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Forum Chemical Industry 2014: Germany's Chemical Industry – Trends, Challenges, and Opportunities

Dr. Marcus Schmidt

Director Chemicals & Healthcare

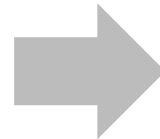


GERMANY
TRADE & INVEST

Germany features a unique set of qualities that make it one of the most attractive business locations in the world.

Expansion / Investment Drivers:

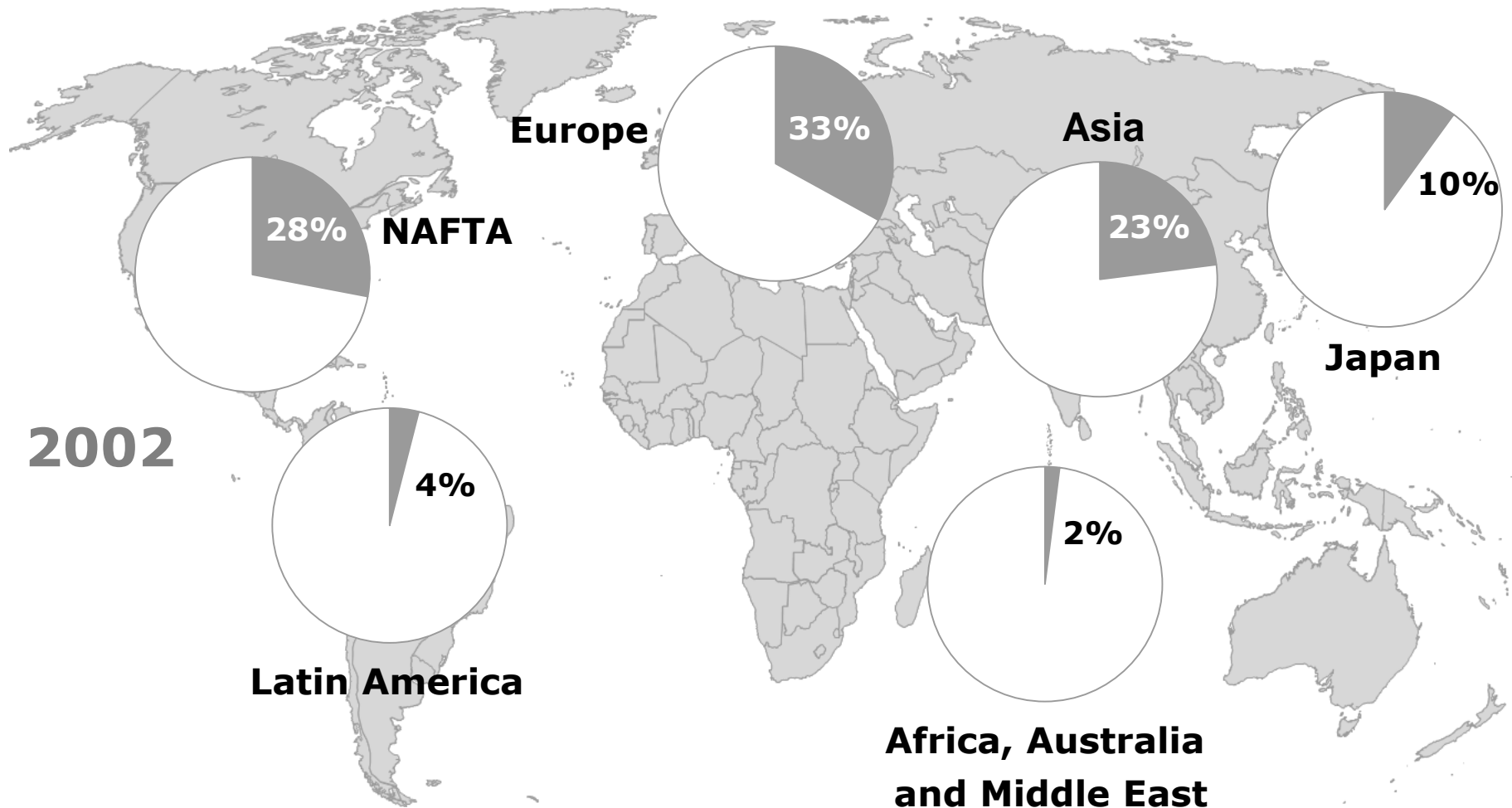
- Increase sales
- Lower cost
- Improve / localize products



Germany's Strengths:

