

AT A GLANCE

Prognos Dual-Use-Atlas

Dual-Use Employment Potential in German Industry

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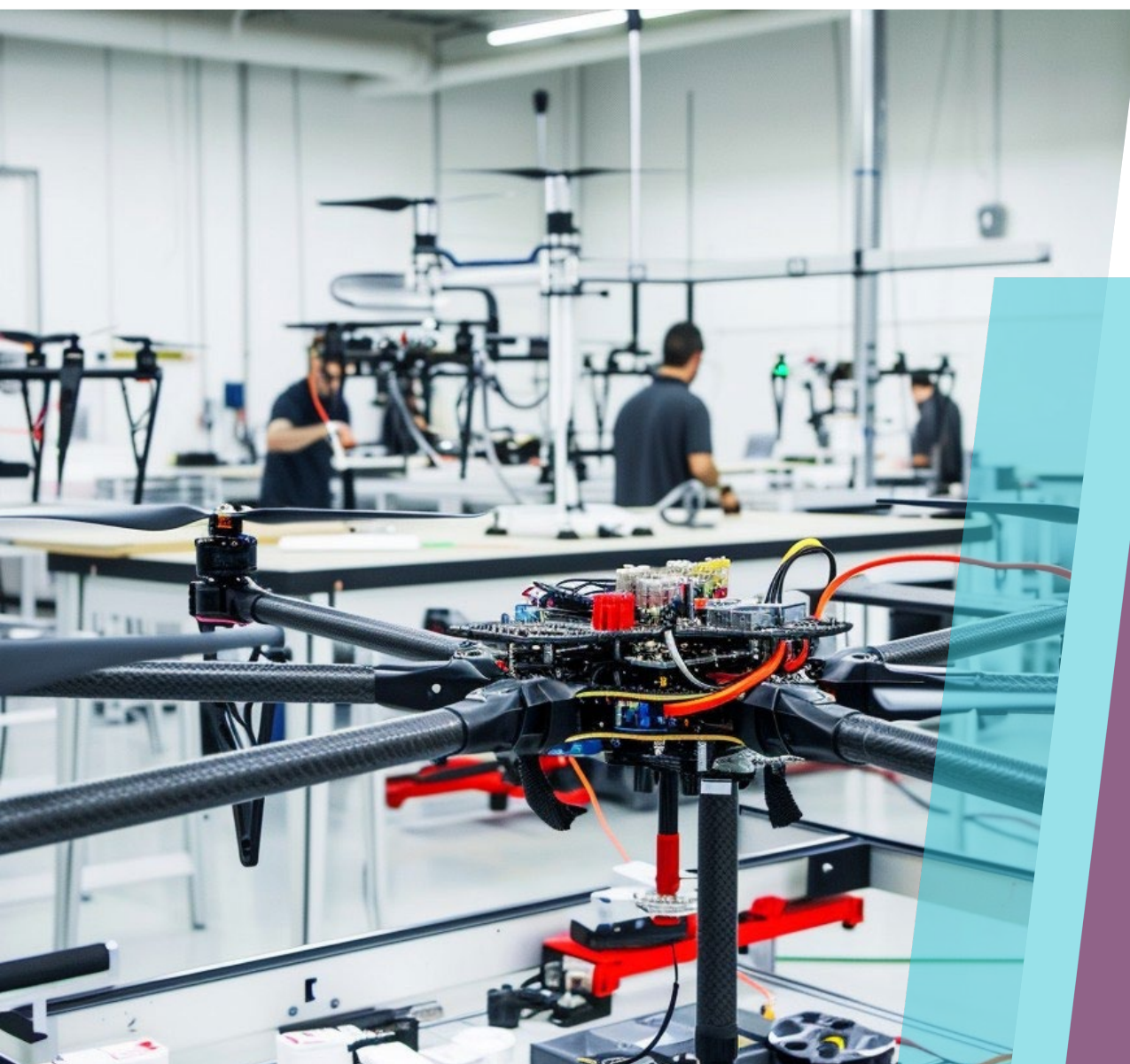


Table of Contents

1	About the Prognos Dual-Use-Atlas	3
2	Results of the Dual-Use-Atlas	5
2.1	Overview of the Dual-Use Economy in Germany	5
2.2	Key Findings of the Dual-Use Atlas	7
2.3	Regional Dual-Use Employment Potential	10
3	Methodology and Indicators	18
3.1	The Prognos Dual-Use Analytical Framework	18
3.2	Indicators and Calculation of the Dual-Use Atlas	18
4	Customized Analysis and In-Depth Assessment for Your Region	20
	Your Contacts at Prognos	21
	Legal Notice	22

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1 About the Prognos Dual-Use-Atlas

Germany is at an industrial policy turning point. Geopolitical tensions, major security-policy shifts, and technological disruption are fundamentally changing the rules of the global economy. As a result, the dual-use economy— long regarded as a niche topic— is moving to the **center of the industrial transformation**, focusing on technologies and products that can be used for both civilian and military purposes.

This is no longer just about traditional defense production. Instead, a **new nucleus of development and innovation is emerging at the intersection of technology, security, and competitiveness**. The momentum behind this trend is substantial. Global uncertainty, new security requirements, and rising defense budgets are driving investments in security and defense technologies. This demand acts as an innovation engine across existing industries. Companies are entering new markets, adapting existing capabilities to new applications, and developing scalable solutions for both civilian and security-related contexts. Industry is therefore becoming an essential component of the security architecture while receiving new impulses for value creation and growth.

The **dual-use market follows a different logic than traditional defense markets**. Rather than being dominated by a few large systems, it is driven by technology-based solutions with broad application potential. Innovation increasingly originates in the civilian sector and is subsequently transferred to security-related applications. At the center of this development are digitalization and artificial intelligence. They control industrial processes, analyze sensor data, enable autonomous systems, and form the foundation of modern security architectures. As a result, value creation is increasingly generated through data-driven systems and their intelligent interconnection. At the same time, the market for cybersecurity is growing rapidly. It is no longer merely an IT issue but has become an integral component of industrial value creation and competitiveness.

The **protection of critical infrastructure, connected production systems, and digital platforms** is becoming a strategic priority, along with the field of autonomous systems technology. **Drones, robotics, and autonomous vehicles** are often developed in civilian markets before being transferred to security-related applications. This creates significant scaling opportunities for Germany's mechanical engineering and automation industries, as their existing expertise in robotics and engineering can be readily applied. The technology landscape is complemented by advanced **sensors, data fusion technologies, and space and communication infrastructures**. The ability to collect and analyze large volumes of data with precision is increasingly critical for industrial efficiency, resilience, and security-related performance. In addition, **satellite-based systems** for communication, navigation, and earth observation have become indispensable for industrial, civilian, and security applications alike. Recent developments show that commercial satellite solutions can play a central role in geopolitical conflicts, blurring the traditional boundaries between civilian and military use. Satellite-based systems are therefore becoming increasingly important in modern economic and security systems, creating both resilience and new forms of systemic vulnerability.

These developments create a particular strategic and industrial-policy opportunity for Germany. Few countries possess a comparable combination of industrial breadth, technological depth, and long-established value chains. Three key industries are particularly important due to their technological capabilities, application expertise, and production strengths:



Automotive Industry: Expertise in sensors, software, and autonomous driving can be directly transferred to security-related applications.



Mechanical Engineering: Strengths in robotics, automation, and engineering enable the development of complex and scalable systems.



Electrical Engineering and ICT: These sectors form the backbone of modern security infrastructures – from communication networks to data and control systems.

