

# MARKETS

**GERMANY**

Insights into Europe's Biggest Economy 3 / 23

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Structural changes are creating new opportunities in Europe's largest market

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### DEMOGRAPHIC CHANGE



## Retirement Reinvented

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on the basis of a decision  
by the German Bundestag



**“People are living longer lives. It means their needs and desires are changing — and creating new markets.”**

Dear Reader,

Germany is rightly proud of the role the country played in combatting the global coronavirus pandemic — and particularly of the contribution made by the biopharma company BioNTech. Germany has a long history of pharmaceutical excellence, but what comes next? In this issue, we take an in-depth look at the latest trends in biopharma, including potential treatments for everything from dengue fever to cancer.

Of course medicines are just one aspect of the sprawling health industry both in Germany and beyond its borders, so we broaden our focus to examine the effects of demographic changes in Europe's largest economy. People are living longer lives, which is naturally good news, but it also means that their needs and desires are changing — and creating new markets. There will be a greater demand for doctors and healthcare facilities in the future. One key to coping with this phenomenon is better use of data, something we explore in our first feature on medical technology.

Today's seniors are more active and affluent than previous generations of older people. New markets are emerging in various areas, for example, in senior-friendly vacations and forms of mobility. Germany's over-60s are busy reinventing retirement, it seems.

We hope this issue of *Markets Germany* finds you in good health — and that it gives you some ideas about how to make your business more robust.

**Dr. Robert Hermann, CEO**

Email: invest@gtai.eu

# ONE TO WATCH

Israeli entrepreneur Viktoria Kanar (left) with her co-founder Revital Nativ. The two want to clean up the polluting textiles industry with their textile waste recycling solution.



Photo: Gordon Welters/iaif

## **VIKTORIA KANAR:** CO-FOUNDER OF RE-FRESH GLOBAL

In late 2021, Viktoria Kanar and Revital Nativ Zivan relocated their textile recycling start-up Re-Fresh Global from Israel to Berlin to benefit from the sustainable textiles revolution that is sweeping Europe and to tap into Germany's textile research expertise. In line with the EU's Strategy for Sustainable and Circular Textiles, all textile products will need to be recyclable by 2030. But with the current textile recycling rate a dismal one percent, there is a pressing demand for new solutions.

Re-Fresh Global's proprietary technology creates three high-quality raw materials by upcycling waste textiles: bioethanol, sanitized textile pulp and nanocellulose. The last is a new biodegradable material that replaces plastic and synthetic products used in the packaging and electronics industries. The pulp can be reconstituted for industrial fabric production.

The ethanol is an alternative to biofuel and can be applied in the pharmaceutical and cosmetic industries.

"When I previously worked as a PR and event producer for the fashion industry, I was alarmed to see that there was little sense of responsibility about the waste and a strong tendency to unsustainable over-capacity," Kanar recalls. "So, in 2021 we launched a pilot program in an Israeli town that succeeded in recycling 80 to 90 percent of collected municipal textile waste. Then we moved on setting up a very nice R&D network in Germany, including, for example, the Sächsisches Textilforschungsinstitut STFI in Chemnitz and the Textilforschungsinstitut Thüringen-Vogtland TITV in Greiz."

An additional draw to Germany was the country's ecological mindset. Kanar points out that Re-Fresh Global can now benefit from

policymakers, industry stakeholders and a high level of consumer awareness of the textile waste problem.

### **Quick facts**

<b>NAME</b>	Viktoria Kanar
<b>JOB TITLE</b>	Co-founder, CEO
<b>NATIONALITY</b>	Israel
<b>QUALIFICATION</b>	MA Interdisciplinary Communications Studies
<b>PRIOR EXPERIENCE</b>	Fashion PR manager, event and TV producer
<b>COMPANY NAME</b>	Re-Fresh Global
<b>LINK</b>	<a href="https://re-fresh.global">re-fresh.global</a>
<b>LOCATION</b>	Berlin HQ, offices in Israel and US
<b>HEADCOUNT:</b>	11
<b>INDUSTRY</b>	Greentech



# DATA-DRIVEN MEDTECH

Changes in German law have given the digitalization of German healthcare new momentum. That's creating a new business environment in Europe's largest health market.

**W**ith a few mouse clicks, a specialist from the Charité University Hospital in Berlin can perform diagnostic checks on a patient in a small hospital hundreds of miles away. He does this using a telemedical robot made by the US company Teldoc Health. It has remote controls connected to advanced cameras, lenses, sensors and microphones, enabling the doctor to perform basic clinical examinations. It can also be linked to diagnostic equipment like CT and MRI scanners.

## THE BOTTOM LINE

The German government is investing heavily in the modernization and digitalization of hospitals. This has opened up niches that international companies can help fill.

By integrating robotics with broadband, telerobotic treatment integrates robotics with connectivity and can help save the lives of patients with restricted access to specialist care. It's one example of how German medtech is increasingly data-driven — and how international companies can benefit.

One key is a major piece of legislation. The 2020 *Krankenhauszukunftsgesetz* (KHZG), or German Hospital Futures Act, has seen the government commit EUR 4 billion to mod-

# HOW ARE GERMANY'S HOSPITALS ORGANIZED?

Germany has lots of hospital beds per capita but also high numbers of inpatient treatments and comparatively long hospital stays. New hospital reform legislation currently in the making will further increase the financial efficiency and quality of medical care.

Today, hospitals are operated by private companies, non-profit organizations or the state. Most hospitals are owned by companies (about 39 percent), followed by non-profit organizations (about 33 percent) and the state (about 28 percent). State-owned hospitals, however, account for nearly 50 percent of all hospital beds, compared to only about 20 percent for private companies.

The situation varies somewhat between regional states, but there are essentially four different levels of care. Basic care is provided by both large and small hospitals, while larger hospitals offer additional, specialized medical services.

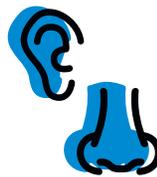
The "da Vinci X" surgical assistant at work during an operation. Its American creator Intuitive Surgical is expanding its German operations.

Photo: DaVinci Xi Robotic Surgical System®



## BASIC

Basic care with specialist internal medicine and surgery departments



## STANDARD

Standard care with hospitals having departments such as gynecology or ear, nose and throat medicine



## SPECIALIZED

Specialized care, with hospitals having additional departments for areas like pediatrics and neurology



## MAXIMUM

Maximum care, with hospitals, often university clinics, equipped to handle all the most serious medical conditions and having extremely specialized departments, for example, rare diseases

ernizing Germany's roughly 2000 hospitals. One focus is bridging gaps between town and country — a key use of Teladoc's technology.

"In Germany, just like in many other healthcare markets, we strive to support the creation of networks in which university hospitals in urban areas are able to provide expertise to smaller hospitals in rural areas," says Thomas Geuenich, Teladoc's General Manager Hospital & Health Systems International Markets. "The German market is one of the largest healthcare markets in Europe."