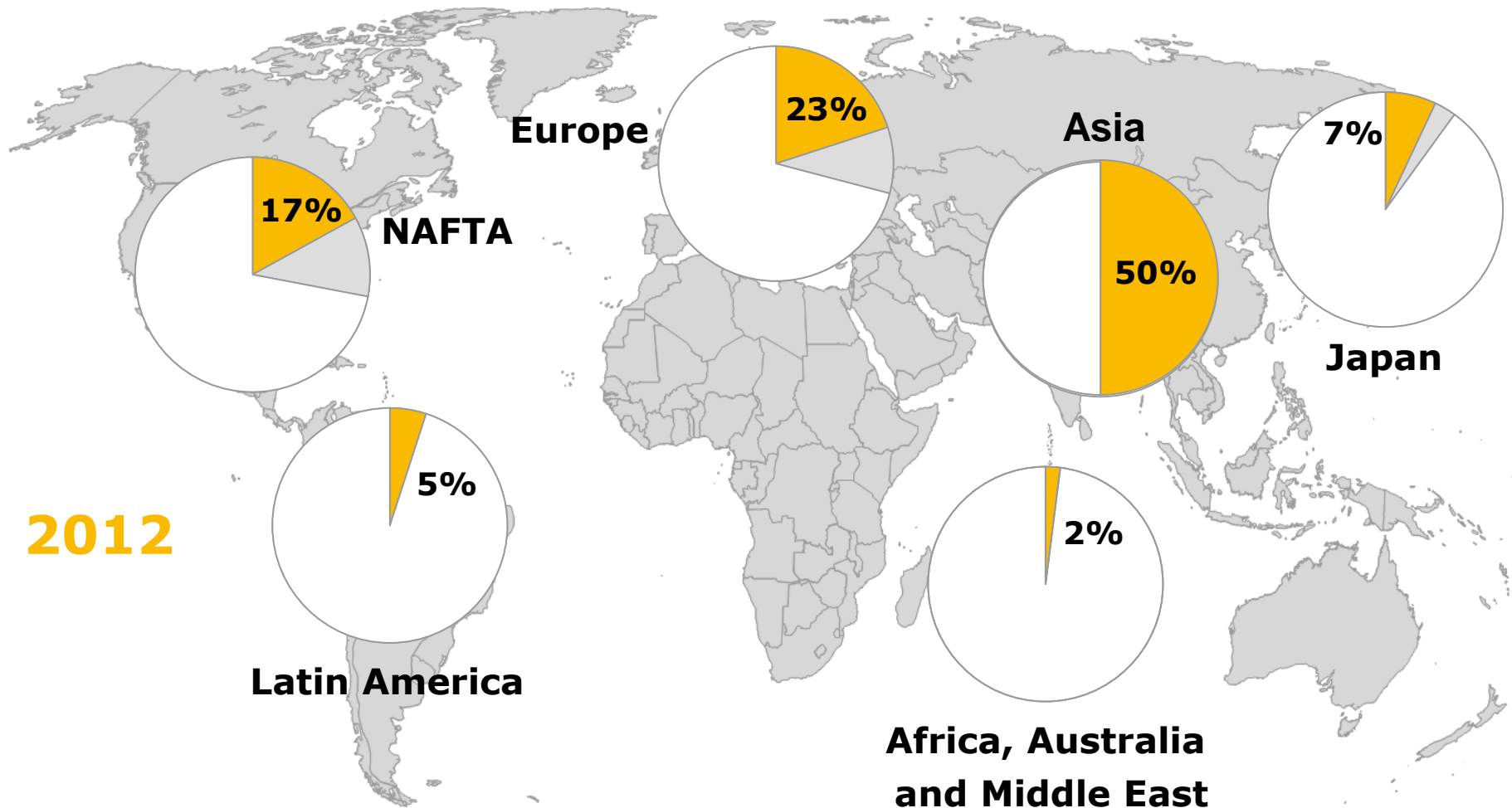
- Europe's largest market
- World's second largest exporter
- Robust economy
- Infrastructure and logistics
- High efficiency (permits, labor, construction, trade, etc.)
- Raw materials and energy?
- German engineering and innovation
- Research and development
- Manufacturing know-how

In the past 10 years chemical sales grew most significantly in South-East Asia.



Source: Cefic, Facts and Figures 2013.

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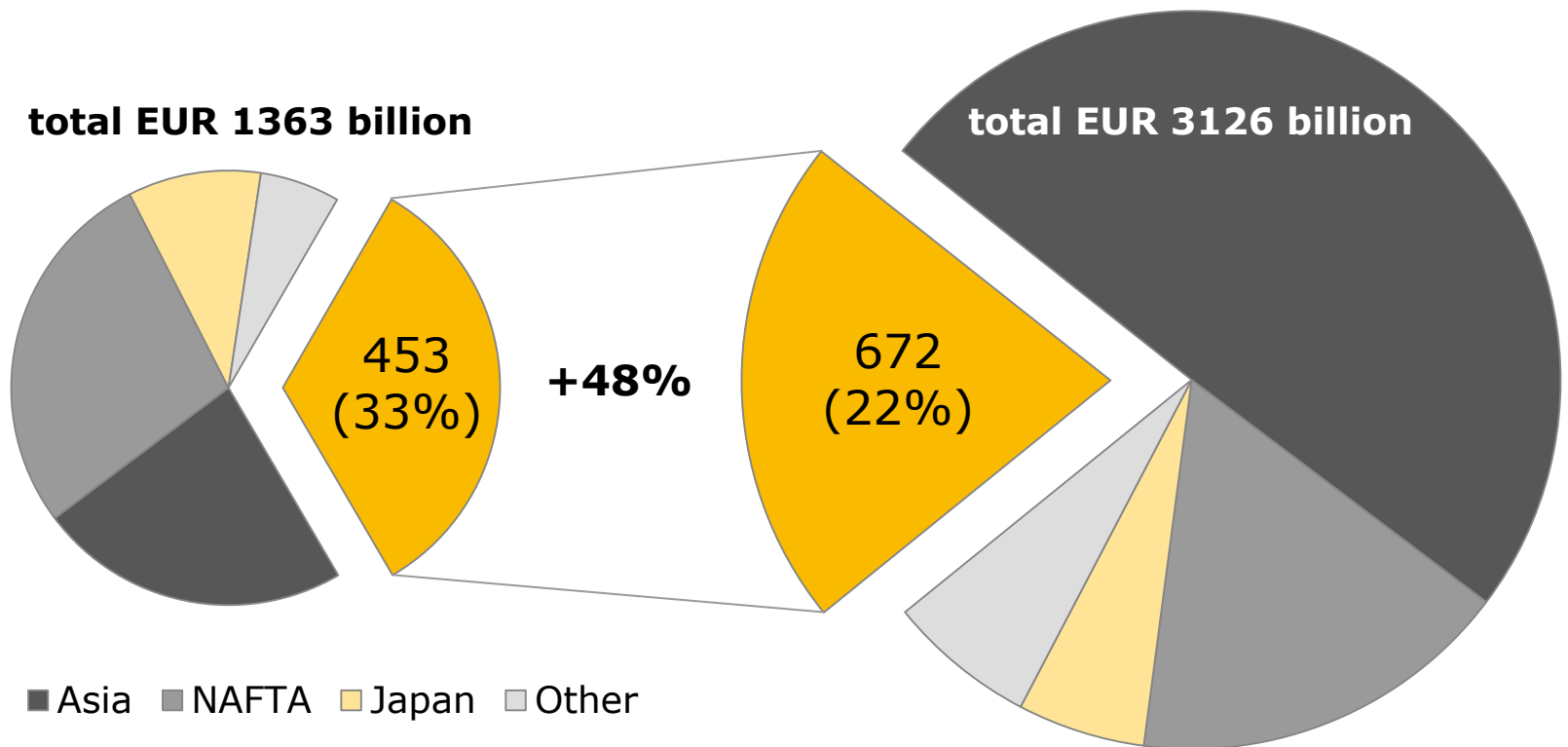