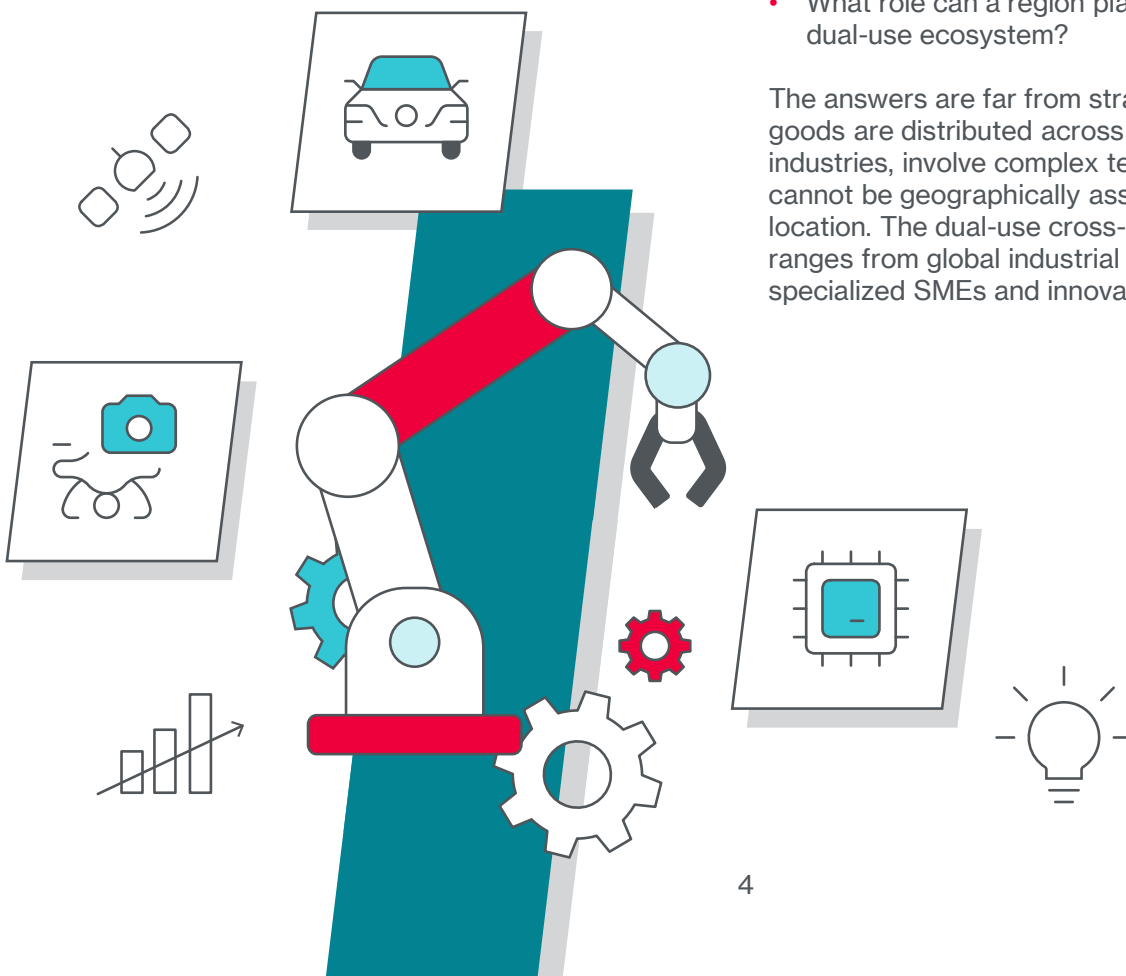
Dual use does not mean replacing existing industries. Rather, it means transferring their capabilities into new application contexts. This creates economies of scale that traditional defense markets, with their more limited scaling potential, cannot offer to the same extent.

At the same time, competition is changing. Technology-driven companies and start-ups are increasingly competing alongside established industrial corporations. Innovation cycles are accelerating, diffusion processes are becoming faster, and the boundaries between civilian and military markets are becoming increasingly blurred. As a result, the industrial-policy perspective is also shifting: dual use is less a clearly defined market and more a new organizing principle of cross-sectoral industry. It is about the ability to think about security technologically and scale it industrially. For companies and regions alike, dual use is becoming a strategic location factor.

The Prognos Dual-Use-Atlas therefore provides answers to three key questions:

- Which technologies, industries, and capabilities are particularly relevant for dual-use applications?
- Which value chains and markets are emerging for companies?
- What role can a region play within the emerging dual-use ecosystem?

The answers are far from straightforward. Dual-use goods are distributed across a wide range of industries, involve complex technologies, and often cannot be geographically assigned to a single location. The dual-use cross-sectoral industry ranges from global industrial corporations to highly specialized SMEs and innovative start-ups.



2 Results of the Dual-Use-Atlas

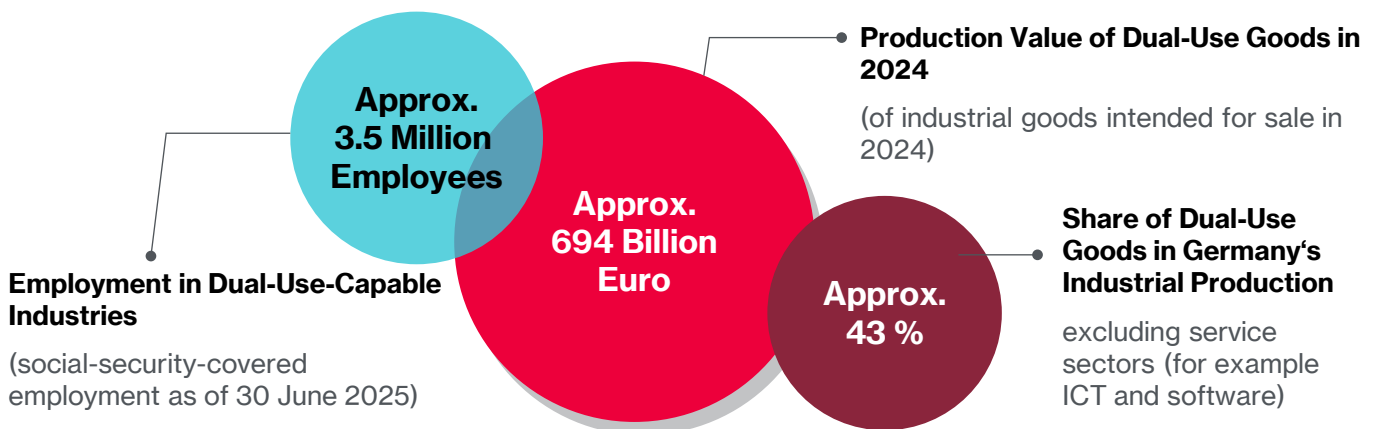
2.1 Overview of the Dual-Use-Economy in Germany

The Dual-Use Atlas shows that the production of dual-use goods is of considerable importance to the German economy and extends far beyond the traditional defense sector. Around **3.5 million employees subject to social security contributions** were already working in 2025 in industries that are fundamentally capable of producing dual-use goods.

This corresponds to approximately **45% of all employees in manufacturing and information and communication technology (ICT)**.

In manufacturing alone, the production value of dual-use goods amounted to more than **€694 billion in 2024**, representing approximately **43% of total industrial production in Germany** (see Figure 1).

Figure 1: Overview of the Dual-Use Economy in Germany



Prognos AG 2026, Source: Destatis 2026, Sonderauswertung Beschäftigtenstatistik Bundesagentur für Arbeit 2026.

Looking at the past five years reveals a **structural shift**. Employment in dual-use manufacturing industries declined moderately between 2020 and 2025 (-3.5% or around 102,000 employees), while the dual-use ICT sector gained significant importance (+20% or around 111,000 employees). Overall, growth in the ICT sector almost completely offset the decline in manufacturing employment.

As a result, total dual-use employment remained largely stable compared with 2020, increasing by

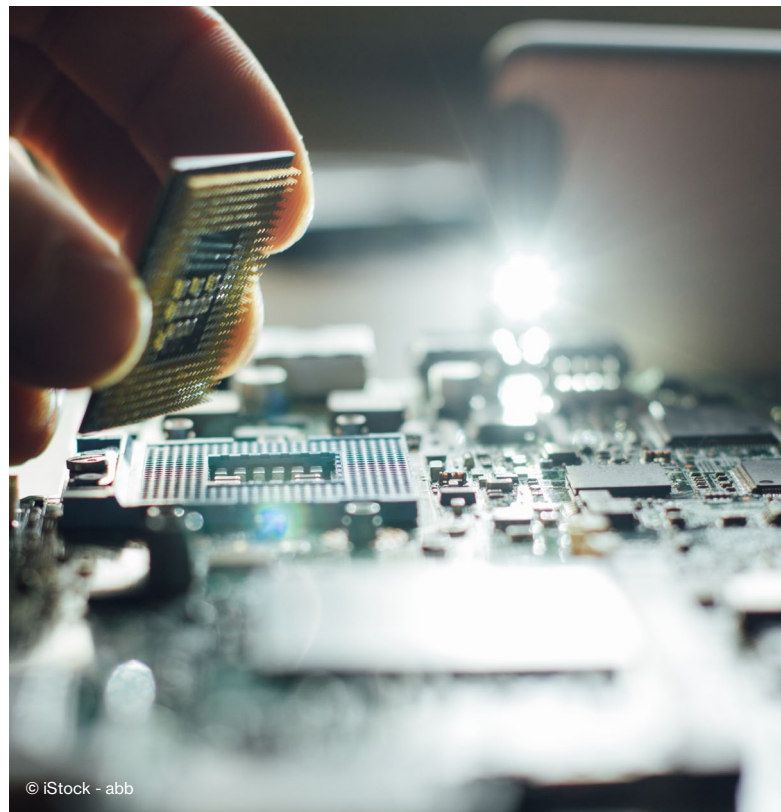
just **0.25%**, equivalent to approximately **8,700 employees**. Nevertheless, **manufacturing remains the dominant pillar** of the dual-use economy. With more than **2.8 million employees**, accounting for roughly **81% of total dual-use potential**, it still significantly exceeds the ICT sector, which employs around **670,000 people**.

