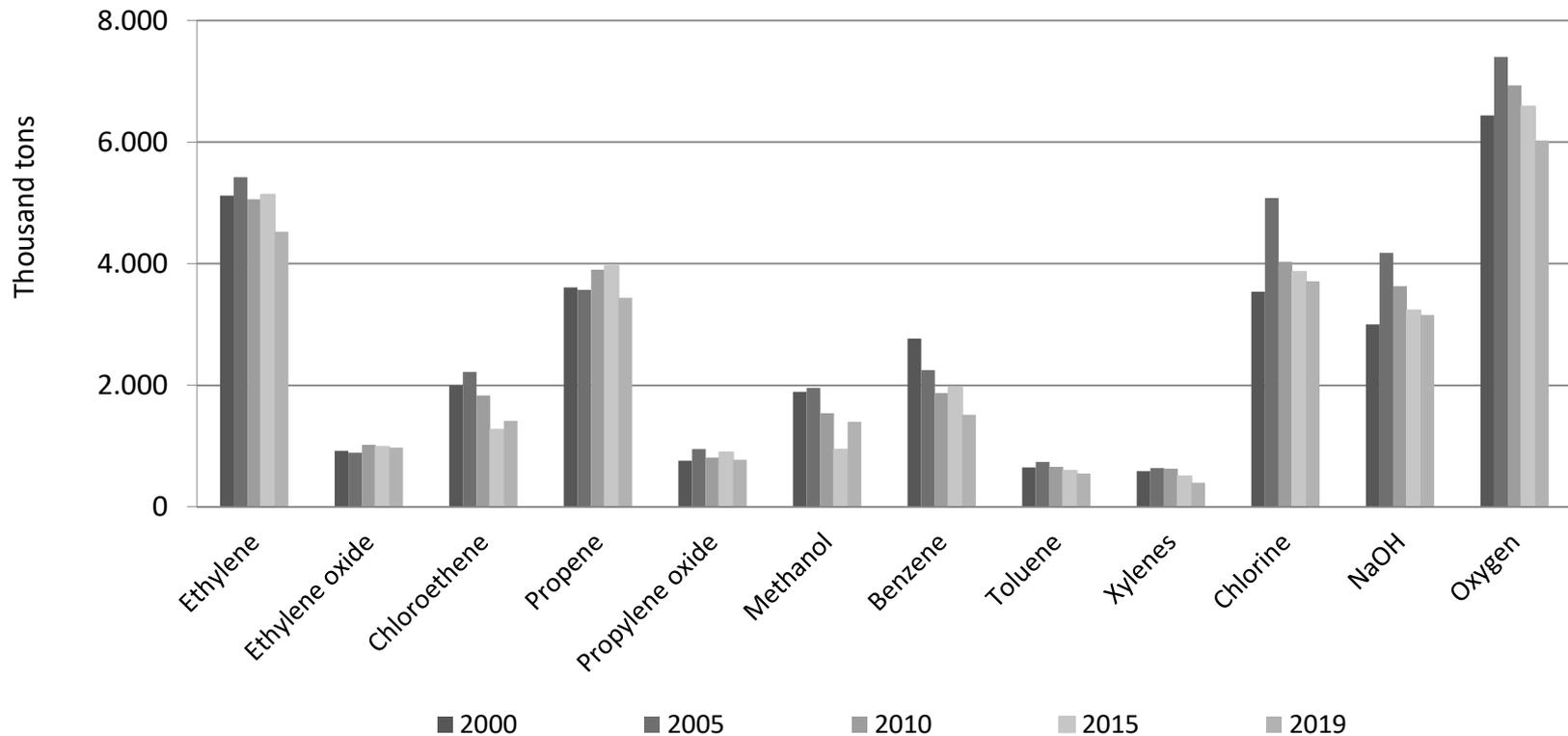


Source: VCI, *Chemiewirtschaft in Zahlen 2020* (Table 15a)

German Chemicals Production

Despite the economic downturn in 2009, the Basic Chemicals output in Germany remained almost steady since 2000.