Source: Cefic, Facts and Figures 2013.

Despite China's strong growth, Europe continues to be a relevant and growing market.

Chemical Sales 2002 in EUR billion

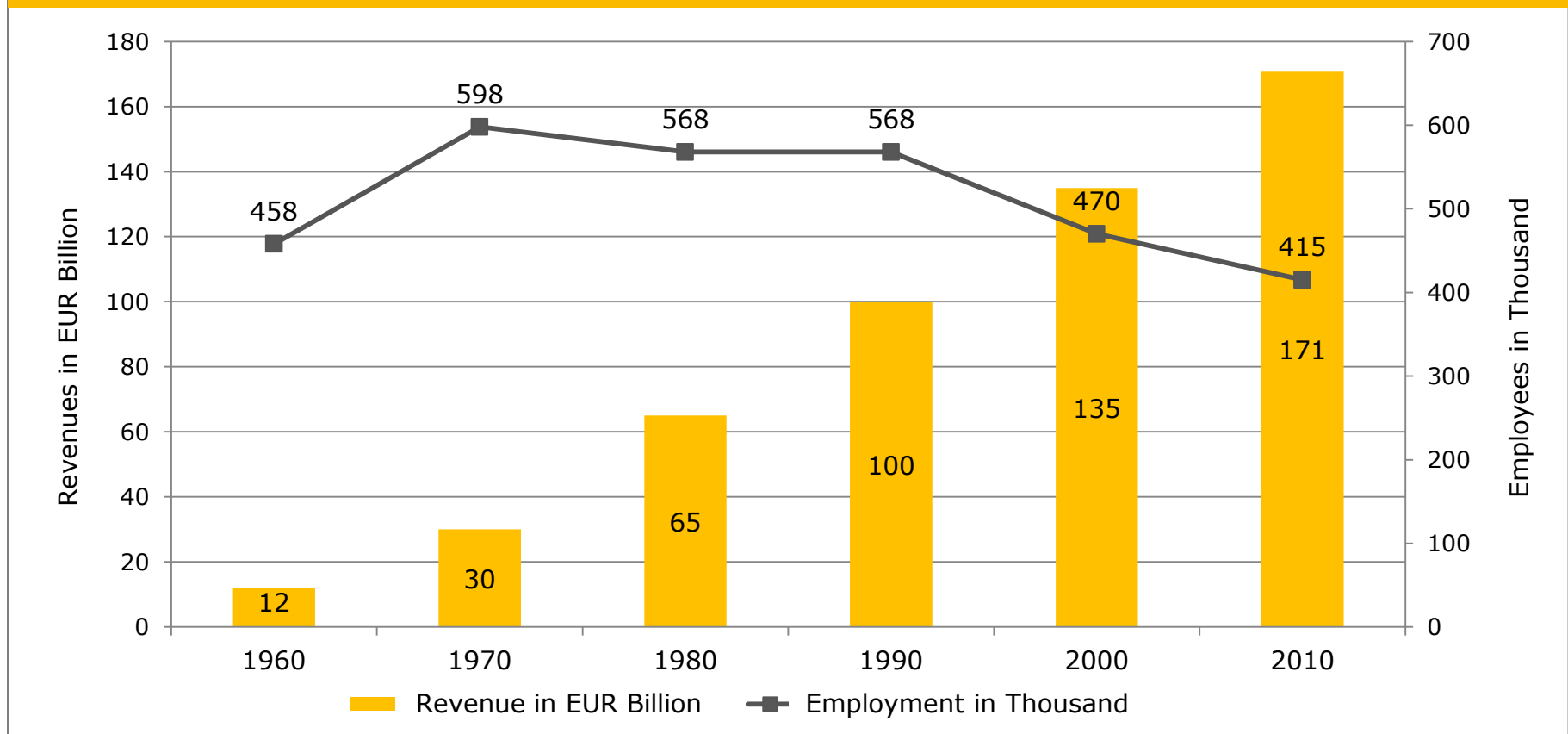
Chemical Sales 2012 in EUR billion



Source: Cefic, Facts and Figures 2013.

Over the past 50 years, productivity in Germany has increased 14-fold.

Chemical Industry Revenue and Employment in Germany 1960-2010



Source: VCI, 2012.

Details: 1960: without Saarland; from 1964 including west Berlin; 1970, 1995, and 2008 with new statistical classification; as of 1991 as unified Germany.

German global players show operating margins in the double-digits.