Dual-use-related activities can be found across numerous core industrial sectors, including automotive manufacturing, mechanical engineering, electrical engineering, chemicals, and software. As a result, they encompass a substantial share of Germany's industrial value creation. Measured by total dual-use employment in Germany, three sectors stand out in particular: **mechanical engineering** with a share of **19%**, **electrical engineering** with **14.8%**, and **motor vehicle manufacturing** with **14.1%**. At the same time, **ICT services** have gained significant importance. With a share of **19%**, their dual-use potential is now comparable to that of mechanical engineering.

The value of industrial production intended for sale in 2024 confirms this picture. The largest share, around 23.6%, or approximately €164 billion in dual-use production volume, is attributable to the manufacture of motor vehicles. This is followed by mechanical engineering with around 20.4%, or approximately €141 billion, and the manufacture of electronic and optical products with around 7.6%, or approximately €53 billion in dual-use production volume. These three sectors occupy a special position. They not only produce dual-use-relevant goods but also provide the technological and production-related foundations for many other industries and products while serving as key sources of know-how. Mechanical engineering and automotive manufacturing represent production equipment, machinery, metalworking, plastics manufacturing, and drivetrain technologies, while the electrical engineering industry acts as an enabler for key products such as data-processing equipment, telecommunications technology, measuring, control, and navigation instruments.

What exactly is included in the dual-use goods list becomes clear when looking at products that millions of people use every day, often without realizing it. Many technologies that are currently developed and produced for civilian applications are also used in security- and defense-related contexts. Drive components found in virtually every automobile, such as fuel pumps, small electric motors, and other components, are now being used to power drones. Modern sensors, cameras, and optical systems are used not only in vehicles, smartphones, and industrial production facilities, but also in reconnaissance, navigation, and surveillance systems. The same applies to semiconductors and microelectronics, which form the technological foundation of laptops, communication networks, and data centers while also enabling secure communication, data processing, and autonomous systems. High-performance

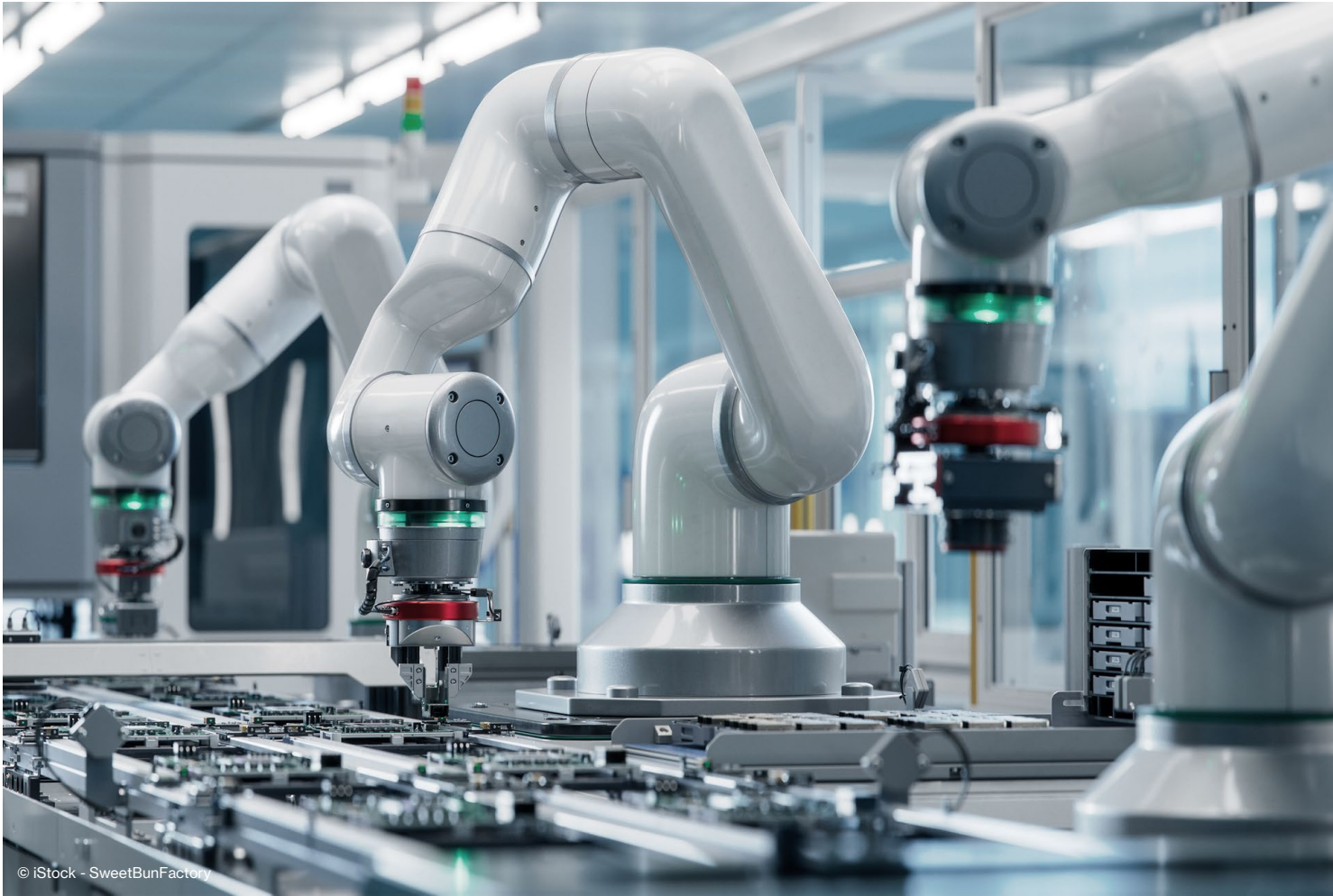
ceramics used in industry, medical technology, and energy systems are employed in protection and high-temperature applications because of their exceptional durability. Similar examples include robotics, automation, artificial intelligence, and satellite communications. The underlying technologies are predominantly developed in civilian markets before also being applied to security-related uses.



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¹ Mechanical Engineering (NACE/WZ 28), Manufacture of Motor Vehicles and Motor Vehicle Parts (WZ 29, excluding special-purpose vehicles under WZ 30), Manufacture of Electrical Equipment and Electronic and Optical Products (WZ 26 and WZ 27), and ICT Services (WZ 61, 62, 63).

² Manufacture of Motor Vehicles and Motor Vehicle Parts (WZ 29), Mechanical Engineering (WZ 28), and Manufacture of Computer, Electronic and Optical Products (WZ 26).



2.2 Key Findings of the Dual-Use-Atlas

Dual use is not a niche topic limited to a small number of defense companies. Rather, it represents a broad industrial potential embedded across value chains, key industries, and regions throughout Germany – from major industrial centers to highly specialized SME locations. As such, dual use is becoming a central element of industrial transformation, the development of regional value creation systems, and strategic location policy. The key question is which regions will be able to combine security, resilience, and industrial scalability in the future.

Dual Use is Far Broader Than the Traditional Defense Debate Suggests

Currently, Germany is debating the extent to which it should invest in its military rearmament. However, the reality is that reinvestment in manufacturing for defense extends to almost half of the country's industrial and digital value-creation base. **Nearly every second industrial job in Germany is potentially relevant for dual-use applications.** The Dual-Use Atlas shows that dual use is not a peripheral issue of the defense industry. Instead, it reaches deep into the core of Germany's industrial and economic structure. Around **3.5 million employees** already work in sectors fundamentally capable of producing dual-use goods. This corresponds to approximately **45% of the 7.7 million employees** in manufacturing and ICT. Dual use is therefore not an exception, but a defining element of Germany's industrial base. At the same time, more than **€694 billion**, or roughly **43% of industrial production**, is associated with potentially dual-use-relevant products and the related value creation.

Software, Sensors, and AI are Transforming the Security Industry

Anyone who understands dual use only in terms of metal, machinery, and munitions underestimates the true structure of value creation and technology. In the digital era, the security industry increasingly relies on software-driven security technologies. While manufacturing remains the backbone of the dual-use economy, momentum is shifting clearly toward ICT, software, data, sensors, and communications technologies. Regions with strong ICT sectors are therefore becoming increasingly important for both security- and defense-oriented industrial policy and industrial transformation. This applies particularly to metropolitan regions, but also to Southern Hesse, the Rhine-Main region, Karlsruhe, Leipzig, and North and East Westphalia.

Over the past five years, the ICT sector has gained considerable importance and has almost completely offset employment losses in parts of manufacturing. Dual use is therefore no longer only a matter of industrial production, but increasingly a question of digital system capabilities.

Dual Use Depends on Scalability and Technology Adaptation

The key question is not who manufactures weapons. Instead, the real issue is **how security can be scaled industrially**. Our security depends not only on military capabilities, but also on security- and defense-oriented industrial policy. When discussing security and defense, factories, data centers, and R&D departments must be considered alongside military facilities and government institutions. Growing demand for security, resilience, and defense technologies is transforming not only the defense industry itself, but entire industrial value chains. Mechanical engineering, electrical engineering, automotive manufacturing, chemicals, optics, sensor technologies, and software are becoming strategic key sectors. In addition, these industries play a dual role. They not only produce dual-use goods but also generate **new innovation impulses** and act as technological enablers.