Production Volumes of Basic Chemicals in Germany, 2000–2019

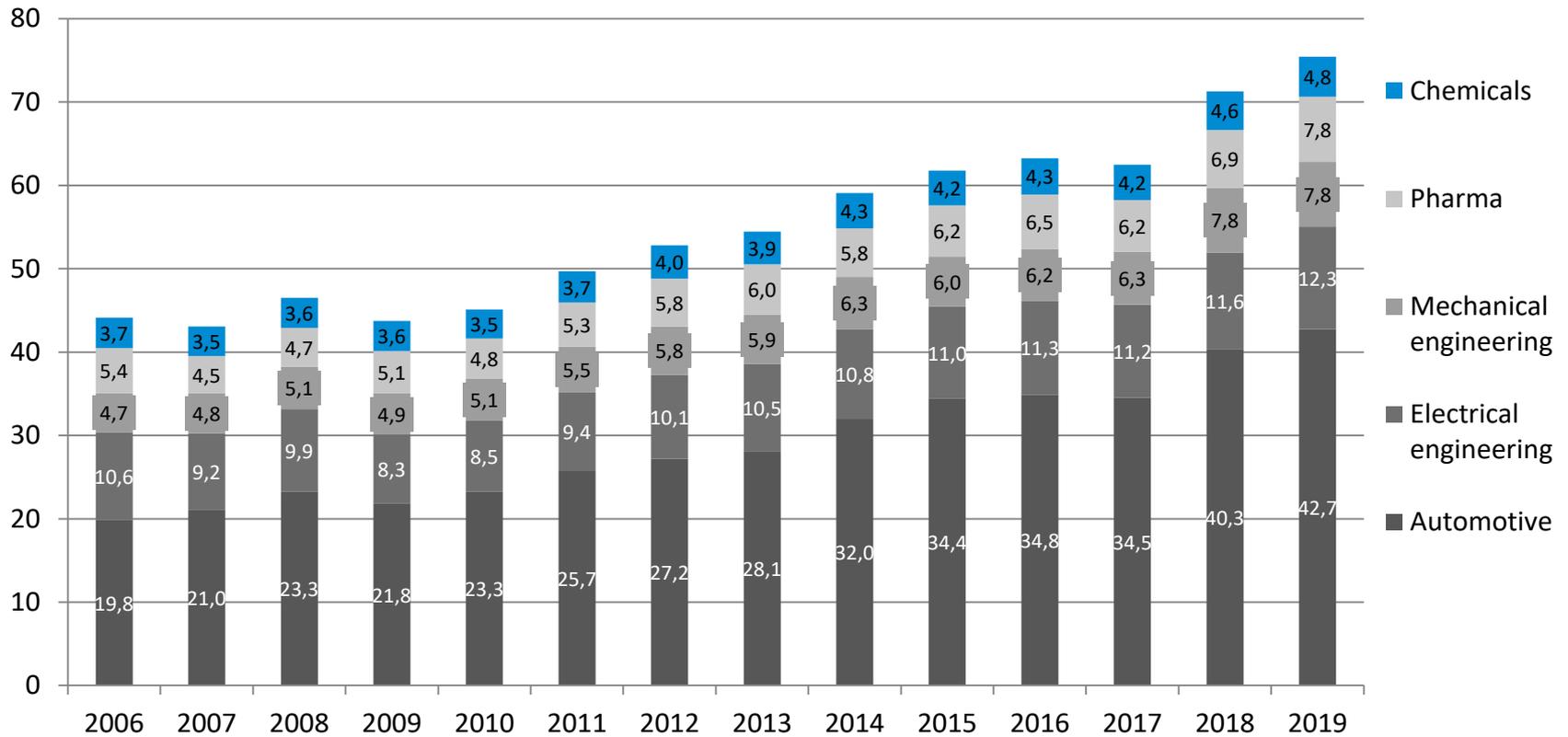


Source: VCI, *Chemiewirtschaft in Zahlen 2020*, Table 4a and 4b; Oxygen in million m³ under normal conditions..

Germany's private R&D spending

German chemical industry R&D expenditure was EUR 4.8 billion in 2019, making the sector the fifth strongest in Germany.