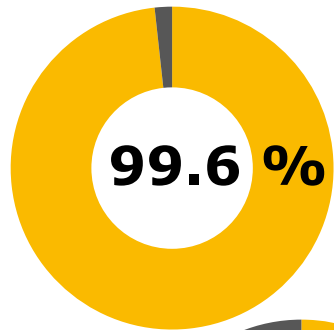


Financial Results of German Chemical Companies in 2012 in Million Euro

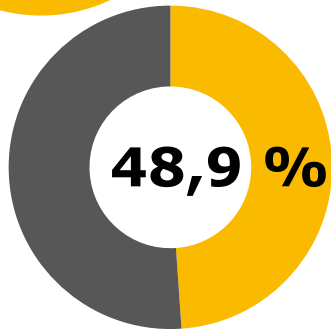
Company	Revenue	Operating Margin	Net Profit
BASF	78,729	11%	5,222
Bayer	39,760	10%	2,446
Henkel	16,510	14%	1,510
Evonik	13,629	14%	1,164
Merck	11,173	9%	567
Lanxess	9,094	9%	515
Wacker	4,635	6%	107
Altana	1,705	13%	155

Source: respective annual company reports. The financial year corresponds with the calendar year.
Operating margin: operating income (EBIT) in relation to revenues.

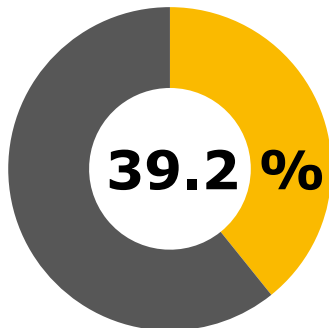
The vast majority of German chemical and pharmaceutical companies are small and medium sized enterprises.



Share of small and medium sized enterprises (SME)
total of 3700 companies <1000 employees



Share of employees working for SMEs (220,000)



Share of revenues generated by SMEs

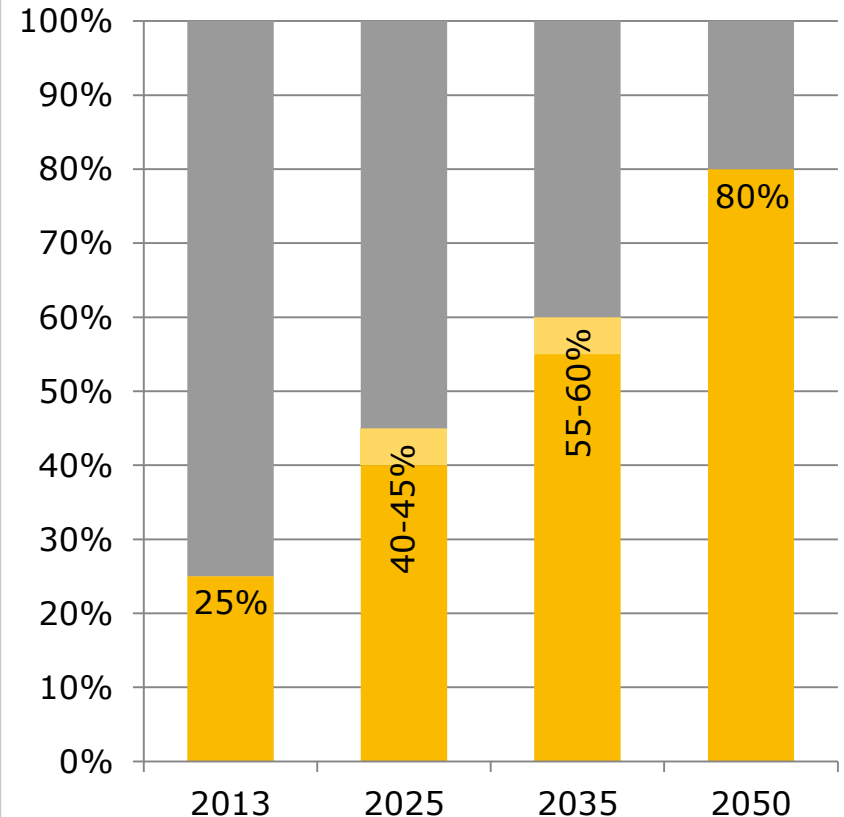
Germany has set ambitious goals regarding the transformation of its energy generation, supply, and consumption („Energiewende“).

Goal:

Achieve sustainable energy generation and supply for an industrialized and economically competitive Germany.

- Energy security (supply and production facilities)
- Independence from fossil fuels
- Stable, competitive prices

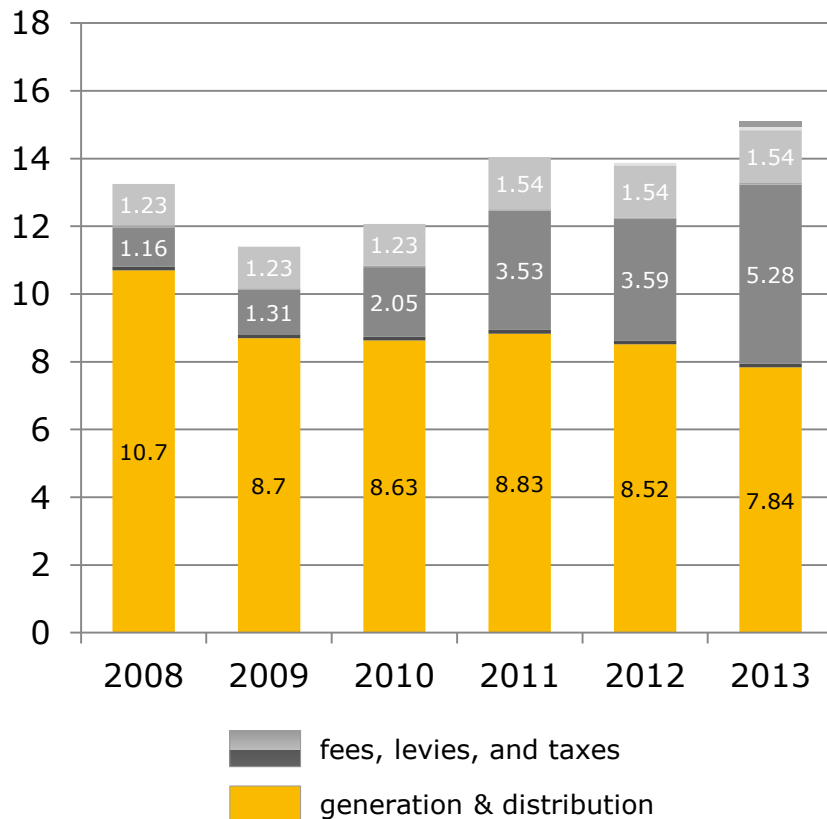
Share of Renewable Energy Sources for Electricity Generation (Goals 2014)



Source: Gesetzentwurf der Bundesregierung (German government energy bill), April 2014; BMWi

Electricity prices for industrial consumers in Germany depend on several factors.