Electrical engineering, for example, provides key components for data processing, sensor systems, and communications in times of war, crisis, and defense operations. These same components can simultaneously serve as resilience factors for Industry 4.0 and smart logistics, while mechanical engineering and automotive manufacturing provide essential production capabilities. This creates new

application opportunities and security solutions for a resilient industry and economy of the future. Regions with **strong manufacturing capabilities, specialized suppliers, ICT expertise, and application-oriented research** can become key locations within a **new security economy**.

Security-Relevant Industry is Not Confined to Metropolitan Areas

The new security economy is emerging not only in Berlin, Munich, or Hamburg, but also throughout Germany's industrial regions. The Atlas shows that dual-use potential extends far beyond well-known industrial centers. Smaller and medium-sized industrial regions often possess highly specialized capabilities in mechanical engineering, electronics, optics, sensors, aerospace, and automotive technologies. Examples include Ostwürttemberg, Bodensee-Oberschwaben, East Thuringia, Chemnitz, Bielefeld, South Westphalia, and Siegen. As a result, dual use is becoming a development issue for regions that are often less visible in public innovation debates. What matters is not the size or location of a region, but rather the depth of its industrial specialization and technological connectivity. Rural regions with strong manufacturing sectors – particularly in Southern Germany, Rhineland – Palatinate, Saarland, Saxony, and Westphalia – can benefit significantly from dual-use effects and leverage the emerging security economy as part of their industrial transformation.

Germany Does Not Have a Single Dual-Use Map, but Distinct Industrial Role Models

Germany's dual-use landscape resembles a new industrial-policy map of the country. From a regional perspective, a **division-of-labor model of dual-use Germany** becomes visible. The south, particularly Bavaria and Baden-Württemberg, forms the industrial core region. The east stands out through specialized high-tech niches in microelectronics, optics, and mechanical engineering. The north is home to regional centers for excellence in maritime technologies, aerospace, and security-related mobility. The west demonstrates diversified specialization across key industries ranging from metals and mechanical engineering to logistics and aerospace. Dual use is not a monolithic market, but rather a regionally differentiated industrial ecosystem.



The South – the Industrial Dual-Use Core Region:

Regions in Baden-Württemberg and Bavaria concentrate large shares of dual-use employment and rank among the strongest locations with a complete ecosystem of industry, technology, and innovation. Regions shaped by automotive manufacturing such as Stuttgart, Munich, or Nuremberg combine automotive engineering, aerospace, mechanical engineering, electronics, and increasingly digital technologies. Even beyond the southern German metropolises, a high regional potential in the dual-use sector is evident. The south thus functions as the core region of the German dual-use system.



The West – Density and Volume:

Regions along the Rhine, Ruhr, and in Westphalia combine high absolute employment figures and a broad industrial base with correspondingly large dual-use contributions. They encompass numerous sectors along the value chain from basic materials industries through mechanical engineering and aerospace to industrial services and the ICT sector, particularly in the centers around Düsseldorf, Essen, Cologne, Bonn, and Aachen. This leads to very high absolute dual-use potentials, even if individual specializations are still less pronounced. The west thus becomes a backbone of dual-use volume in Germany.



The East – an Innovation Engine for Specialized High-Tech Competencies:

In many regions, a clear pattern of highly specialized clusters is evident. Regions such as Dresden, Leipzig, East Thuringia, Lusatia and parts of Brandenburg combine an industrial tradition with modern high-tech competencies (e.g., microelectronics, optics, automotive and mechanical engineering). These regions often achieve high rankings in individual sectors, even if they are smaller overall. Precisely this specialization makes them particularly relevant for dual use. One example is the strong role of microelectronics in Dresden and optical systems in Jena, which directly connect to dual-use applications. The east thus becomes an important niche player with high technical depth in the dual-use system.



The North – Characterized by Strong Lighthouses:

In the north, the dual-use structure is less widespread but more strongly anchored in regional centers. Locations such as Hamburg, Bremen, or the southeast of Lower Saxony focus on automotive engineering, aerospace, or security-relevant maritime technologies. In particular, regions near the coast such as Kiel, East Frisia/Papenburg, or Rostock demonstrate competencies in metals, electronics, and telecommunications for the maritime sector. The north thus stands out as a model of highly effective but concentrated centers of competence.

Potential Areas

Germany's Strength Does Not Lie in a Few Large Defense Locations

Germany's dual-use potential is large but fragmented. Many companies are already part of a potential dual-use value chain today, without seeing themselves as security or defense companies. Without strategic visibility, networking, and political translation, much potential remains untapped. In addition to the well-known hotspots, the maps and indices reveal numerous **further potential areas beyond the urban agglomerations**. Regions with a strong industrial tradition but **lower visibility at the federal level** possess relevant dual-use connection points. These include locations in central Germany (e.g., Saxony-Anhalt, Lusatia, Thuringia), in northern Germany (e.g., East Frisia, Osnabrück, Oldenburg, Kiel, Rostock), or smaller industrial regions in peripheral western areas (e.g., Palatinate, Koblenz, Saarland, Gießen-Friedberg, Siegen, or Lower Rhine) and in the south (e.g., Coburg, Aschaffenburg, Northern Black Forest, Ostwürttemberg, Bodensee-Oberschwaben). These areas often contain 'Hidden Champions' – companies with specialized competencies in individual sectors or technologies. Dual-use potentials are distributed much more broadly there and open new strategic options for many regions.

2.3 Regional Dual-Use Employment Potentials

The regional analysis of dual-use employment potential is based on the **employment structure of the 79 German IHK (Chamber of Commerce and Industry) regions**. The aim is to reveal which regions already have particularly favorable conditions today to participate in the importance of security, defense, and dual-use markets (see Figure 2). Two perspectives are combined:

- The **Regional share** indicates what proportion of employees in manufacturing and the ICT sector within a region are currently working in dual-use-capable industries. It answers the question of what significance dual use has for a region's economic

structure. High values indicate that a large share of regional industry and the digital sector is involved in technologies, products, and value chains that can be used for both civilian and security-relevant applications.

- The **Germany share** measures the significance of a region for the overall German dual-use system. It indicates what share a region has of Germany-wide employment in dual-use-capable industries. It answers the question of what contribution a region makes to Germany's overall dual-use potential.

Figure 2: Top 20 IHK Regions by Regional Share and Germany Share

Top 20 By Regional Share			Top 20 By Germany Share		
Rank	IHK-Region	Share	Rank	IHK-Region	Share
1	IHK Region Stuttgart	53.0 %	1	IHK für München und Oberbayern	8.1 %
2	Handelskammer Hamburg	51.7 %	2	IHK Region Stuttgart	5.7 %
3	IHK Ostwürttemberg	51.1 %	3	IHK zu Berlin	3.2 %
4	IHK Lahn-Dill	51.1 %	4	IHK Nürnberg für Mittelfranken	3.0 %
5	IHK Offenbach am Main	50.3 %	5	IHK Schwaben	3.0 %
6	IHK zu Berlin	50.2 %	6	Handelskammer Hamburg	2.5 %
7	IHK Bodensee-Oberschwaben	50.2 %	7	IHK Hannover	2.5 %
8	IHK für München und Oberbayern	50.0 %	8	IHK Ostwestfalen zu Bielefeld	2.5 %
9	IHK für Essen, Mülheim an der Ruhr, Oberhausen zu Essen	49.8 %	9	IHK zu Köln	2.4 %
10	IHK zu Düsseldorf	49.7 %	10	IHK Nord Westfalen	2.3 %
11	IHK Karlsruhe	49.5 %	11	IHK Regensburg für Oberpfalz/Kelheim	2.3 %
12	IHK Rhein-Neckar	49.4 %	12	IHK Heilbronn-Franken	2.1 %
13	Handelskammer Bremen – IHK für Bremen und Bremerhaven	49.1 %	13	IHK Rhein-Neckar	1.9 %
14	IHK Frankfurt am Main	49.0 %	14	IHK Karlsruhe	1.8 %
15	IHK zu Köln	48.5 %	15	IHK für Niederbayern in Passau	1.7 %
16	IHK Ulm	48.2 %	16	IHK Dresden	1.7 %
17	IHK Heilbronn-Franken	48.2 %	17	IHK Chemnitz	1.7 %
18	IHK Braunschweig	47.9 %	18	IHK Lüneburg-Wolfsburg	1.6 %
19	IHK Lüneburg-Wolfsburg	47.8 %	19	IHK Frankfurt am Main	1.6 %
20	IHK Schwarzwald-Baar-Heuberg	47.7 %	20	IHK Südlicher Oberrhein	1.6 %

The top positions by **regional share** are held by IHK Region Stuttgart (53.0%), Handelskammer Hamburg (51.7%), IHK Ostwürttemberg (51.1%), IHK Lahn-Dill (51.1%), and IHK Offenbach am Main (50.3%). In these regions, already more than half of employees in manufacturing and the ICT sector work in dual-use-capable industries. Alongside large metropolitan areas, the regional share ranking also includes several medium-sized industrial regions. The strong presence of southern German industrial regions is striking. In addition to Stuttgart, regions such as Ostwürttemberg, Bodensee-Oberschwaben, München und Oberbayern, Karlsruhe, Rhein-Neckar, Ulm, Heilbronn-Franken, and Schwarzwald-Baar-Heuberg from Baden-Württemberg and Bavaria appear in the top 20 positions. This underscores the high significance of automotive manufacturing, mechanical engineering, electrical engineering, automation, and industrial software for the German dual-use economy. At the same time, regions such as Lahn-Dill, Essen, Düsseldorf, and Cologne show that traditional industrial locations in western Germany also have a pronounced specialization.