Teldadoc's telemedical robot enables doctors to perform basic clinical examinations remotely. The US manufacturer is thriving in the German market.

The new law has given digitalization a true boost. "This is a paradigmatic example of the legal framework driving innovation," says Germany Trade & Invest health expert Gabriel Flemming.

#### The next stage

The KHZG is an important motor within a larger trend. In recent years, German hospitals have already undergone a great deal of digitalization (see Markets Germany 3/21 — "Germany's Life Science Revolution," [tinyurl.com/55dedbb7](https://tinyurl.com/55dedbb7)).

More than 30 percent of German hospitals have currently reached level five of seven in the Electronic Medical Records Adoption Model (EMRAM). Level five signifies that institutions can integrate data from various sources and provide telemedical and virtual care services.

There are various forms of digital innovation in hospitals. Smart hospitals integrate special applications and artificial intelligence (AI) into their hospital operations. Voice assistance and voice control systems can optimize everyday processes when doctors call up relevant information.

The process known as "ambulatorization" also has great potential in Germany. It involves doctors continuing to accompany discharged patients via an app. The patient's data is made accessible to family members, physicians and healthcare providers. This form of telemedicine could enable earlier discharges from hospital and shorten the duration of inpatient stays. Furthermore, doctors can also detect the symptoms of illnesses earlier, improving patient health while cutting costs.

These changes are needed because efficiency is more crucial than ever. Hospital stays in Germany are comparatively long, and its population is aging (see article on the reinvention of retirement, p. 14).

#### Digital networks

Changes are also afoot in how academic research institutions and hospitals and doctors' practices exchange information. Several university hospitals in Germany have teamed up with research centers to form an initiative called SMITH — the acronym stands for "Smart Medical Information Technology for Healthcare." It's intended to make routine medical data available for research. The German Ministry of Education and Research put some EUR 55 million into the first phase of development from 2018 to 2022.

Networking is also a watchword concerning operating rooms. German hospitals have more than 9500 operating rooms, more and more of them smart or otherwise digitally networked. The rise in numbers has been impressive. Hundreds of such hybrid-equipped facilities now exist in Germany, compared with only thirty in 2016.

The equipment involved combines surgical procedures and imaging technologies such as angiography, computer tomographs or magnetic resonance. That allows doctors to better manage surgery.

One international company at the heart of this development in Germany is Intuitive Surgical. The US medtech firm specializes in robot-assisted surgery, among other things, and has been doing business in the southwestern German city of Freiburg since 2019. The company's "da Vinci X" and "da Vinci Xi" surgery assistance systems are known the world over.

Intuitive Surgical produces the optics for its systems at two sites in Germany, among other places, and is now planning to expand its German operations. What also attracted Intuitive Surgical to Germany was the excellent healthtech environment, including education, in the region.



*“Germany leads Europe in medical technology patent applications.”*

**GTAI health expert Gabriel Flemming**

“Businesses in Germany can find skilled workers at an absolute top level, especially in precision mechanics and optical production,” explains Intuitive Surgical Senior Vice President Dirk Barten.

#### **A global patent leader**

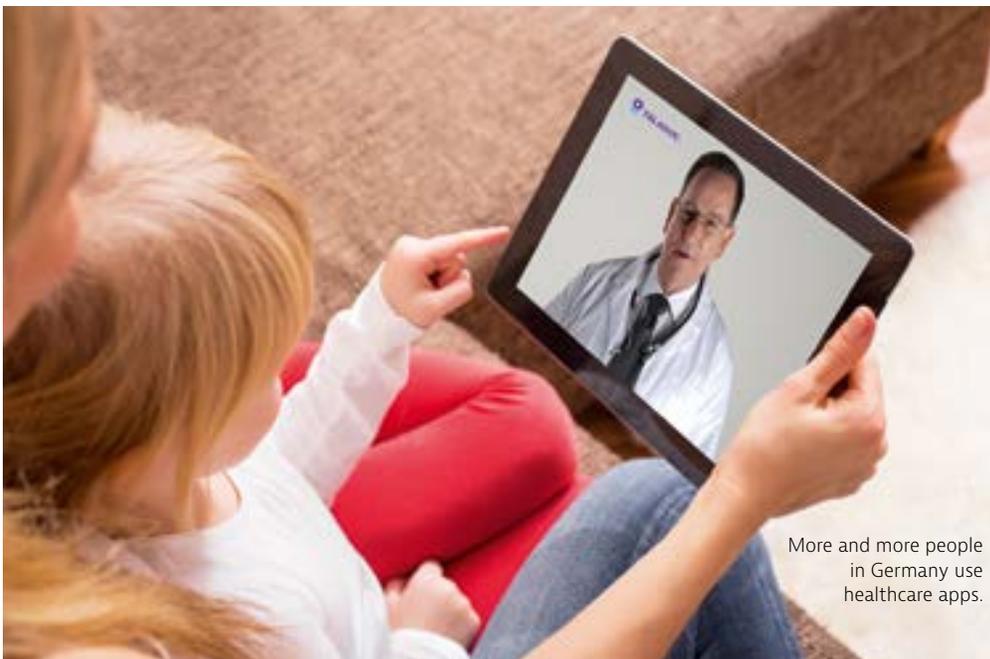
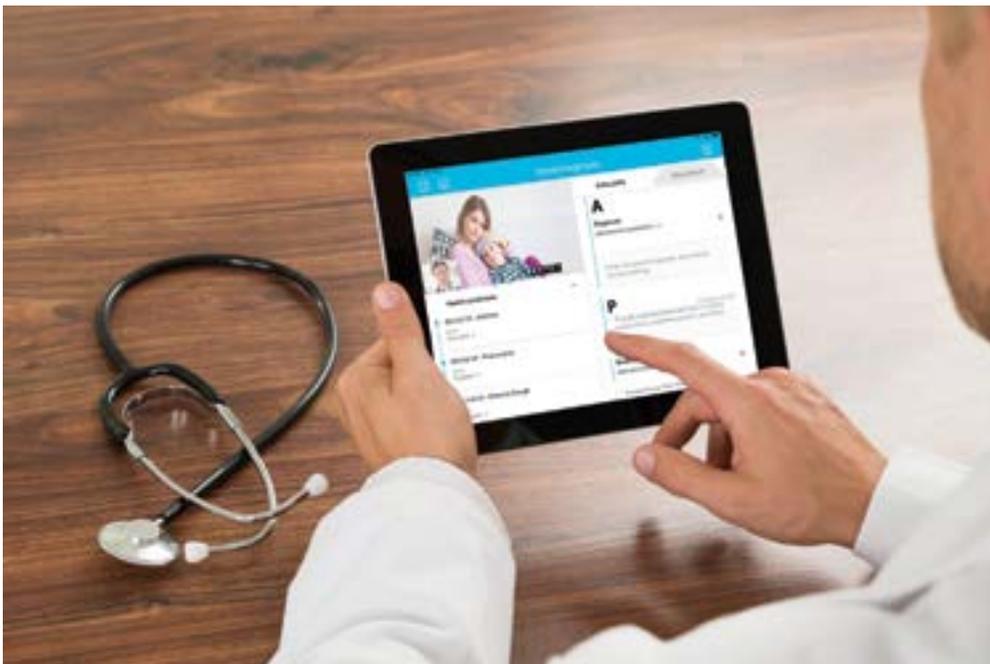
Currently, Germany is the world’s second-largest medtech location behind the US — ahead of Japan and China — according to industry association BV Med. But there’s more to the German market than size alone.