Electricity prices for industrial consumers in Germany in €-Cent/kWh



Source: BDEW, VEA, 2013

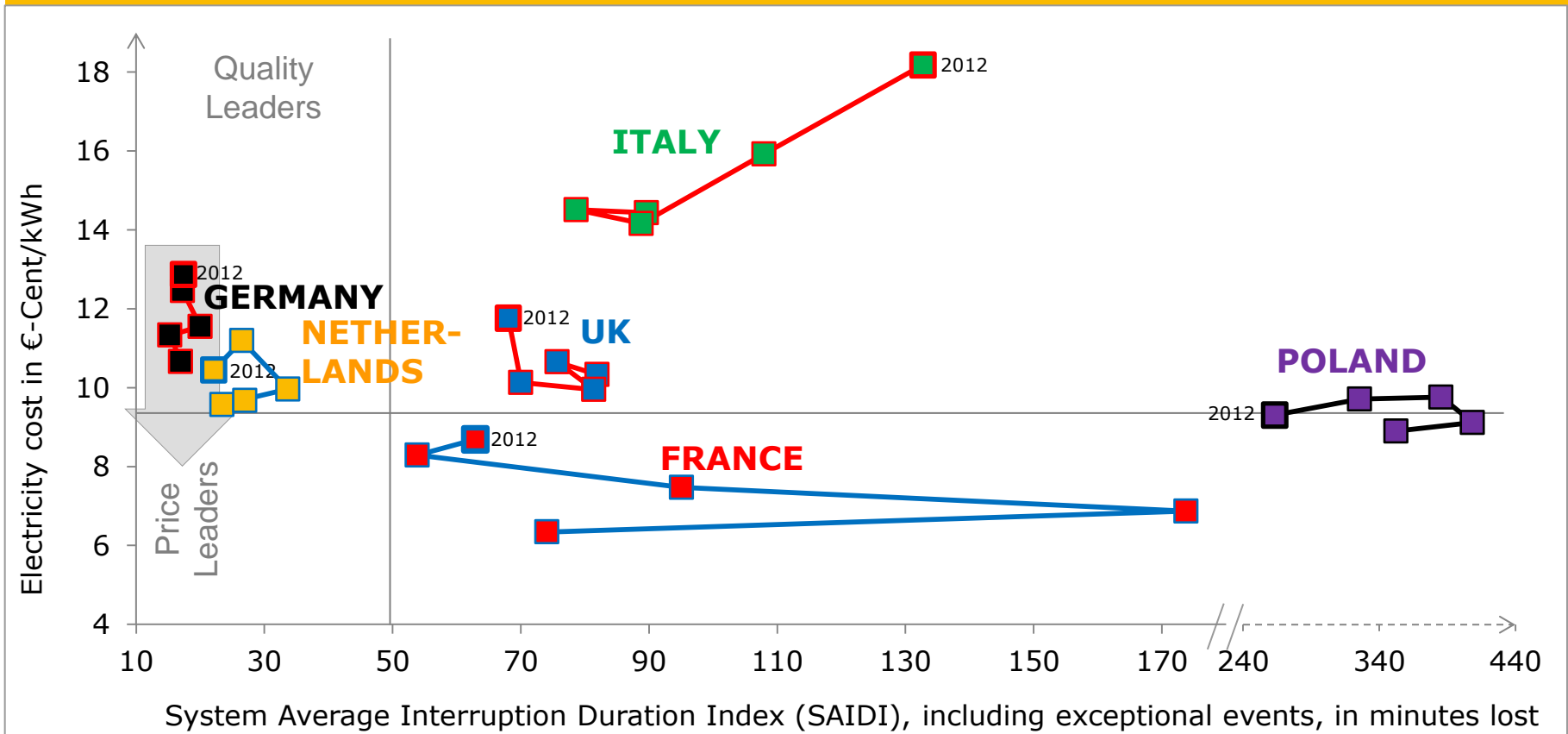
Note: based on electricity consumption of 100kW/1600h – 4000kW/5000h

Fees and levies can be eliminated or reduced under certain requirements:

- Energy intensive industries
 - 1-≤10 GWh/a: 10% of regular EEG
 - 10-≤100 GWh/a: 1% of regular EEG
 - >100 GWh/a: 0.05 cent/kWh*
- Energy Management System (ISO 50001)
- Own power plants
- 2262 plants profited from hardship provisions in 2013, incl. 10% chemical companies
- Currently review by federal government and EU commission

Germany is leading in regard to power quality and network reliability.
Energy costs are expected to become even more competitive over time.

Electricity cost for industrial consumers and grid reliability in Europe 2008-2012



Source: EUROSTAT (energy prices); statista database;

Source: Council of European Energy Regulators (CEER): Ref: C13-EQS-57-03 v. 11.2.2014, Table1: Unplanned SAIDI, incl. exceptional events

The „Energiewende“ has its challenges, but also creates long-term opportunities, especially for the chemical industry.