The ranking by **Germany share** is led by IHK für München und Oberbayern (8.1%). This is followed by IHK Region Stuttgart (5.7%) and IHK zu Berlin (3.2%). The latter stands out above all through its relevance in the ICT sector. In contrast to the regional share, the focus here is primarily on large economic and employment areas. In addition to the large metropolitan areas of Munich, Stuttgart, Berlin, Hamburg, and Cologne, significant industrial and economic regions such as Nuremberg, Swabia, Regensburg/Kelheim, Hannover, East Westphalia, North Westphalia, and northern Baden-Württemberg also emerge. These regions have a broad industrial base and large numbers of employees in dual-use-relevant industries.

Various Region Types

A comparison of both rankings shows that regional significance and national weight do not necessarily coincide. **Three different region types become visible:**

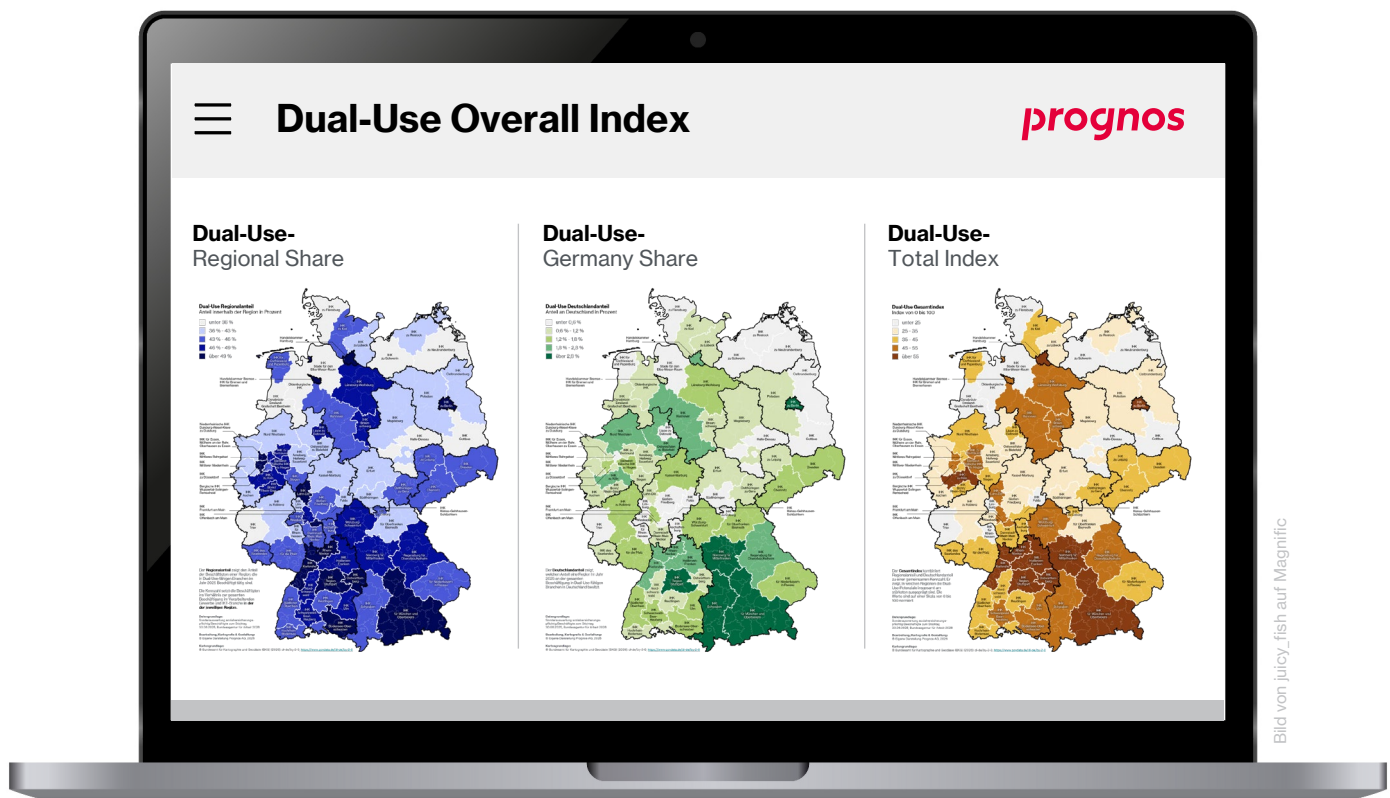
- 1 Regions with high regional and high national significance** combine a high regional share with a high Germany share. They rank among the relevant locations both within their own economic structure and for the German dual-use system overall. An example is Handelskammer **Hamburg** with a regional share of 51.7 percent (2nd Place) and a Germany share of 2.5 percent (6th Place).
- 2 Regions with high regional significance and lower national weight** show a particularly high significance of dual use within their economic structure and, due to their lower number of employees, contribute less to the overall German dual-use potential. These include regions such as Ostwürttemberg, Bodensee-Oberschwaben, Lahn-Dill, Essen, or East Thuringia. Exemplary here is the IHK zu **Leipzig** with a regional share of 45.3 percent (32nd Place) and a Germany share of 0.9 percent (44th Place). Their strength lies in a high share of dual-use-capable industries within the regional economic structure.
- 3 Regions with high national significance and lower regional significance** are primarily characterized by their high employment volume. These include regions such as Nuremberg, Swabia, or Hannover. These regions make an important contribution to the overall German dual-use potential without dual use having the same significance within their economic structure as in the leading regions of the regional share. IHK **Nord Westfalen** is exemplary here with a Germany share of 2.3 percent (10th Place) and a regional share of 39.9 percent (63rd Place).

The Ranking: Dual-Use Overall Index

The regional share and the Germany share answer different questions. While the regional share shows what role dual use plays within the economic structure of a region, the Germany share measures a region's contribution to the overall German dual-use potential. Both indicators thus illuminate different perspectives on regional potentials. Only together do they provide a complete picture of regional dual-use potentials.

To map both dimensions together, both maps are consolidated in the **Dual-Use Overall Index into a single indicator**. The index reveals which regions hold an outstanding position both within their own economic structure and for the German dual-use system overall, and thus have particularly favorable conditions to benefit from growing dual-use markets.

The Overall Index shows a concentration of high dual-use potentials in the large urban industrial and technology areas of Germany (see map: Dual-Use Overall Index). The top positions are held by IHK für München und Oberbayern, IHK Region Stuttgart, IHK zu Berlin, and Handelskammer Hamburg. Following these is a broad group of regions from southern Germany and North Rhine-Westphalia, including IHK Nürnberg für Mittelfranken, IHK zu Köln, IHK Rhein-Neckar, IHK Karlsruhe, IHK Heilbronn-Franken, and IHK Ostwürttemberg. At the same time, several industrial regions outside the major agglomerations such as IHK Regensburg für Oberpfalz/Kelheim, the Südwestfälische IHK zu Hagen, or IHK Bodensee-Oberschwaben also achieve high rankings in the top 30.