R&D Expenditure by Industry, 2006–2019

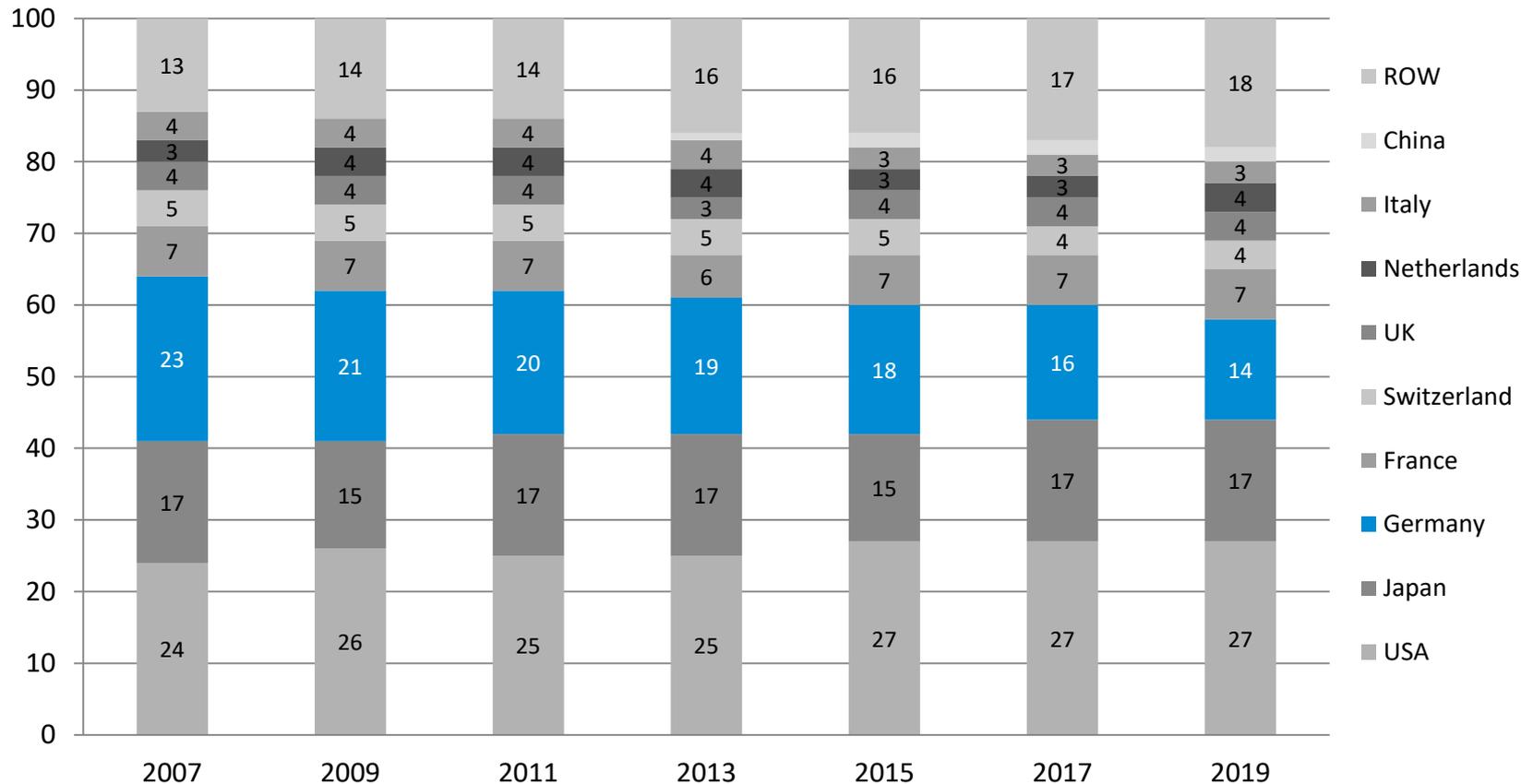


Source: VCI: Chemiewirtschaft in Zahlen 2020 (Table 48)

Chemical Patents

Germany is number three spot for European chemical patent registrations, only surpassed by the US and Japan.