“Germany leads the European field in medical technology patent applications and is far ahead in basic research,” says Germany Trade & Invest health expert Gabriel Flemming. One reason for this is Germany’s world-renowned Fraunhofer, Leibniz Helmholtz and Max Planck research institutes.

“International companies have the opportunity to further develop their products locally with application-oriented researchers for the medical technology market,” says Flemming.

And, of course, applications developed with German regional expertise can be used to drum up business outside Germany’s borders. Teladoc, for example, sees a lot of growth potential outside of Germany, as well.

“In order to strategically position ourselves in the hospital digitalization landscape in Europe,” says Teladoc’s Geuenich, “Germany is clearly a key anchor market.”



More and more people in Germany use healthcare apps.



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GTAI health expert

# BEYOND BioNTech

The success of BioNTech in developing one of the world's most widely used Covid-19 vaccines refocused the world's attention on Germany's biopharma industry. This and other health sectors are attracting more and more international companies, and the prospects for future breakthroughs are bright.

**W**hen Germany's BioNTech announces the start of a new project, the company is sure to grab global attention. In the spring of 2023, the eyes of the international health industry once again turned to Marburg, the university town where BioNTech and its international partner, the US company Pfizer, began producing their game-changing coronavirus vaccine in autumn 2020. This year, BioNTech is spending EUR 40 million to increase the capacity of its Marburg location.

"Since the acquisition of our manufacturing facility in Marburg, we have continuously invested in the site to expand our manufacturing capacity and capabilities," said Uğur Şahin, CEO and cofounder of BioNTech. "We plan to increase manufacturing of mRNA-based products for our clinical trials at the Marburg site while preparing for commercial manufacturing of personalized oncology therapies."

In other words, the company that helped contain Covid is turning its attention back to the disease in which it specialized before the coronavirus pandemic: cancer.

## A key to the twenty-first century

BioNTech is emblematic of the developments in German pharma, which enjoys the express support of the country's government. On a re-

cent trip to Marburg, German Chancellor Olaf Scholz expressed the nation's sense of pride in the industry, which he called "a key technology of the twenty-first century."

"The pandemic proved what Germany can do as a location for innovation and manufacturing of medicines," said Scholz. "Germany and Europe are becoming more resilient by building local value chains."

Promising opportunities are already emerging for international companies interested in the German market. But because Germany has established pharma, medtech and health clusters, leading research universities and scientific institutes, there is no need to completely reinvent the wheel.

"New space and new infrastructure are being created all over the country right now to attract pharmaceutical companies with strong

research and development capabilities, but also manufacturing companies, healthcare service providers and medical technology innovators," says Gabriel Flemming, health industry expert at Germany Trade & Invest.

## Europe's biggest player

Genetically engineered mRNA drug development of the sort done by BioNTech is a highly innovative and high-tech discipline that has enabled breakthroughs in the treatment of diseases such as multiple sclerosis and rheumatism as well as respiratory illnesses and cancer.

In general, biopharma is an absolute growth market: well over half of all newly-approved drugs are biopharmaceuticals. But the production of these innovative drugs is very demanding technologically. With the largest number of health companies in Europe, Germany is second only the US.

"The industry's strength comes from the presence of both established companies and start-ups," says Flemming. "Industry, government and the research sector are working in the same direction to build on the sector's already strong market foundations."

## Production efficiency, medical innovation

The decisive step toward success for biopharma projects is the production of marketable drugs. So a company's location is crucial, ex-

### THE BOTTOM LINE

Germany is actively promoting the healthcare industry. Companies and investors in pharma, biopharma, medtech and related sectors can find optimal conditions and opportunities for innovation and growth.

The laboratory at BioNTech's expanded, state-of-the-art R&D facility in Marburg, Germany.

**€17.8bn**

**sales of biopharmaceuticals**  
in Germany in 2022

Source: VFA

**30**

**new original**  
**biopharmaceuticals**  
registered in Germany in 2022

Source: VFA

**50,000**

**employees working** in medical  
biopharma in Germany

Source: VFA



German Chancellor Olaf Scholz meets with Uğur Şahin, cofounder and CEO of BioNTech, on a visit to the company's new plasmid DNA production facility in January.

### Much ado about Mainz

The Mainz city government is doing its part. It has set up a life sciences and biotechnology hub called Biomindz to attract businesses and help them establish themselves.

In addition, construction is underway on a new complex, Innovationlabz, at the Mainz Innovation Park.

"Stakeholders interested in setting up shop here initially receive essential information about the location and are then forwarded to us as project developers of laboratory buildings," explains Albrecht von Pfeil, the head of the innovation park. "The goal of our Innovationlabz is to create a future-oriented laboratory and office space for the new biotechnology and life sciences hub as quickly as possible."

Mainz is already home to a roster of spin-offs from the science sector that are hoping to follow in BioNTech's footsteps. This competitive, hothouse atmosphere fuels innovation.

"Promising developments in the fields of health, food and plant protection, for example, are currently in the pipeline," Pfeil says.

Medical technology manufacturer Lifecare AS is one international company enjoying the new possibilities in Mainz. The Norwegian firm will begin producing microsensors for measuring blood sugar in the new Biotechnology Hub's inaugural building, LAB 1, from 2025. Lifecare's approach has the potential to revolutionize blood glucose monitoring, making the firm a hot prospect.

### Making waves in Munich

Life sciences clusters can also be found in the southeast of Germany. Several large pharmaceutical companies are currently expanding their German facilities around the Bavarian capital of Munich.

plains Marburg Mayor Thomas Spies. "When it comes to moving from development to actual production in this high-tech field, you need a great many highly specialized professionals, suppliers and service providers," he says. "A quick and efficient production start-up needs to rely on existing infrastructure and local networks at the production site."

BioNTech, for example, was able to rely on the support of specialists such as Siemens Healthineers when it upgraded its Marburg plant for the production of the coronavirus vaccine.

Healthcare clusters such as Marburg have a long tradition in the field. R&D in this sector has been going on there since the early twentieth century. Local and regional universities and scientific institutes have produced Nobel Prize winners and a host of internationally successful companies.