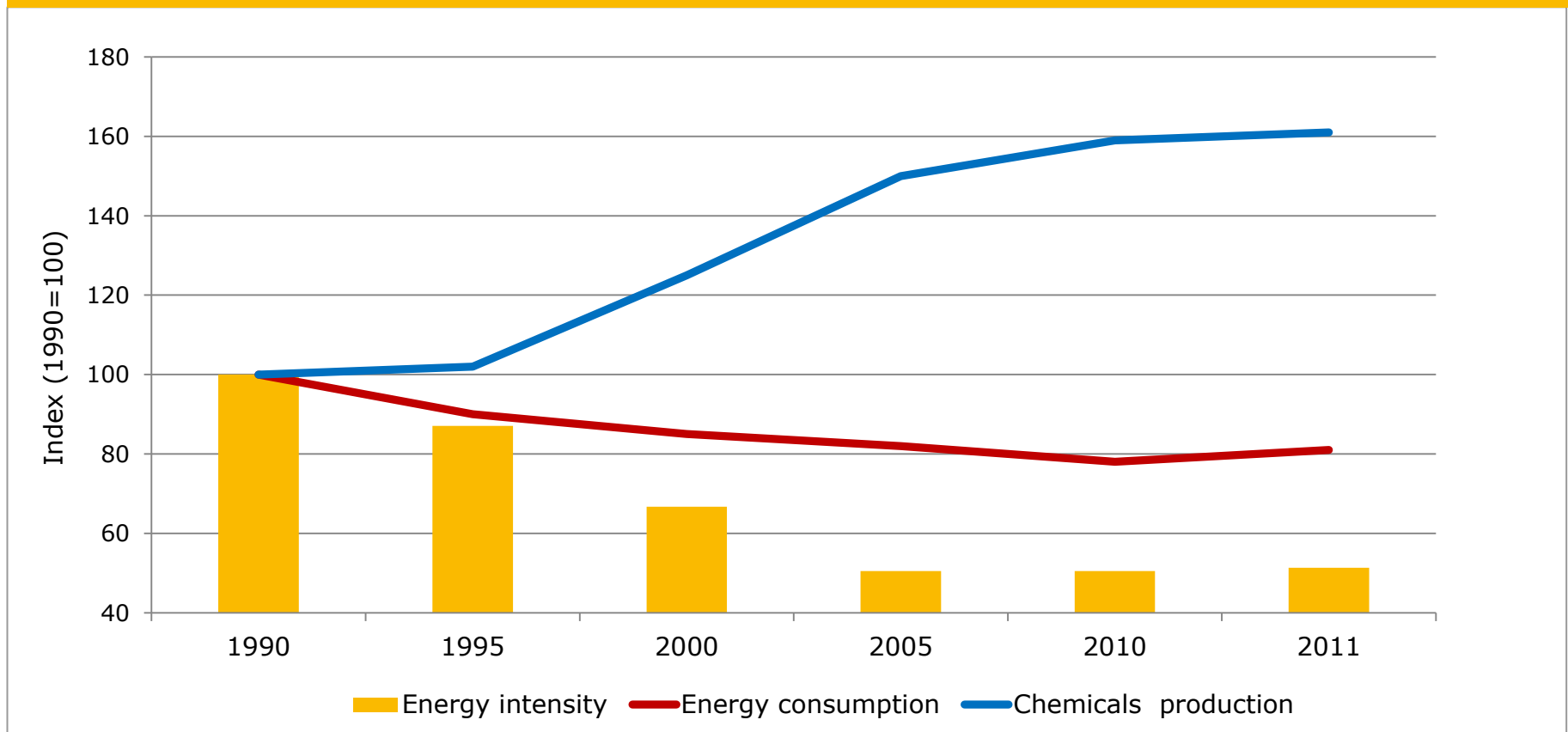
The vast majority of Germans supports the transformation of the current energy infrastructure , as long as three conditions are met:

- Energy supply continues to be secure
- German industry remains competitive (job security)
- Private consumer prices rise only moderately



The energy intensity of the European chemical industry was cut almost in half over the past two decades.

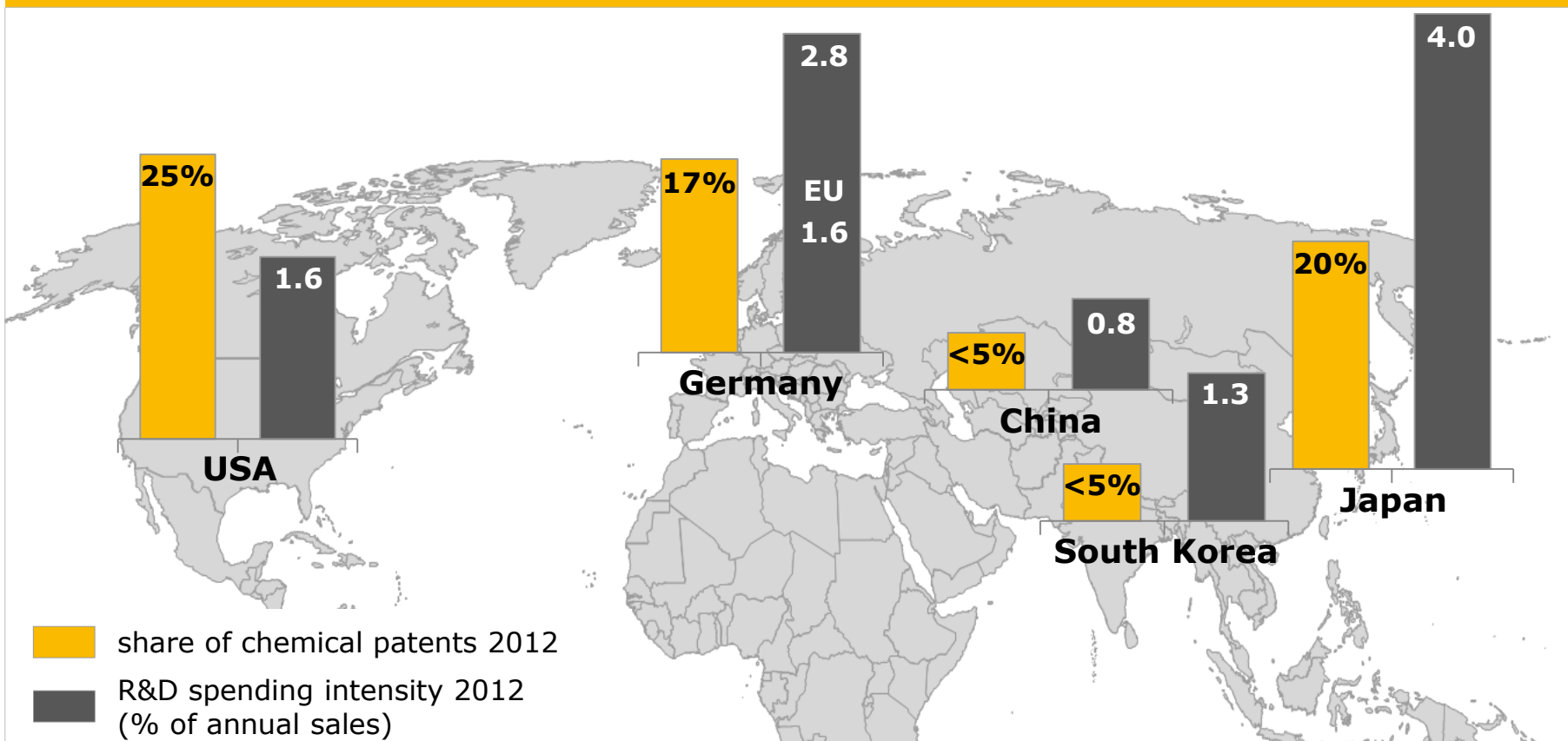
Chemical Industry Energy Consumption in relation to Production Output