European Chemical Patents granted by the EPO by Source Country in %, 2007–2019

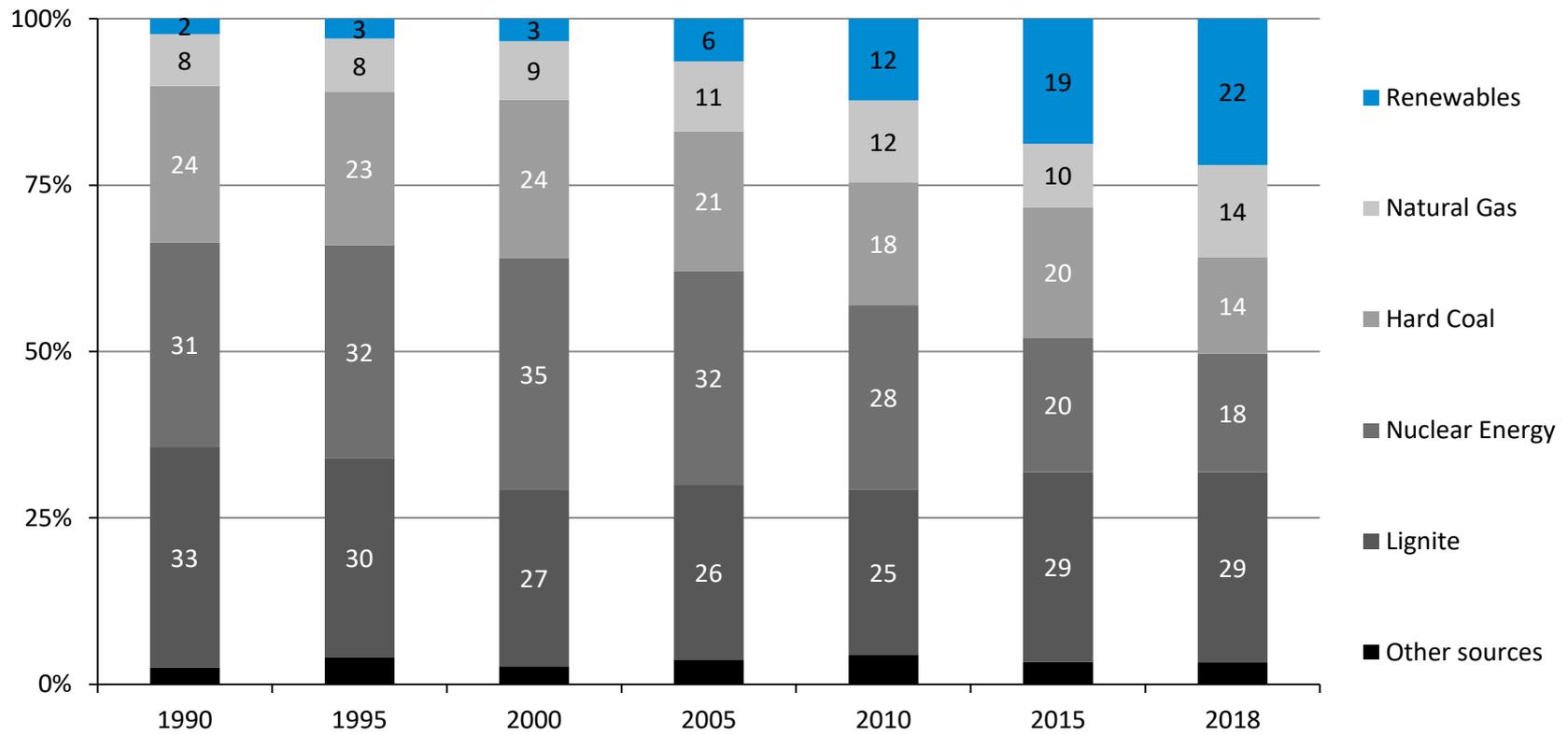


Source: European Patent Office (EPO), 2020

Electricity generation

In the last 30 years Germany got “greener” as Renewables has grown from 2% up to 22%. Nuclear energy decreased by 40% in the same period.

Electricity Generation in Germany by Energy Carrier in %, 1990–2018

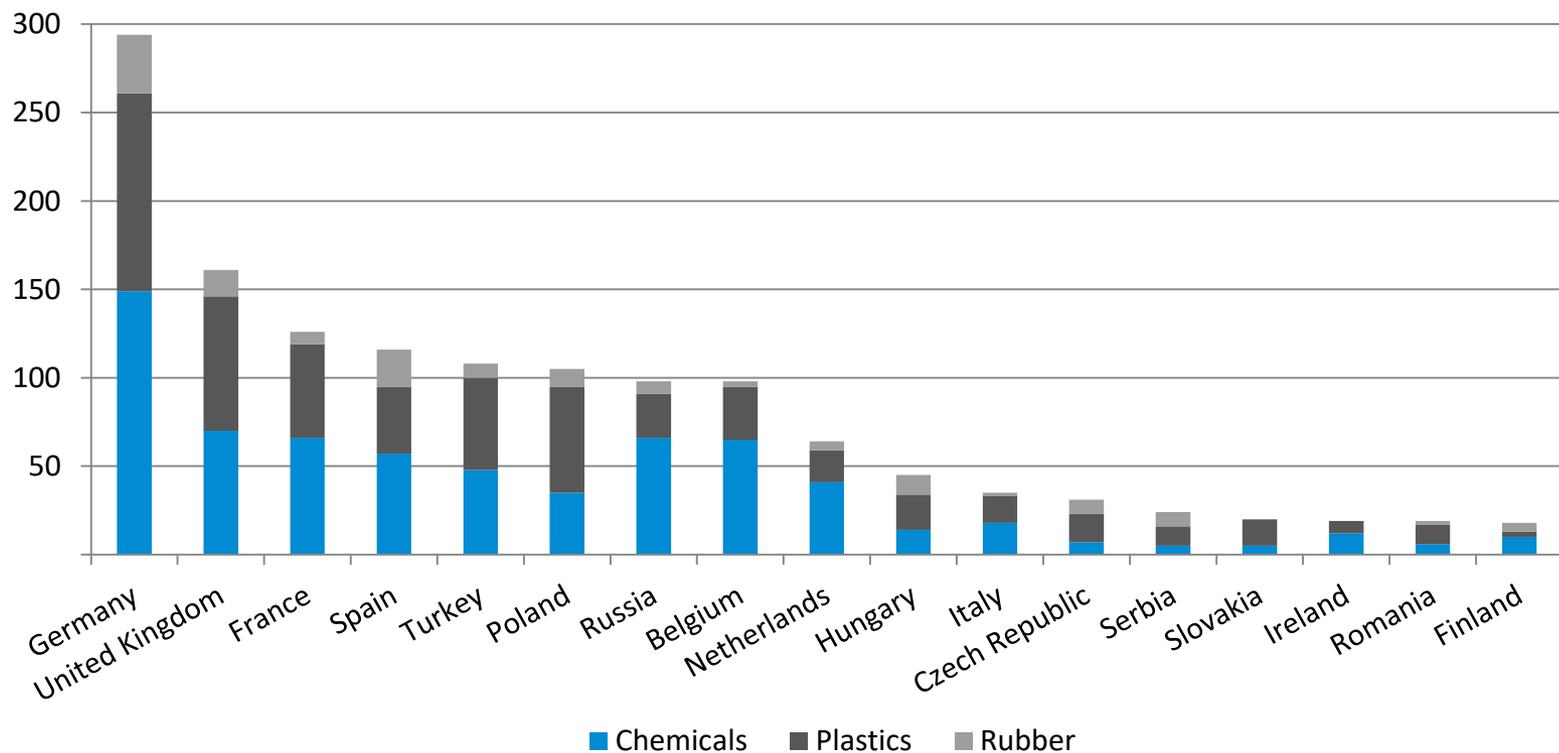


Source: AG Energiebilanzen e.V. (<http://www.ag-energiebilanzen.de/>)