With its own Innovation Hub and concerted infrastructure investments, Marburg and its neighboring municipalities aim to be an ideal location for the next generation of innovative companies. International firms also find a world-class research landscape, with a pool of young, highly educated healthcare professionals living in and around this cosmopolitan university town.

### Canada meets Marburg

One of the international pharmaceutical players benefiting from this location is the Canadian company Nexelis. In 2021, it acquired the vaccine production lines of the British firm GlaxoSmithKline (GSK), which has been active in Marburg since 2015. Nexelis invested a further EUR 160 million in those facilities.

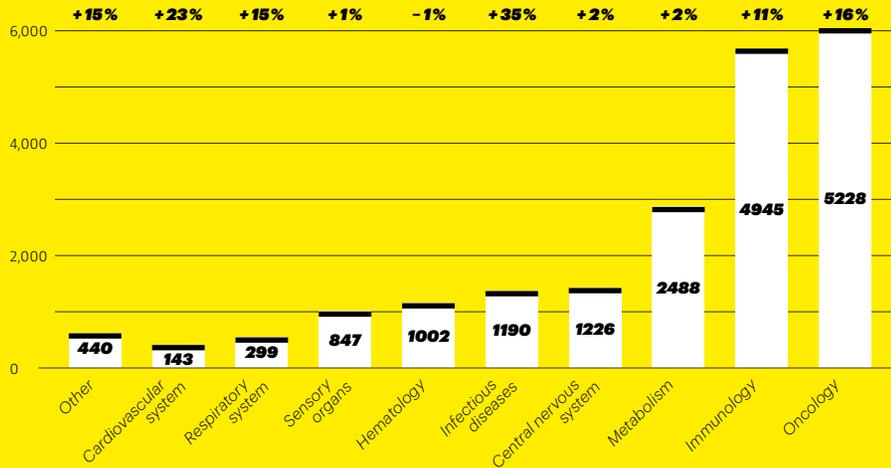
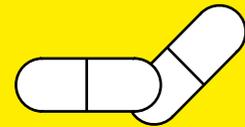
"We are thrilled to welcome on board new colleagues with a legacy of over 20 years under Novartis and GSK leadership in clinical laboratory activities supporting the development of vaccines against viral and bacterial diseases," Nexelis CEO Benoit Bouche said at the time. "We believe that this transaction is a decisive step in establishing Nexelis as an unrivaled global vaccine player."

The industry cluster in Marburg closely cooperates with other healthcare locations in the wider region of western Germany. For example, there is a lot of activity around the cities of Frankfurt am Main and Mainz.

Mainz is not only where BioNTech was founded as a spin-off of the city university. It's also home to groundbreaking company Novo Nordisk. The Danish diabetes specialist opened its new German headquarters there in September 2023.

### ACROSS-THE-BOARD GROWTH PROSPECTS

Net sales of biopharmaceuticals in Germany in 2022 in million EUR (change compared to previous year)

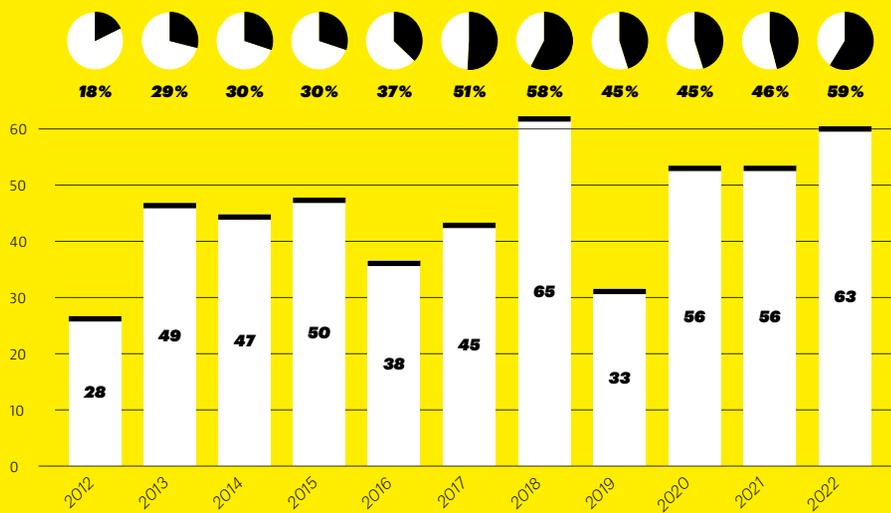


Biopharmaceuticals are an **ABSOLUTE GROWTH MARKET IN GERMANY** spread across a number of specialist fields and disciplines, with the biggest annual sales in oncology, immunology and metabolism. Dynamic growth areas in the past 12 months include infectious disease treatment (35% growth compared to 2021), cardiovascular medicine (23%) and oncology (16%).

Source: IQVIA Commercial, BCG

### NEW REGISTRATION RECORD

Share of biopharmaceuticals among newly approved drugs and  
 number of new biopharmaceutical registrations in Germany



In 2022, a total of 63 drugs with a new active ingredient were approved. The 37 newly approved **BIOPHARMACEUTICALS INCLUDING BIOSIMILARS CORRESPOND TO A SHARE OF 59%** of all new registrations — higher than ever before.

Source: EMA, European Commission, BCG

# 135

Number of biopharma companies in Germany in 2022. International players include Mayer, Merck and Boehringer Ingelheim.

Source: VFA

# 50,000

Number of employees working in the pharmaceutical industry in Germany, most of whom are highly trained technical experts, researchers and specialists.

Source: VFA

# 672

Number of ongoing projects in Germany (2022), which has the most dynamic and well-funded R&D landscape after the US.

Source: VFA

## Listen to GTAI

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[www.tinyurl.com/intogermany](http://www.tinyurl.com/intogermany)

# 4

## REASONS WHY THE GERMAN BIOPHARMA SECTOR IS SO DYNAMIC

### 1

#### Market size:

Germany is home to Europe's largest pharmaceutical market and has a highly efficient public healthcare system as well as a growing demand for personalized medicine.

### 2

#### Existing clusters

Germany is home to a number of global industry leaders, internationally renowned universities and excellent R&D institutes. Finding experienced partners, suppliers and service companies is easy.

### 3

#### High level of innovation

In 2022, 59 percent of new drug approvals in Germany were biopharmaceutical products. Some 672 new development candidates are in the pipeline.

### 4

#### Political tailwind

The German government is actively promoting the growth of healthcare, medtech and (bio-)pharma. German Minister for Economic Affairs and Climate Change Robert Habeck has taken a personal interest in the industry, calling for approval procedures to be made "leaner and faster."

The French company Roche, for example, is investing EUR 620 million to digitally upgrade its diagnostics division at its Bavarian site in Penzberg.