Source: Cefic, Facts and Figures 2013.

Japan, Germany, and the US are leading in chemical R&D spending and patent registration.

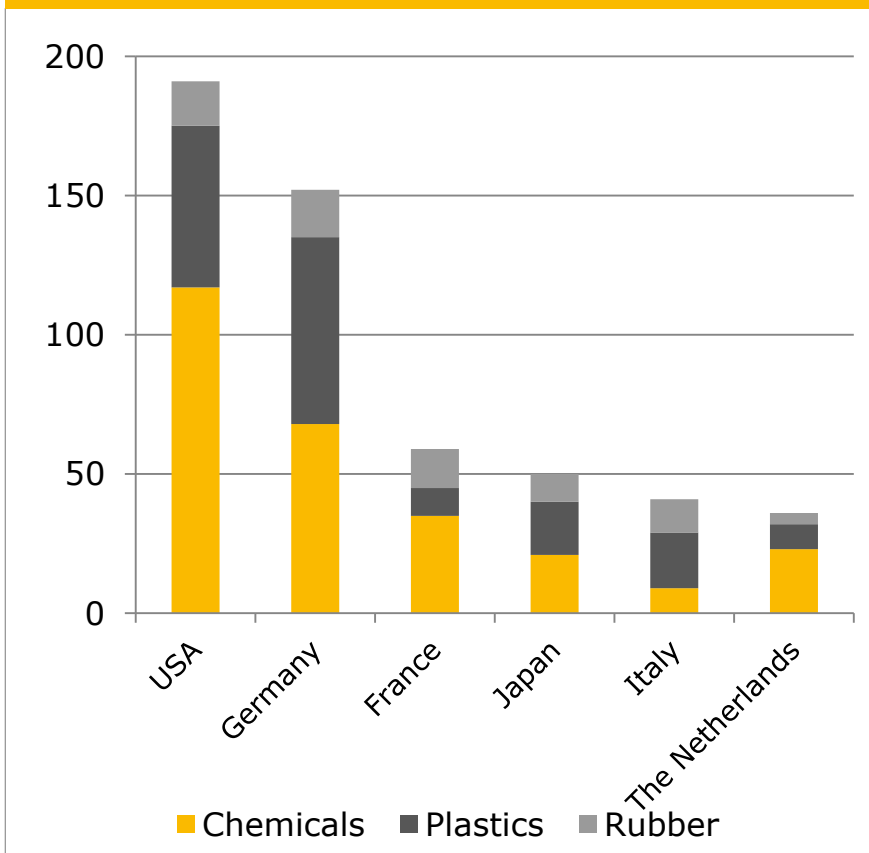
Chemical Patents and R&D Spending Intensity



Source: Cefic, Facts and Figures 2013; Statistisches Bundesamt, VCI, Stiferverband für die deutsche Wissenschaft 2013