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Cartographic base data: Federal Agency for Cartography and Geodesy (BKG)

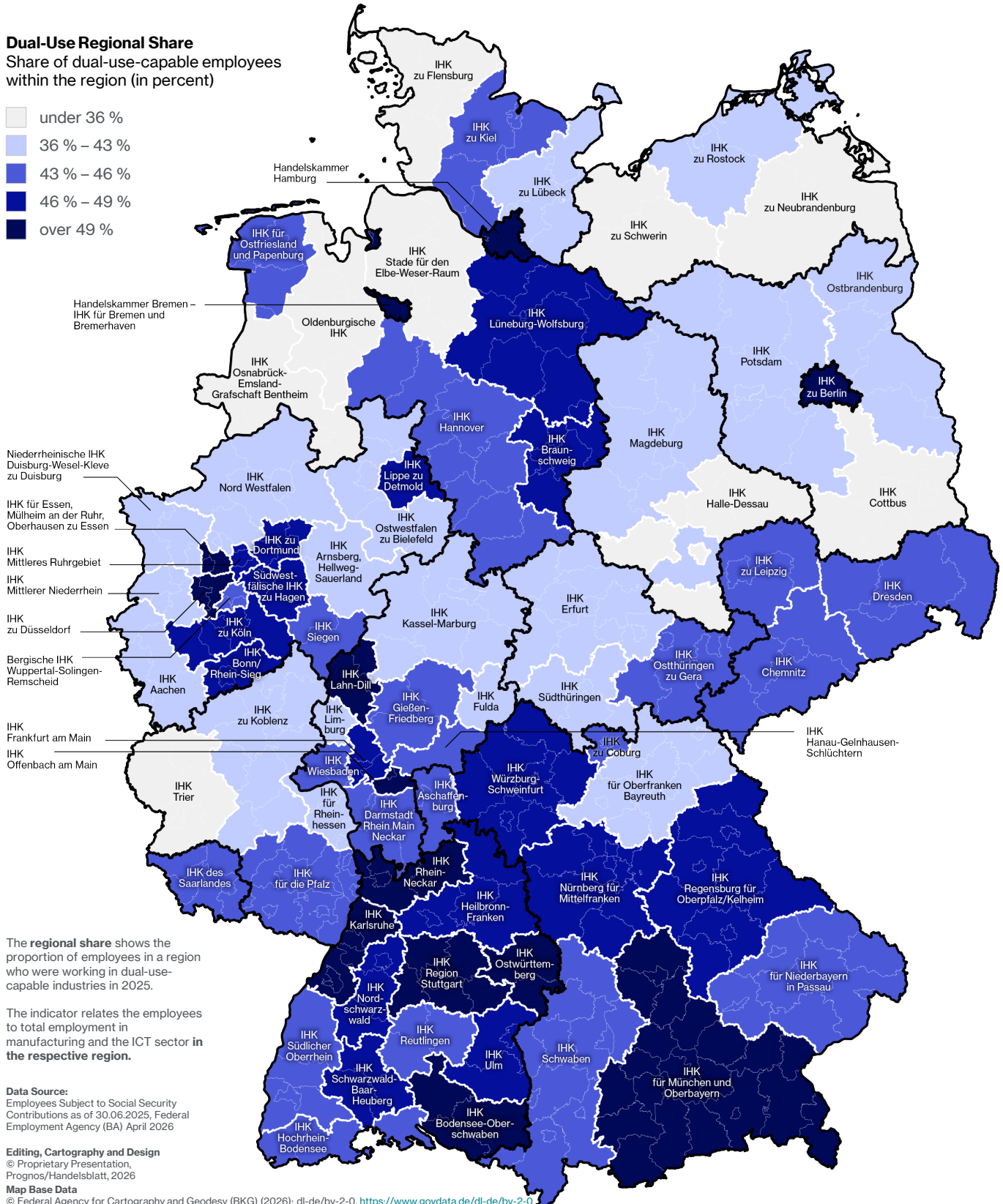
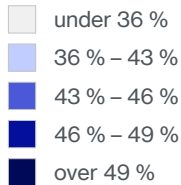
³ A detailed description of the calculation methodology is provided in Chapter 3, "Methodology and Indicators"

Dual-Use Regional Share

How important is dual use for the region?

Dual-Use Regional Share

Share of dual-use-capable employees within the region (in percent)

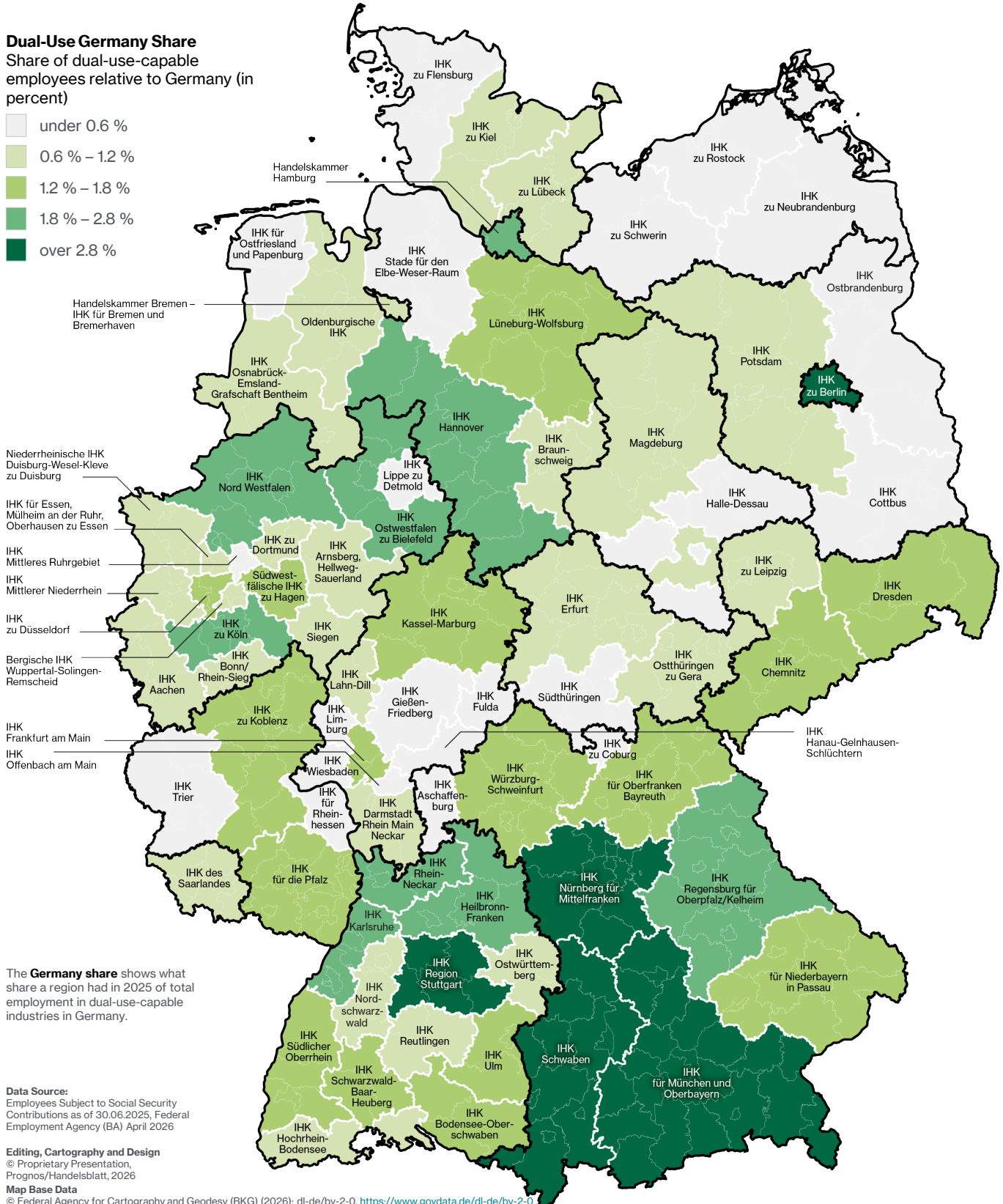
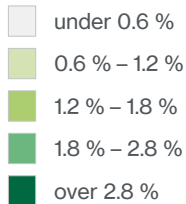


Dual-Use Germany Share

How important is the region for Germany?

Dual-Use Germany Share

Share of dual-use-capable employees relative to Germany (in percent)



The **Germany share** shows what share a region had in 2025 of total employment in dual-use-capable industries in Germany.

Data Source:
Employees Subject to Social Security Contributions as of 30.06.2025, Federal Employment Agency (BA) April 2026