Roche chose Penzberg because the pharmaceutical and diagnostics sectors work in unique proximity there. In Penzberg, furthermore, the entire value chain, from R&D to production, can be covered. As a result, the city has become a global center for the production of diagnostic tests and input materials, analytical systems and biopharmaceutical active ingredients.

"In the modern healthcare industry, medical technology, biotechnology and pharmaceuticals are moving ever closer together when it comes to finding innovative new solutions," says Gabriel Flemming.

#### A one-billion Genesis

Another highly specialized industry center, the Biopharma Cluster South Germany, can be found in the city of Ulm.

The Israeli drug manufacturer Teva has just invested one billion US dollars in a new facility there to produce new active substances, particularly to fight cancer. The Genesis factory, as it's known, was completed in May 2023 and is the largest business investment in Teva's 120-year history.

"Genesis represents a clear commitment to the expertise of the Ulm team," says Teva Germany's managing director Andreas Burkhardt. "We're keeping the know-how on site, becoming more independent of suppliers and strengthening our supply chains."

"With Genesis, Teva is investing in the future, because biopharmaceutical products are becoming increasingly important," adds Stefan Fügenschuh, managing director of Teva's biopharma production at the Ulm site. "Over half of all newly approved drugs are now biopharmaceuticals."

#### Private equity for German healthcare

Little wonder, then, that private equity investors have been getting in on the act. In May 2023, US equity firms Advent International and

In the lab of Sandoz Germany, where biosimilars are developed. The Swiss company is expanding its biopharma technical development facilities in Bavaria.



Photo: Sandoz AG/A Novartis Division

Warburg Pincus announced that they would jointly acquire the Biopharma Solutions (BPS) division of one of the world's leading medical technology companies, Baxter International.

While Baxter intends to focus its energies on medtech in the immediate future, the new investors will develop the biopharma division BPS with its sites in Halle in eastern Germany and Bloomington, Indiana. The volume of the deal is a staggering USD 4.25 billion.

BPS is expected to generate revenues of approximately USD 600 million for the full year 2023. It will be operated independently in partnership with Advent and Warburg Pincus as a so-called Contract Development and Manufacturing Organization (CDMO).

This is not unusual: CDMOs are becoming increasingly important in medtech since they offer specialized services related to the development, research and manufacture of medical products and drugs.



## FDI PERSPECTIVE: GROWING STRONGLY IN GERMANY

Sandoz, a subsidiary currently spinning off from its parent company, the Swiss Novartis Group, is expanding its biopharma division in Germany. It has also made preparations to bolster its biosimilars business, announcing a deal with the German drug discovery and development company Evotec. Meanwhile, it's further investing to transform its Holzkirchen site in Bavaria, southern Germany, into a development hub.

The company intends to grow its Biopharma Technical Development (BioTD) capabilities and transform the existing lab building into a state-of-the-art biotech lab. The financing will bring together highly advanced research facilities and analytical expertise. 45 full-time employees are expected to work on site.

Sandoz's Chief Medical Officer and head of biopharmaceuticals development, Florian Bieber, has said the investment will help to position the site as part of a "growing network of BioTD centers." It will also "strengthen Bavaria's position as a leading biotechnology hub" and will help to generate "innovation and job growth," according to Bavarian State Premier Markus Söder.

Sandoz currently markets eight biosimilar medicines spanning immunology, oncology and endocrinology and has a pipeline of more than 24 molecules in various stages of development. Biosimilars are new biological medicinal products similar to existing medicines with no meaningful differences to the originator medicine in terms of quality, safety and efficacy.

**€25M**

investment in the German site in Holzkirchen  
in 2023

**21,000**

Sandoz employees worldwide

**160**

countries in which Sandoz operates

### Investors court start-ups

Fledgling health companies are also attracting the interest of big global investors. In April 2023, Ariceum Therapeutics at the Berlin-Buch Campus research center in the German capital announced the successful completion of a Series A expansion round, adding a further EUR 22.75 million to a EUR 25 million Series A financing round in June 2022. The company develops radio-pharmaceutical products for the diagnosis and treatment of especially stubborn forms of cancer.

The financing was led by new investors Andera Partners (France) and Earlybird Venture Capital (Munich), with participation from existing investor Pureos Bioventures (Switzerland). The firm's ambitions are international. Ariceum already has offices in Germany and Switzerland and operates in Europe, North America and Australia.

Thanks to the double financial infusion, Ariceum was able to acquire the British company Theragnostics in the summer, a private radio-pharmaceutical company involved in the development of radioactively labelled inhibitors for the diagnosis and treatment of tumors.

Ariceum's rapid success story is typical of the dynamism of the biopharma sector. It's a good example of what can be achieved given the right location, enthusiastic financiers and an experienced management team.



### CONTACT

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**Huge market**  
German spending on  
healthcare in 2021  
**€ 498bn**

Source: DESTATIS

**One day,  
one billion**  
Gross value added by  
the healthcare industry  
in Germany per diem

**€1.2  
billion**

Source: German Ministry for Economic  
Affairs and Climate Action

The median age in Germany is rising. At the end of 2022, 17.7 million people were 65 years old, which means 1 in 5 Germans are now senior citizens.

# REINVENTING RETIREMENT

The median age in Germany has been rising for years, but “the new old folks” are different from the seniors of the past. More active and wealthier than previous generations, they’re also a more attractive market.

**T**he town of Zschopau is located just under 60 kilometers southwest of Dresden, and you wouldn’t necessarily expect to find lots of opportunities for internationally listed companies there. At the end of the 1920s, Zschopau was home to one of the largest motorbike factories in the world, but these days the only trace of that proud tradition is the town’s regular motorbike race.

But scratch the surface and you’ll see that places like Zschopau are buzzing right now. The baby boomer generation, which happened later in Germany (1955–1965) than elsewhere, is gradually leaving the workforce. That’s creating a new business demographic.

Belgian real estate company Aedifica, which specializes in care facilities for senior

## THE BOTTOM LINE

Germany will experience a wave of retirements in coming years. International businesses in the health industry and many other sectors can profit from the Germany’s growing, affluent, new “grey demographic.”

citizens, began expanding to Zschopau in 2018. It started by acquiring a freshly renovated housing complex for senior citizens for nine million euros.

The listed company, which operates throughout Europe (see box-out on real estate), knew what it was doing. Even back in 2018, on signing the contract, Aedifica projected a gross initial yield of five percent. Five years later, Aedifica has rented out the property with 127 residential units to a German care home operator. In addition to residential units for permanent nursing care, there are also residential units for seniors who require care on request only but want to live in an age-appropriate environment. The home also offers places in a daycare facility.

## 70 is the new 60

The real estate market is just one of many sectors that will be influenced by demographic changes in Germany. Put simply, the country is getting older. The number of people over the age of 67 already rose by 58 percent between 1990 and 2021: from 10.4 million to 16.4 million, out of a total population of 83.2 million. By the mid-2030s, at least 20 million will be over 67.