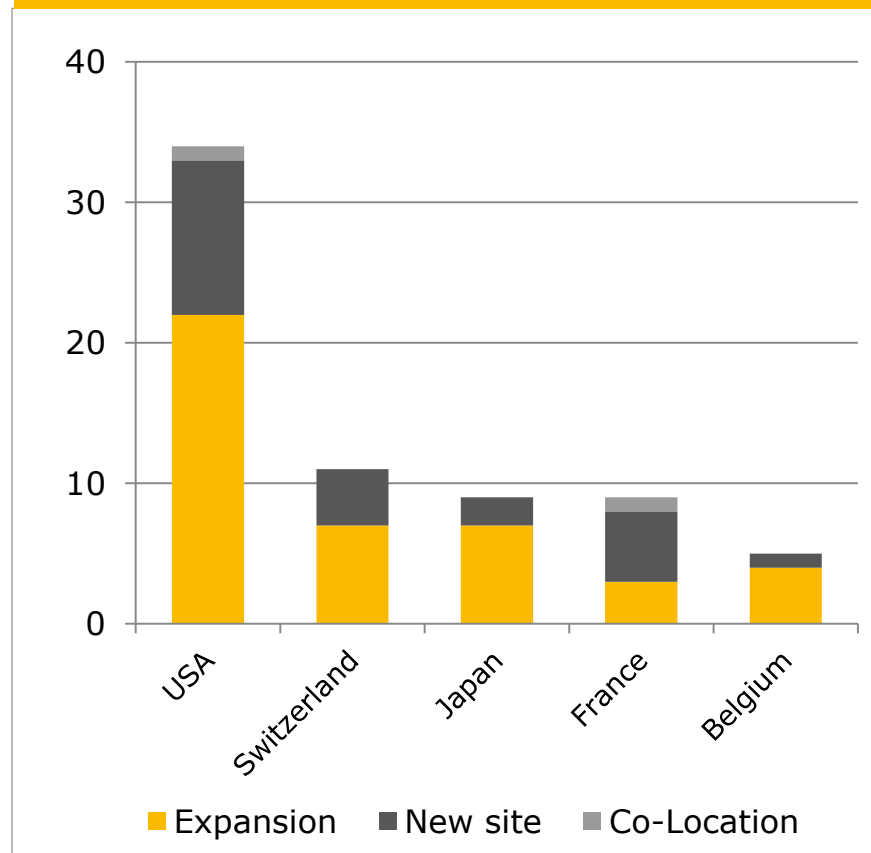
The most important sources for Foreign Direct Investments in Germany are the USA, Japan and neighboring countries.

Number of production investments in Europe (2008-12) by source country



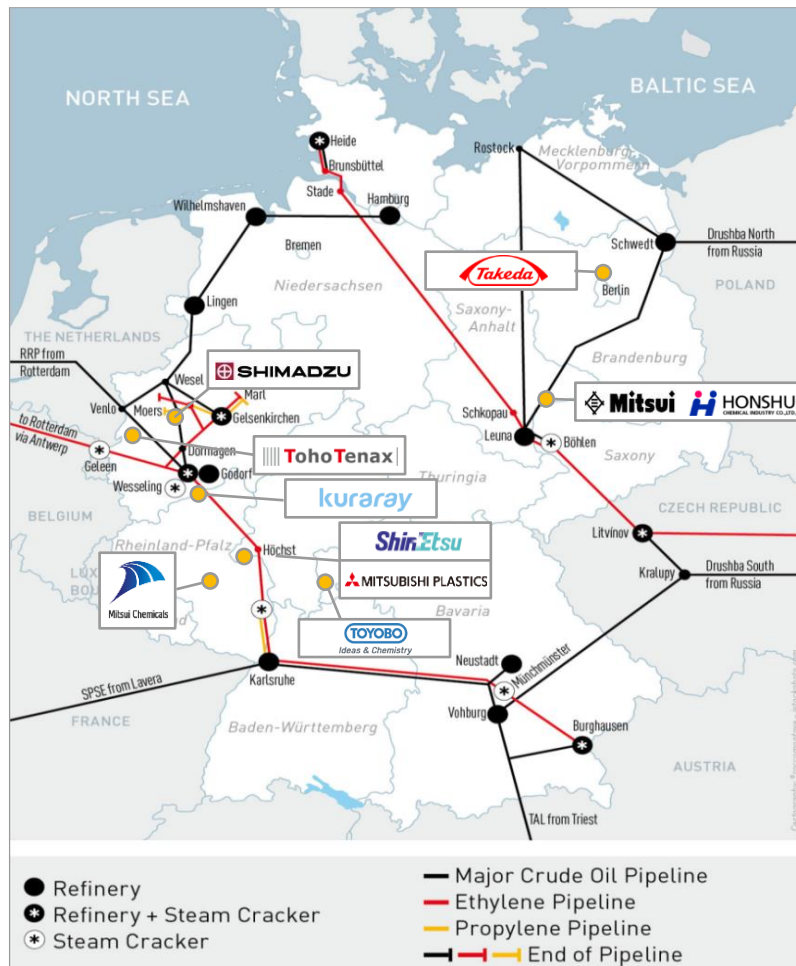
Source: fDi Markets; Germany Trade & Invest, 2013.
only selected countries shown

Number of production investments (2008-12) in Germany by source



Note: only selected countries and investment projects shown. Non-production related operations (e.g. sales, R&D, distribution) not included.

Germany continues to be a highly attractive business and investment location for Japanese chemical and pharmaceutical companies.



Selected Production Investments in Germany

Product & Volume	Investment	Parent Company
Pharmaceuticals + 30%	100M EUR	Takeda
AI Sandwich Materials 1,500,000 sqm/a	2B Yen	Mitsubishi Plastics
Labs and Training Center 1,500 sqm	3.2M EUR	Shimadzu
Polyester Elastomer 1,100 t/a	700M Yen	Toyobo
Bisphenol Derivative +5,000 t/a	50M EUR	Hi-Bis (JV of Honshu, Mitsui, Bayer Material Science)
Polyvinyl Butyral 10,000,000 sqm/a	20M EUR	Kuraray
Polymer Blend +15,000 t/a	2M EUR	Mitsui Chemicals
Methylcellulose +13,000 t/a	13B Yen	ShinEtsu
Carbon Fibers +1,700 t/a	51M EUR	Teijin / Toho Tennax

Source : Germany Trade and Invest, 2014; press releases by the respective companies.

Contact

Germany Trade & Invest Foreign Trade and Inward Investment Promotion Agency

Dr. Marcus C. Schmidt

Director Chemicals & Healthcare

T. +49 (0)30 2000-99-600

Marcus.Schmidt@gtai.com

Germany Trade and Invest GmbH

Berlin Headquarters

Friedrichstraße 60

10117 Berlin

Germany

T. +49 (0)30 200 099-0

F. +49 (0)30 200 099-111

www.gtai.com