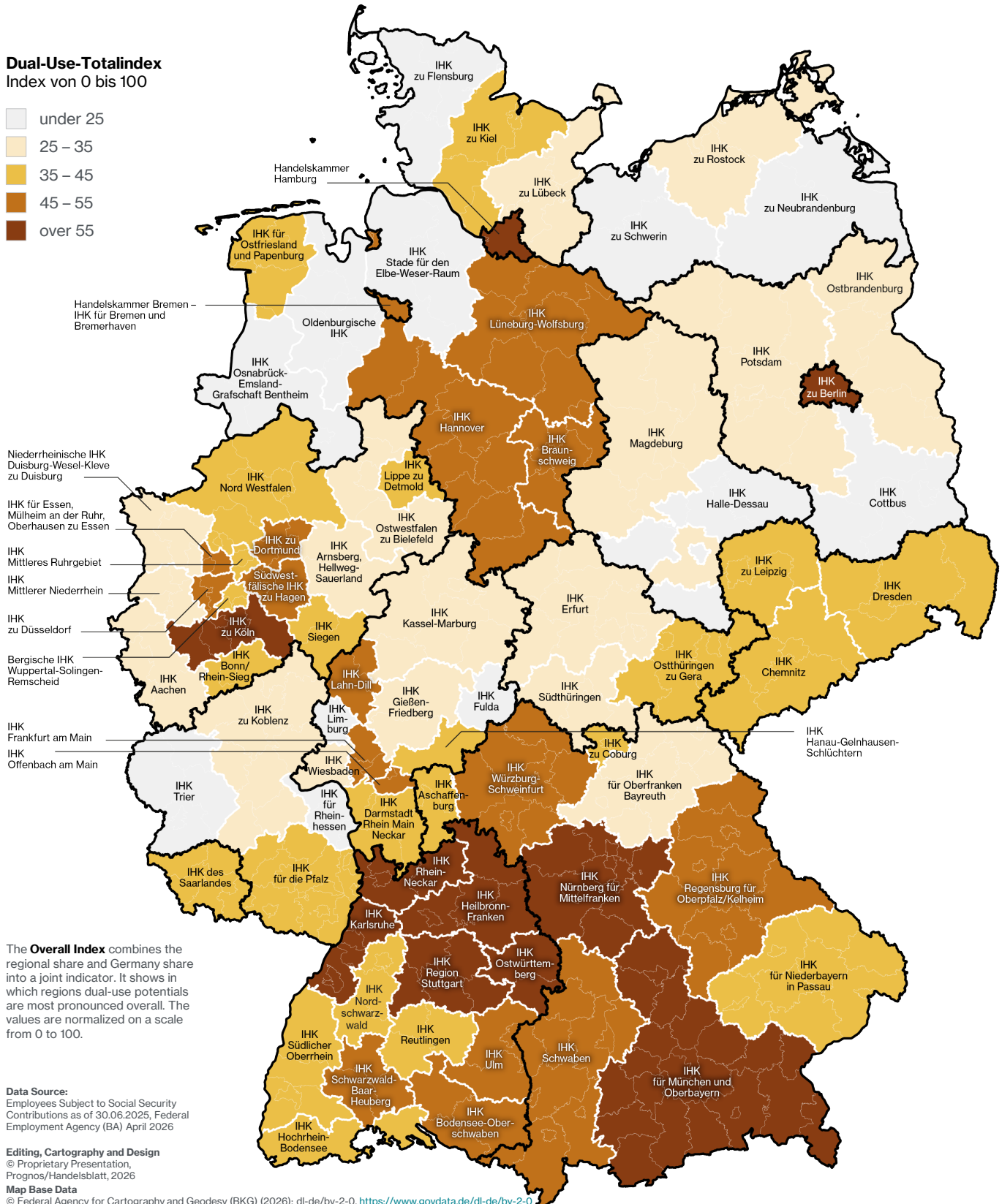
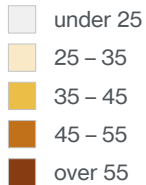
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Map Base Data
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Dual-Use Overall Index

Where is the greatest dual-use potential?

Dual-Use-Totalindex
Index von 0 bis 100



Rank	IHK-Region	Dual-Use- Capable Employees in Region	Regional Share	Germany Share	Overall Index (0-100)
1	IHK für München und Oberbayern	282,170	50.0 %	8.1 %	100.0
2	IHK Region Stuttgart	198,290	53.0 %	5.7 %	90.7
3	IHK zu Berlin	111,680	50.2 %	3.2 %	67.3
4	Handelskammer Hamburg	88,080	51.7 %	2.5 %	66.3
5	IHK Nürnberg für Mittelfranken	105,150	47.1 %	3.0 %	58.6
6	IHK zu Köln	83,250	48.5 %	2.4 %	57.8
7	IHK Rhein-Neckar	66,060	49.4 %	1.9 %	56.5
8	IHK Karlsruhe	64,240	49.5 %	1.8 %	56.5
9	IHK Heilbronn-Franken	74,630	48.2 %	2.1 %	55.3
10	IHK Ostwürttemberg	38,040	51.1 %	1.1 %	55.1
11	IHK Bodensee-Oberschwaben	48,670	50.2 %	1.4 %	55.0
12	IHK Regensburg für Oberpfalz/Kelheim	80,220	47.4 %	2.3 %	54.5
13	IHK zu Düsseldorf	51,420	49.7 %	1.5 %	54.3
14	IHK Frankfurt am Main	55,730	49.0 %	1.6 %	53.5
15	IHK Schwaben	103,350	44.7 %	3.0 %	52.6
16	IHK Lahn-Dill	21,400	51.1 %	0.6 %	51.8
17	IHK Lüneburg-Wolfsburg	57,610	47.8 %	1.6 %	51.1
18	IHK Hannover	87,410	44.9 %	2.5 %	50.0
19	IHK Ulm	45,510	48.2 %	1.3 %	49.7
20	Handelskammer Bremen – IHK für Bremen und Bremerhaven	33,250	49.1 %	1.0 %	49.5
21	IHK für Essen, Mülheim an der Ruhr, Oberhausen zu Essen	23,590	49.8 %	0.7 %	49.2
22	IHK Offenbach am Main	14,690	50.3 %	0.4 %	48.7
23	IHK Schwarzwald-Baar-Heuberg	46,050	47.7 %	1.3 %	48.5
24	Südwestfälische IHK zu Hagen	46,830	47.2 %	1.3 %	47.7
25	IHK Würzburg-Schweinfurt	51,220	46.7 %	1.5 %	47.4
26	IHK Braunschweig	33,130	47.9 %	0.9 %	46.6
27	IHK zu Dortmund	35,670	47.1 %	1.0 %	45.3
28	IHK Bonn/Rhein-Sieg	26,640	47.6 %	0.8 %	44.6
29	IHK für Niederbayern in Passau	60,910	44.7 %	1.7 %	44.5
30	IHK Nordschwarzwald	35,140	46.8 %	1.0 %	44.4
31	IHK Südlicher Oberrhein	54,810	45.0 %	1.6 %	44.0
32	IHK Dresden	60,140	44.4 %	1.7 %	43.5
33	IHK für die Pfalz	54,600	44.8 %	1.6 %	43.5
34	IHK Mittleres Ruhrgebiet	15,980	47.5 %	0.5 %	42.3
35	IHK des Saarlandes	42,110	45.3 %	1.2 %	42.3
36	IHK Darmstadt Rhein Main Neckar	41,910	45.0 %	1.2 %	41.5
37	IHK Reutlingen	39,630	45.1 %	1.1 %	41.3
38	IHK Lippe zu Detmold	17,070	46.9 %	0.5 %	41.2
39	IHK Siegen	31,580	45.7 %	0.9 %	41.2
40	IHK Chemnitz	59,180	43.4 %	1.7 %	41.1

Rank	IHK-Region	Dual-Use- Capable Employees in Region	Regional Share	Germany Share	Overall Index (0-100)
41	IHK zu Leipzig	33,070	45.3 %	0.9 %	40.5
42	IHK zu Kiel	29,860	44.8 %	0.9 %	38.8
43	Bergische IHK Wuppertal-Solingen-Remscheid	25,010	44.7 %	0.7 %	37.5
44	IHK Nord Westfalen	80,490	39.9 %	2.3 %	37.0
45	IHK Ostthüringen zu Gera	27,820	44.2 %	0.8 %	36.9
46	IHK Hochrhein-Bodensee	27,330	44.2 %	0.8 %	36.8
47	IHK Hanau-Gelnhausen-Schlüchtern	13,660	45.1 %	0.4 %	36.3
48	IHK Aschaffenburg	19,250	44.4 %	0.6 %	35.6
49	IHK für Ostfriesland und Papenburg	14,060	44.8 %	0.4 %	35.6
50	IHK zu Coburg	8,100	45.0 %	0.2 %	35.0
51	IHK Wiesbaden	14,530	44.5 %	0.4 %	34.9
52	IHK Kassel-Marburg	45,900	41.9 %	1.3 %	34.9
53	IHK zu Koblenz	52,170	41.1 %	1.5 %	34.3
54	IHK Ostwestfalen zu Bielefeld	86,610	38.0 %	2.5 %	33.8
55	IHK Erfurt	36,000	42.0 %	1.0 %	33.2
56	Niederrheinische IHK Duisburg-Wesel-Kleve zu Duisburg	32,060	42.3 %	0.9 %	33.2
57	IHK Gießen-Friedberg	17,010	43.1 %	0.5 %	32.2
58	IHK Mittlerer Niederrhein	34,910	41.1 %	1.0 %	31.0
59	IHK Arnsberg, Hellweg-Sauerland	28,540	41.3 %	0.8 %	30.2
60	IHK Aachen	35,230	40.6 %	1.0 %	29.8
61	IHK Südthüringen	17,460	41.8 %	0.5 %	29.2
62	IHK Potsdam	24,180	41.0 %	0.7 %	28.7
63	IHK für Oberfranken Bayreuth	42,320	38.8 %	1.2 %	27.0
64	IHK Ostbrandenburg	15,010	41.0 %	0.4 %	26.9
65	IHK zu Rostock	10,080	41.2 %	0.3 %	26.2
66	IHK Magdeburg	29,990	39.1 %	0.9 %	25.2
67	IHK zu Lübeck	29,430	39.1 %	0.8 %	25.0
68	IHK Limburg	4,330	38.9 %	0.1 %	19.7
69	IHK für Rheinhessen	14,910	37.2 %	0.4 %	17.8
70	IHK Osnabrück-Emsland-Grafschaft Bentheim	36,940	35.3 %	1.1 %	17.6
71	IHK Fulda	7,540	37.6 %	0.2 %	17.4
72	IHK Stade für den Elbe-Weser-Raum	15,530	35.6 %	0.4 %	14.1
73	IHK Cottbus	10,600	35.6 %	0.3 %	13.2
74	Oldenburgische IHK	34,690	33.2 %	1.0 %	12.2
75	IHK Halle-Dessau	20,080	33.0 %	0.6 %	9.0
76	IHK zu Flensburg	8,780	33.7 %	0.3 %	8.5
77	IHK zu Neubrandenburg	5,820	33.3 %	0.2 %	7.0
78	IHK Trier	12,570	31.0 %	0.4 %	2.8
79	IHK zu Schwerin	8,860	30.1 %	0.3 %	0.0

3 Methodology and Indicators

The methodology of the Dual-Use Atlas is based on a Prognos Dual-Use Analytical Framework, which pursues a quantitative approach for the first time to systematize the cross-sectoral industry of dual-use goods. On this basis, the Dual-Use Atlas systematically evaluates the employment structure in all of Germany's IHK regions.