Increases in life expectancy mean not just longer lives, but higher gross numbers and percentages of older people in Germany. Next to Japan, Germany has the highest median age in the world, although German age demographics remain comparable to those of other countries in the European Union. In other words, Germany is like many other places, only more so.

German baby boomers are very different from their parents. People in this new “grey demographic” have worked longer, have more financial resources at their disposal and are physically fitter than previous generations of seniors. Moreover, evidence suggests that more people in Germany continue working at least part-time although they are eligible for retirement. 63 percent of people aged 60 to under 65 are currently in work compared with only 47 percent ten years ago. The figures for 65- to 70-year-olds are 19 percent compared to 11

percent. Therefore, German seniors are in a position to be much more active consumers.

Hans-Werner Wahl, a professor and age researcher at the University of Heidelberg and author of a book on the psychology of aging, says, “Today’s 70-year-olds are about as physically and mentally fit as 60-year-olds were twenty years ago.” Wahl divides older generations into phases according to how they age and experience aging. Of the cohorts, the so-called “young olds” are a particularly interesting market. In Germany today, retirement usually takes place between the ages of 60 and 65, and this bracket encompasses people 15 to 20 years from the time of retirement. “Young

olds” typically have the financial resources and the good physical condition to more actively shape their own lives.

## Not just about care

Greater longevity and a higher median age of the German population inevitably means an increase in the number of people requiring longer-term medical care, nursing or needs-based assistance. That’s an expanded niche for medical service providers and medtech manufacturers in the growing, high-tech health market. (For more detail, see the article on the digitalization of hospitals, pp. 4–7).

The next decade will also see an increase in the number of over-60s consumers who are travel-happy, adventurous and relatively affluent, that is, who will want to spend their years after retirement enjoying themselves. Be it river cruises through Europe, age-tailored hotels or mobility services, the demands of seniors are diverse. International companies that can meet that demand have every reason to expect prosperity in the German market. “The change affects not only tourism, but also many other consumer markets in Germany that are evolving along with this demographic shift,” says Germany Trade & Invest Consumer Industries Director Marc Rohr.



*“Today’s 70-year-olds are about as physically and mentally fit as 60-year-olds were 20 years ago.”*

**Hans-Werner Wahl**

Germany’s over-65s are far more active than previous generations were. Seniors tend to prefer outdoor fitness activities such as hiking, jogging and swimming.





# TELEMEDICINE ON THE RISE

More and more physicians in Germany are retiring. So an increasing number of senior citizens is meeting a decreasing number of doctors. Some rural areas already face shortages of doctors.

The situation is compounded for elderly people with mobility issues. Digital health solutions like telemedicine are certain to be a key element in increasing efficiency and better serving patients young and old.

“Teleconsultations improve the quality of treatment very significantly,” says Gernot Marx, director of the Clinic for Operative Intensive Care Medicine and Intermediate Care at the University Hospital RWTH Aachen. “They allow the highest medical expertise to be made available quickly and easily throughout the country.”

Telemedical treatment has been permitted by the German medical professional code in Germany since only 2018, so there’s still a lot of room in the market.



*“Teleconsultations improve the quality of treatment very significantly.”*

**Gernot Marx, director of the Clinic for Operative Intensive Care Medicine and Intermediate Care at the University Hospital RWTH Aachen**

German entrepreneur David Meinertz originally founded his telemedicine company, Zava, in London with his British partner Amit Khutti, but now has an office in Hamburg. The firm offers a range of services including an online skin check by photo, test kits for lay use at home and prescriptions based on questionnaires filled out by patients.

“Patients want medical advice anytime, anywhere — without appointments, without traveling, without waiting,” says Meinertz.

That holds just as true for older as for younger patients. And there are signs that German seniors are willing to use digital and remote options. According to Germany’s digital industry association bitkom, coronavirus restrictions improved older people’s general attitudes toward the internet. A 2020 survey of internet users aged 65 and above showed that a large majority either had used or were open to using most e-health solutions.



# HEALTHY E-RETIREMENT

The German healthcare market has been expanding for decades. Since 1992, German spending on health has risen continuously, from EUR 159.5 billion to EUR 474.1 billion in 2021. All the data suggests that this trend will accelerate because of demographic change. In Germany, this trend opens up particularly attractive growth opportunities for medtech companies: per capita health expenditure here is significantly higher there than in many other developed economies. Two reasons for this are comparatively long hospital stays and the widespread use of state-of-the-art equipment in hospitals and by resident doctors.

British firm Isansys Lifecare Europe, which has its European HQ near Berlin, also wants to benefit from the demographically driven growth of the German medtech market. Isansys has developed a wireless system for monitoring patients’ vital signs in real time. At its heart is a digital telemonitoring platform called the “Patient Status Engine.” The sensor technology and the monitoring platform help doctors react more quickly when a patient’s condition deteriorates. “We see good opportunities to be able to operate commercially successfully from here,” says MD Michael Heinlein.



The Patient Status Engine by British firm Isansys is a reactive telemonitoring platform.



# HOME, SWEET HOME

As Germans make provisions for their old age, many find themselves rethinking their housing arrangements. After all, their current home may not be suitable for their golden years. Steps from the street to the front door can become an obstacle, and the high-edged bathtub that seemed like a luxury a few years back could pose a risk to someone with a bad hip.

The German long-term care insurance system (*Pflegeversicherung*) subsidizes senior-friendly renovations with up to EUR 4,000 per person. But that's often not enough, and many people choose to move into age-appropriate housing. A study conducted by the consulting firm PwC found that investors anticipate rising prices for senior properties such as nursing homes, assisted living and senior residences.

"Senior citizen compatible properties are attractive in the long term, and investors expect a peak net initial yield of 4 percent for nursing homes as well," says Dirk Hennig, a partner at PwC Germany and an expert in real estate.

That benefits domestic and international operators of properties for age-appropriate living as well as construction companies and developers. Belgian company Aedifica, for example, specializes in real estate for people in need of care and senior citizens across eight country markets. The firm recognized the importance of the German market ten years ago and has been steadily expanding here ever since. Currently, Aedifica has 103 locations in Germany, most of which were developed in partnership with local specialists such as the nursing home developer/operator Specht. In 2020, Aedifica and Specht signed a cooperation agreement for the development of ten new "care campuses" in Germany. Aedifica is investing around EUR 200 million in the projects.

"This deal underscores the importance of the German market, which will enable our company to sustain its growth," said Heinz Beekmann, country manager at the time the deal was signed.