Investments in Europe

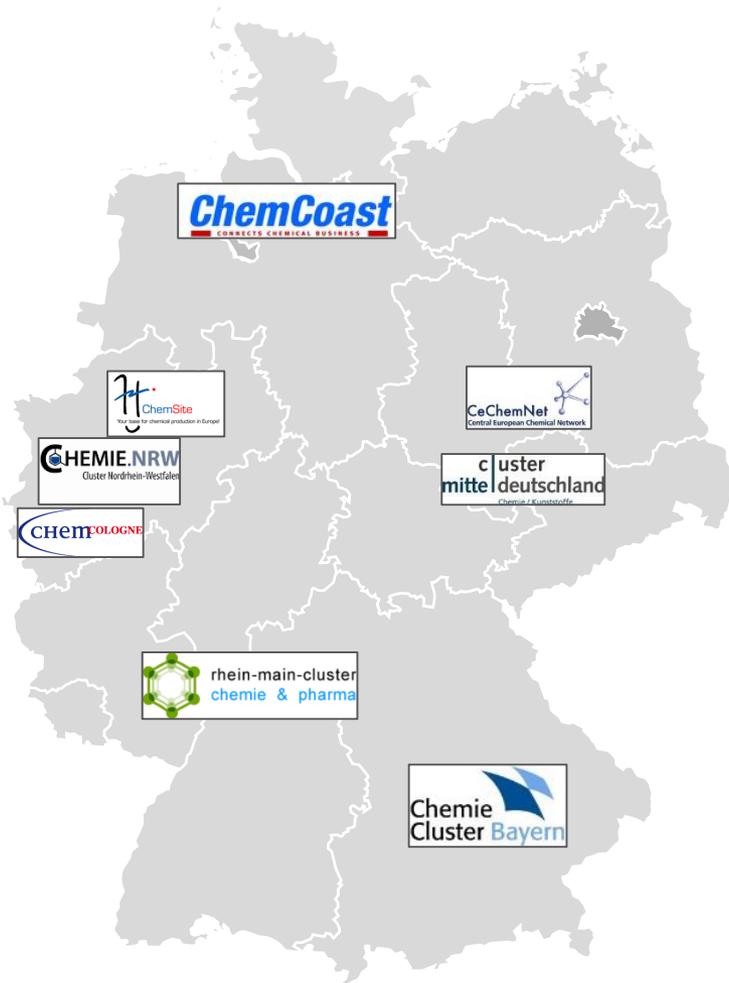
Thanks to market attractiveness, most chemical investments in Europe for the period 2014 to 2018 occurred in Germany.

Number of Investments in Europe, 2014–2018



Source: fDi markets. Total number of investments (1,529): Chemistry (746), Plastics (619), Rubber (164). Graph represents 90% of all investments.

The Chemical Cluster Landscape



Chemical Cluster offer added value to their members:

- as networking platform for R&D institutes, companies, and authorities within the region
- through strategic alliances with international chemical sites in Europe, Asia and the US
- strengthen the cluster members' global competitiveness

Agenda

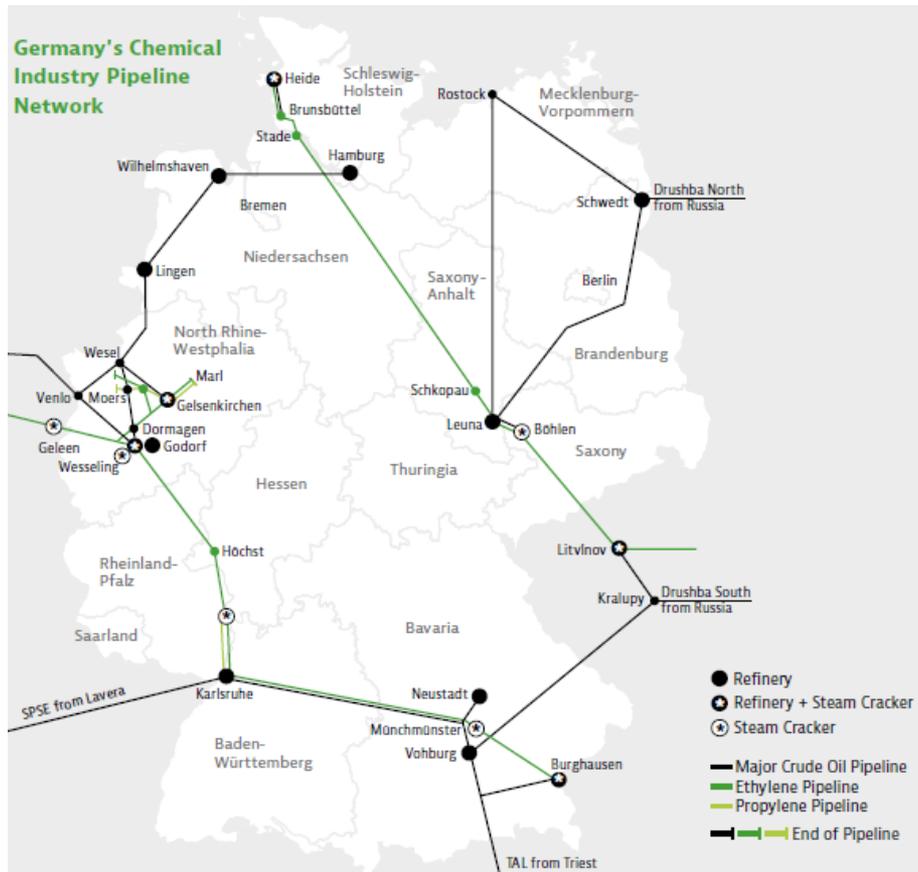
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Raw Materials Supply