3.1 The Prognos Dual-Use Analytical Framework

The aim of the methodological approach is to present the dual-use economy, which has not previously been systematically captured, in a transparent, quantifiable, and regionally differentiated manner. For this purpose, the **dual-use economy is delineated, structured, and evaluated using official statistics along a data-based, multi-stage analytical approach**. The core of the methodology is the combination of different data sources and classification systems to systematically assign dual-use goods to industries and thus to economic indicators such as production, value added, and employment.

The Prognos Dual-Use Analytical Framework is based on definitions in the literature and **official definitions** of the Federal Office of Economics and Export Control and the European Union. Dual-use goods are defined as products, technologies, and software with a **dual purpose** that can be used both in civilian applications and in military or security-relevant contexts.

The starting point for the analysis is the EU Dual-Use Goods List, which systematically captures the relevant products with dual purpose. Export controls for dual-use goods are governed by **Delegated Regulation (EU) 2025/2003 ("EU Dual-Use VO")**. It contains a more than 200-page export control list that is regularly updated. All dual-use goods on this list ("listed goods") are subject to an inspection or authorization obligation by the Federal Office of Economics and Export Control when exported to a non-EU member state.

This goods list was decoded by Prognos and linked via several intermediate steps with existing classifications of official statistics. Specifically, goods are assigned to commodity groups in **foreign trade statistics**, to **production statistics**, and finally to the **industrial classification system**. Herein, a consistent connection between specific dual-use goods, industry structures, and ultimately to macroeconomic indicators is systematically established. The basis for further analysis is the calculation of **dual-use shares within individual industries**. Since these typically include both dual-use and purely civilian products, the production statistics are used to determine what share of the respective industry relates to dual-use goods. These share values are then used to quantify the economic significance of dual use along key indicators such as production value and employment subject to social security contributions. Since dual-use goods in many industries cannot be clearly delineated, the calculated shares are reliable approximations based on the best possible data-based assignment. For sub-areas with limited data availability or missing direct linkage to production statistics, such as information and communication technology and software, secondary sources are additionally consulted to enable reliable approximations (Caviggioli, De Marco & Scellato, 2018, 2020).

3.2 Indicators and Calculation of the Dual-Use Atlas

For the Dual-Use Atlas, Prognos has chosen a quantitative approach based on employment statistics. Statistical data is used to show in which IHK regions known and new growth potentials of dual-use goods are to be expected and where particularly favorable conditions for future value creation and regional development exist.

Data Sources

The data basis for the Dual-Use Atlas consists of official statistics from the federal and state statistical offices as well as an evaluation of the **statistics on employment subject to social security contributions** at the place of work of the Federal Employment Agency with the **reference date of 30th of June 2025**.

The employment statistics provide data in detailed spatial breakdowns and at the level of the industrial classification system (NACE/WZ08), enabling detailed evaluations by region and industry. For the sectoral delineation, the employment figures are drawn from the two-digit industrial classification (divisions). A total of 19 dual-use-relevant industrial sectors are considered, including 16 from manufacturing and three from the ICT sector. The data quality is high due to the special evaluation. Isolated data protection restrictions were interpolated and verified plausibly in an iterative process.

Spatial Reference Unit

The chambers of commerce and industry (IHK) districts represent functionally grown economic spaces that reflect local industrial conditions. They are oriented towards administrative municipal, city, and district boundaries as well as established regions. The **79 IHK regions** were therefore used as the spatial reference level and defined based on the respective websites at district boundaries and, in isolated cases, at municipal boundaries. A further reason for the choice of spatial reference unit lies in data availability. The IHK regions offer significantly higher data availability in employment statistics than at district level, since smaller spatial units are more frequently subject to data protection-related restrictions.

At the same time, the use of IHK regions is subject to limitations. The regions differ in part in their spatial extent and economic size; whereby different economic structures exist within individual IHK districts. Small-scale focal points and local concentrations of dual-use potentials may therefore be partially obscured.

Map Base and Class Divisions

The representation of the maps is based on geodata and layers from the Federal Agency for Cartography and Geodesy. Specifically, Prognos processed the outlines of municipalities and districts into IHK regions and used these for cartographic representation. The class divisions of the regional share and Germany share were based on **class intervals of equal size as possible** (equidistant classes) and **natural breaks in the distribution** of values.

For the overall index, the classes were formed based on natural breaks in the distribution to make structural differences between regions visible. The top class includes the ten highest-ranked regions in the overall index.

Index Calculation

The assessment of regional dual-use employment potential is based on two indicators:

- The **Regional share** indicates what proportion of employees in manufacturing and the ICT sector in a region were employed in dual-use-capable industries in 2025. It answers the question: How important is dual use within the region?
- The **Germany share** indicates how high the region's share is of total employment in dual-use-capable industries in Germany. It indirectly reflects the absolute potential and size of the region. It answers the question: How important is the region for dual use in Germany?

Both indicators are first normalized to a scale of 0 to 100. Subsequently, the unweighted arithmetic mean of the two scaled values is formed, which in turn is renormalized to a scale of 0 to 100. The resulting **overall index** thus maps both dimensions equally, where 0 represents the lowest and 100 the highest value. This index is calculated both for the overall dual-use potential and for individual industries.

4 Customized Analysis and In-Depth Assessment for Your Region

The Dual-Use Atlas shows: many regions already have relevant industrial and technological potentials, but are not yet making sufficient strategic use of them. At the same time, a new industrial-policy window of opportunity is currently opening: security, resilience, and technological sovereignty are becoming central location factors.

Building on the Dual-Use Atlas, key questions arise: what does this mean specifically for our own situation and our future development? What are the regional strengths, specializations, and structural challenges? What role can we play and how can our region be strategically positioned and made visible towards policymakers, business, and relevant

markets? How do we move into implementation and what specific starting points exist to translate existing potentials into new value creation pathways?

We support federal states, regions, economic development agencies, and IHKs in systematically identifying and concretizing their dual-use potentials and translating them into clear development perspectives. In doing so, we combine our **specially developed Dual-Use Analytics with high-quality data from various sources** as well as our long-standing experience in regional structural and innovation policy.



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Our Services



Regional Profile **Your Dual-Use Potential:**

Our Dual-Use Analytical Framework enables the analysis of dual-use potential through employment and macroeconomic indicators in individual regional delineations from the district level through regions to federal states. The regional profile provides a

compact, foundational, and data-based assessment of your region in the dual-use context. It shows where you stand in regional and national comparison, which industries shape your strengths, and which structural starting points exist. This gives you a clear orientation and a reliable data-based foundation for strategic discussions, political decisions, and further in-depth analyses.



Opportunity Study **Solidifying Your Dual-Use Potential:**

Through our specifically developed Dual-Use Analytical Framework, we can look in detail at relevant industries and move beyond conventional industrial classification systems. The opportunity study deepens the regional profile and shows how your region can specifically connect to dual-use markets. It identifies relevant technologies,

companies, and other relevant actors in the region and makes region-specific opportunities and obstacles visible. With your individual study, it is possible to directly incorporate information from actors within and outside your region. This gives you a sound basis for identifying realistic entry points and specifically developing initial fields of action. With these results, you know not only where you stand, but also how you can get started.



Implementation through Dialogue **Activating Your Dual-Use Potential:**

Building on the analyses, the relevant actors for activating dual-use potential need to be brought to the table. With targeted and structured dialogue formats involving business, policymakers, and key actors, we can support networking and provide

perspectives to make decisions and plan implementation. The aim is to translate the identified potentials into concrete activities, market access, and thus value creation potentials through a clear and actionable roadmap.

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Prognos Dual-Use-Atlas

Dual-Use Employment Potential in German Industry

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