*"Senior citizen compatible properties are attractive in the long term, and investors expect a peak net initial yield of 4 percent for nursing homes as well."*

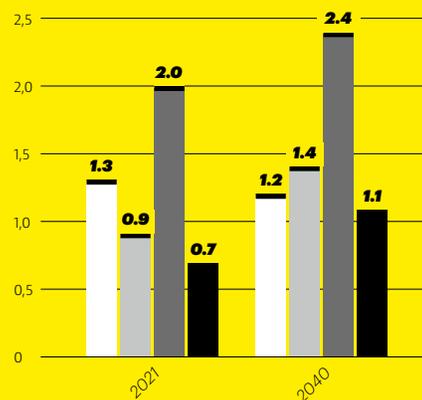
**Dirk Hennig, partner at PwC Germany and expert in real estate valuation**

Age-appropriate housing for elderly Germans, including nursing and retirement homes and assisted living, is a guaranteed growth market.

## NEW NEEDS AND DEMANDS

People (million) needing long-term care in Germany by age group

under 70 70-79 80-89 over 90



Source: Federal Statistical Office, Federal Institute for Population Research



# ON THE MOVE

The stereotype of senior citizens retreating to their homes has never been less true. 65- to 80-year-olds in Germany are typically in better physical condition and have more time and money to be active than previous generations.

Senior mobility, for instance, is a growing market in Germany, and one dynamic sector is cycling. Older people are increasingly using bicycles — and e-bikes in particular. In 2022, 2.2 million e-bikes were sold here, almost 10 percent more than in 2021.

“Many senior citizens in Germany are asking themselves how they can maintain their individual mobility — and are increasingly turn-

ing to e-bikes,” says Reiner Kolberg of the German bicycle industry association ZIV. “They do something good for themselves and stay mobile, which is why e-bikes are very popular, especially with the older customer groups.”

This opens up business opportunities for international players. Many senior riders favor e-bikes with the classic Dutch design, which are easy to get on and off and have comfortable high handlebars. The Dutch manufacturer Gazelle specializes in exactly these sorts of vehicles. On the company website, there is a dedicated section offering information and tips for seniors on how to buy the right sort of e-bike.

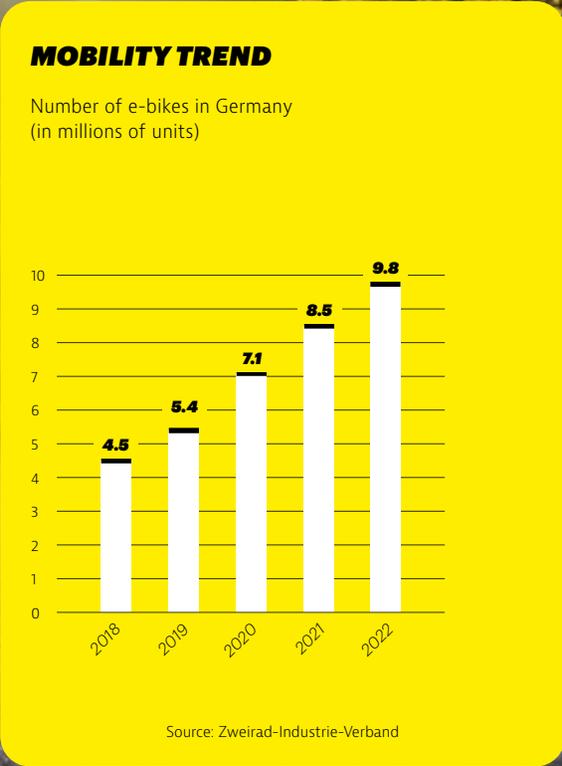
In April 2023, Gazelle opened its latest test center next to Berlin-Brandenburg Airport. There, riders old and young can extensively test the complete Gazelle line of cycles in all frame sizes and with all technical features, modifications and accessories on more than 800 square meters. Two test tracks are available, one for indoor and one for outdoor conditions.

“The interest in e-bikes in Germany continues to grow exponentially,” says Andreas Jansen, managing director at Gazelle. “For us, it’s therefore a logical step to open the e-bike test center in Berlin to convince even more people of the benefits.”

Seniors in Germany are increasingly taking to electric bikes.



Photo: Halfpoint/Adobe Stock



# IN BRIEF

Businesspeople around the world admire the spirit of invention that drives the German economy. Here we highlight some of the most intriguing trends and research projects.

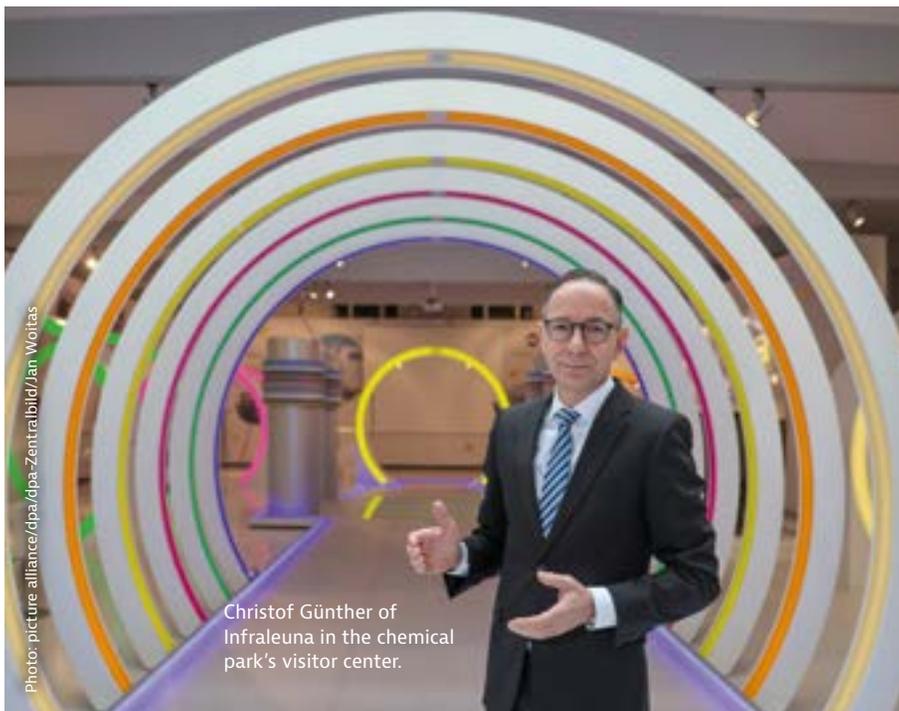


Photo: picture alliance/dpa/dpa-Zentralbild/Jan Woitas

Christof Günther of Infraleuna in the chemical park's visitor center.

## SUSTAINABLE CHEMICALS IN LEUNA

### Saxony-Anhalt gets new facility to support the transition to renewables

Leuna Chemical Complex in Saxony-Anhalt is a manufacturing base for more than a hundred companies from 11 countries, making it one of the largest sites of its kind in Europe. Now with Project Leuna III, the complex is expanding to add an area roughly the size of 280 soccer fields.