Germany's chemical industry regions are well connected to the European pipeline grid.

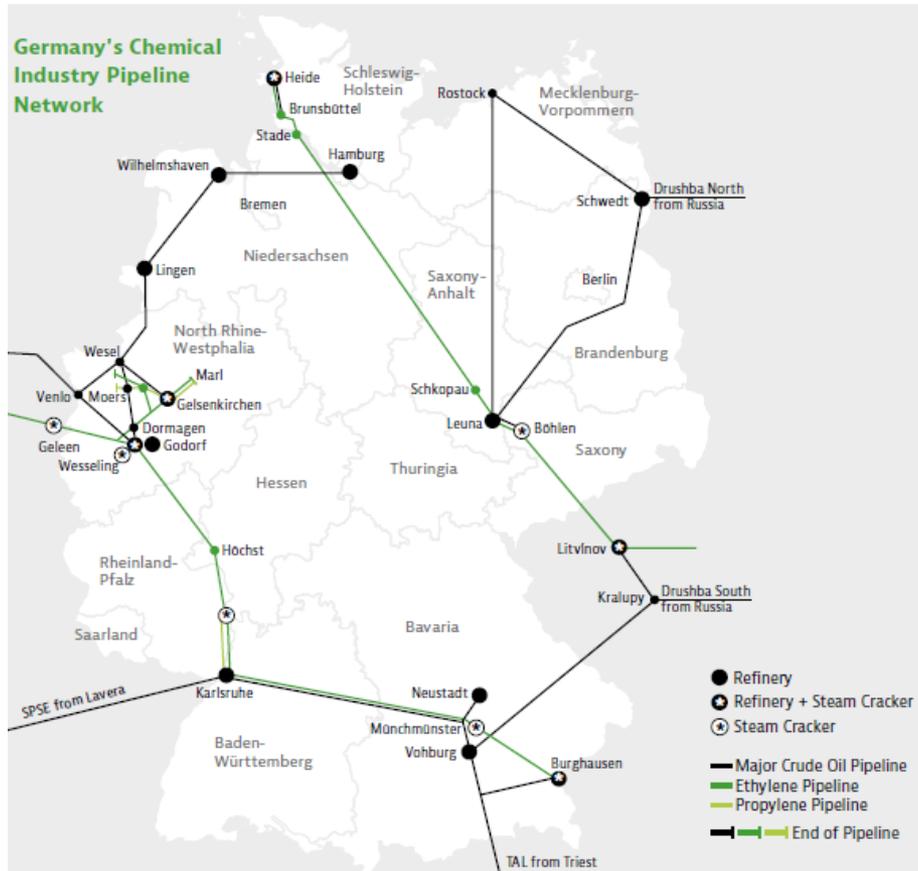


Infrastructure of raw materials supply:

- Crude oil via pipelines from:
 - Russia
 - the Mediterranean Sea
 - France
 - the North Sea
- Crude oil processing via:
 - 14 refineries
 - 8 steam crackers
- Pipelines for:
 - ethylene and propylene
 - natural gas
 - hydrogen
 - carbon monoxide

Phlethora of Logistics

Additionally to the pipeline grid, Europe's longest autobahn, rail and waterway network connects Germany with its nine neighboring states.



Autobahn **12,550 km**

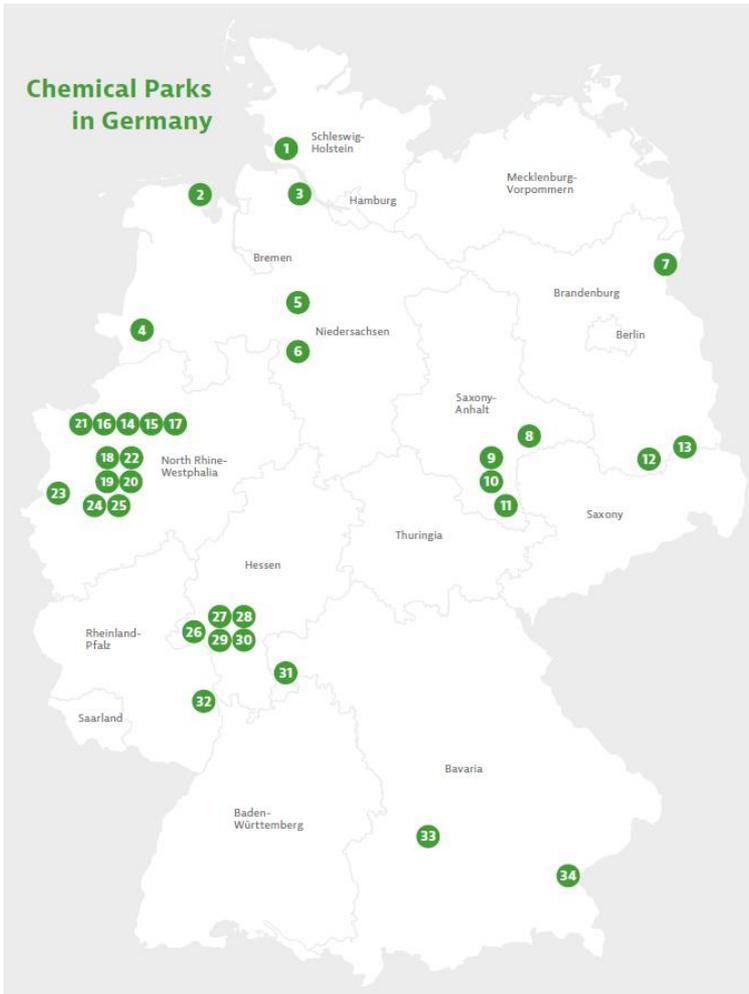
Railways **40,330 km**

Waterways **7,450 km**

Seaports **9**

Major Airports* **12**

Chemical Parks „Plug & Play“ concept

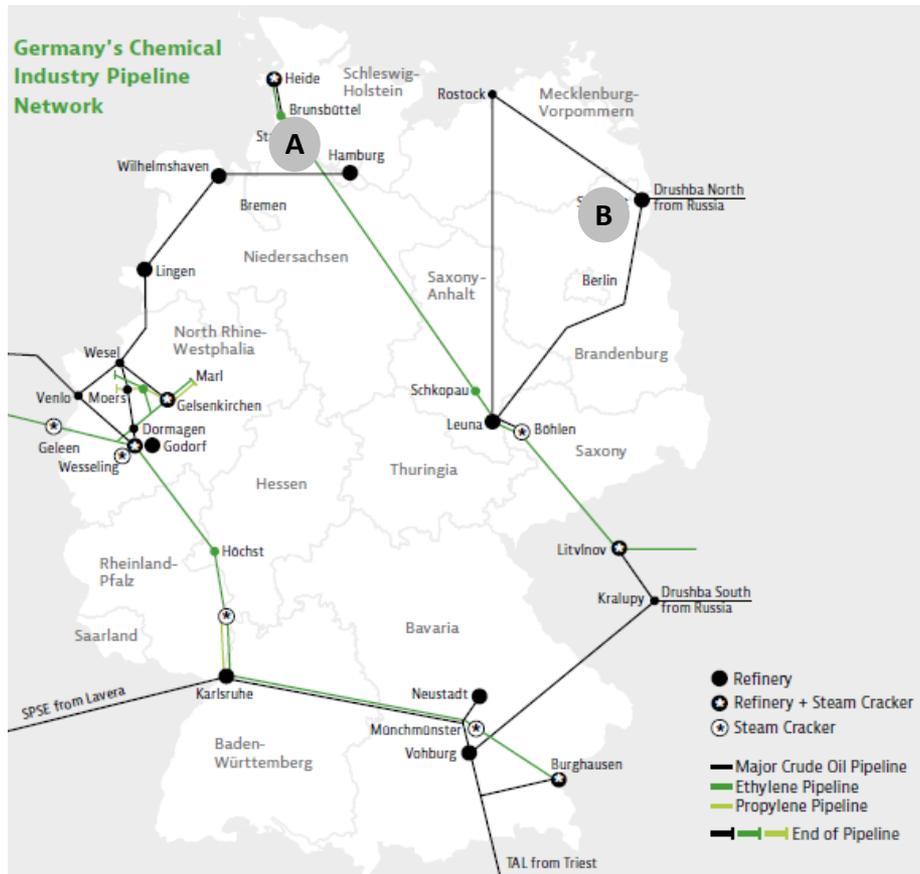


Chemical Parks – Advantages:

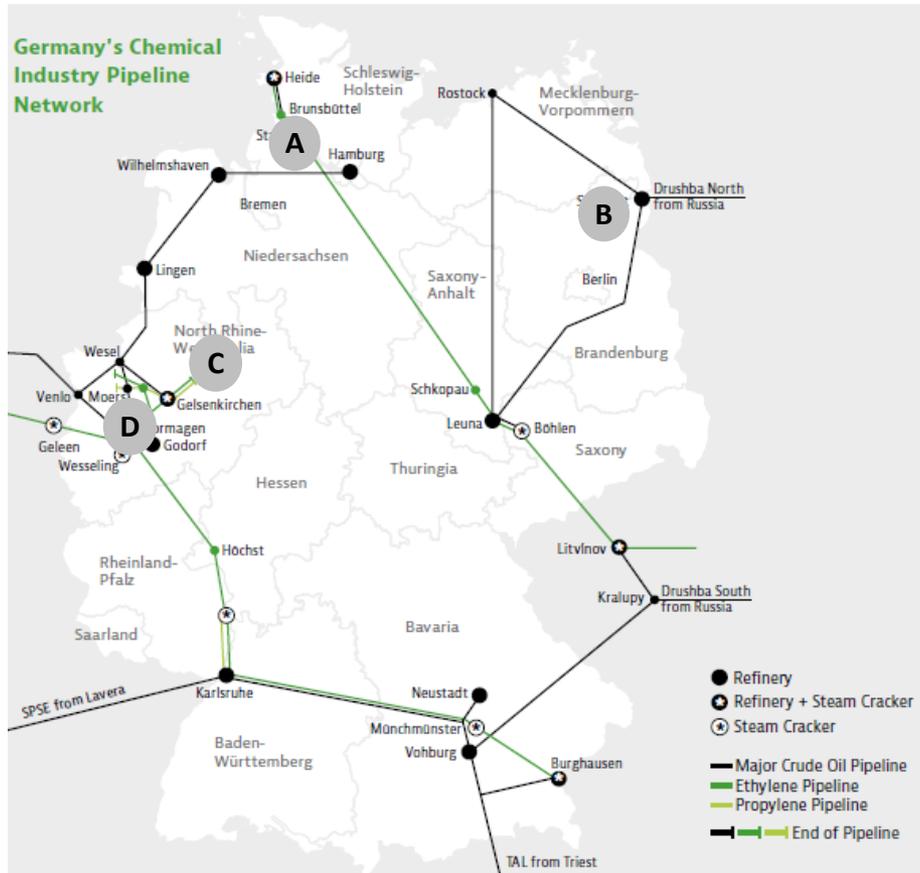
- About 30 chemical parks offer cost-efficient and unique benefits through:
 - excellent infrastructure
 - chemical raw materials via pipelines
 - gases and steam via pipelines
 - secure energy supply
- Site operators offer expertise and services from one source
- Investors choose the services from site operator that suits their business model best

Source: Factsheet „Chemical Parks in Germany“, Germany Trade & Invest, February 2017

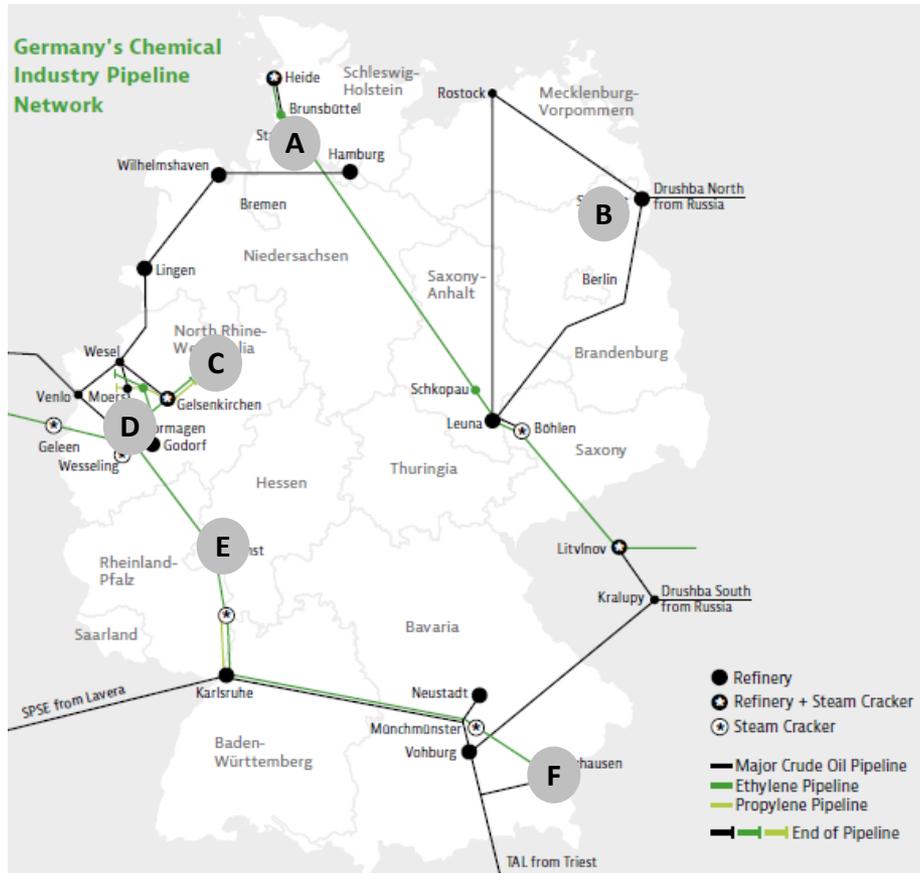
Chemical Parks – Selected Locations



Chemical Parks – Selected Locations



Chemical Parks – Selected Locations



Germany Trade & Invest

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Germany Trade & Invest

Foreign Trade and Inward Investment Promotion Agency

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