The key difference with the new complex is that all new investment projects under consideration must be categorized as "sustainable chemistry," according to Christof Günther, head of InfraLeuna, the owner and operator of Leuna Chemical Complex's infrastructure.

The project is the latest in a series of initiatives at the complex to transition from fossil raw materials to renewables. The Finland-based UPM group, for instance, is currently setting up a biorefinery that will use waste wood from forestry. Among the refinery's major customers will be Coca-Cola, which will source monoethylene glycol needed to produce PET bottles.

[www.infraleuna.de/en](http://www.infraleuna.de/en)

## NEW USES FOR OLD ELECTRIC VEHICLE BATTERIES

### Expired EV batteries can be re-purposed to store electricity

After EV batteries have become too old for cars, they can still be used to store renewably generated electricity. A group of companies from the eastern German city of Zwickau recently presented a large-scale storage system made of used EV batteries. The system can store up to 2.5 megawatt-hours of electricity, depending on how many modules are combined. The modules are installed in ordinary containers, so the storage system is easy to install.

"There's a lot of interest in the different storage systems, and that means inquiries from across Europe," said Matthias Schmidt, CEO of Zwickau-based Erlos Produktions- und Recycling, one of the companies involved in the project.

[www.imws.fraunhofer.de/en.html](http://www.imws.fraunhofer.de/en.html)

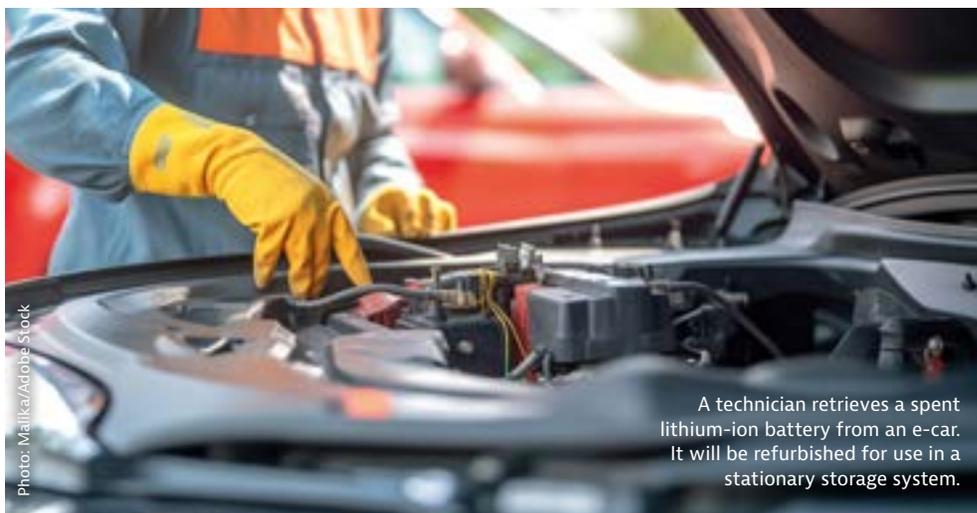


Photo: Malika/Adobe Stock

A technician retrieves a spent lithium-ion battery from an e-car. It will be refurbished for use in a stationary storage system.

## PROFITABLE AI NICHES

### Making it easier for financial, legal and health companies to use AI

While the likes of OpenAI, Google and Baidu are competing fiercely for the general artificial intelligence chatbot markets, Heidelberg-based start-up Aleph Alpha is focusing on lucrative niches, including health services, the financial sector and the legal system. The company recently presented a benchmark study showing that its AI language model Luminous has overtaken those of US and Chinese tech giants in terms of efficiency. Luminous is equipped with a trailblazing explanation feature that allows users to better comprehend how authoritative the system's data output is and how it manages their data.

"Rather than wanting to build a machine to have a nice chat with, we want to create one that can support complex work processes with high safety requirements," says Jonas Andriulis, Aleph Alpha's founder.

[www.aleph-alpha.com](http://www.aleph-alpha.com)



## AN END TO BOM HEADACHES?

### Munich start-up takes the pain out of supply chain hold-ups



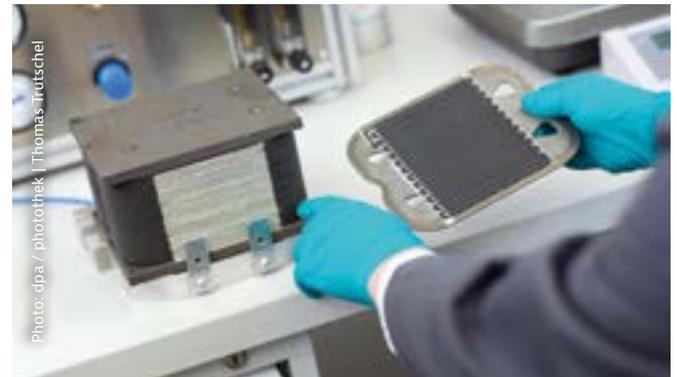
Supply chain bottlenecks have been the norm since the pandemic, with supply shortages and delays to production. Major automakers have been (repeatedly) forced to halt assembly lines due to chip shortages. Munich-based start-up Luminovo aims to cure major bill-of-materials (BOM) headaches with software that manages the monitoring, quoting and procuring of electronic parts and components. The company says it offers access to more than 15 million part alternatives, and its services include the tracking of lead times and a years-to-end-of-life prediction for individual parts.

"Our software inspects your BOM and instantly provides you with up-to-date availability, lifecycle, price and compliance data on millions of parts, so you don't have to," Luminovo says on its website.

[www.luminovo.ai](http://www.luminovo.ai)

## RECLAIMED METALS FROM FUEL CELLS

### New Fraunhofer factory for recycling materials from FC stacks



The dismantling of fuel cell stacks — the heart of fuel cell power systems — at the end of their use lives requires a high level of manual labor, but that may not be the case for long. The Open Hybrid Labfactory in Wolfsburg is working on the world's first pilot line for fully automated stack dismantling.

The research team, which includes the Fraunhofer Institute for Machine Tools and Forming Technology (IWU), wants to keep key raw materials in the loop "to save resources and reduce reliance on imports." Platinum is one of the priorities on the list of the target materials.

Under the National Action Plan Fuel Cell Production (H2GO), the Fraunhofer IWU coordinates a total of 19 Fraunhofer institutes to lay the foundations for efficient mass production.

[www.open-hybrid-labfactory.de](http://www.open-hybrid-labfactory.de)

## COMBATTING FOOD WASTE AI-STYLE

### Berlin start-up tackles food waste with smart supply and demand software

40 percent of all food grown ends up being wasted — something the Berlin start-up SPRK.global wants to change. It has developed an AI-driven trading platform that brings together supply and demand, while conserving resources and considering climate protection. For example, SPRK.global distributes surplus fruit that is perfectly fit for the production of fruit salad for the B2B sector. SPRK.global claims that it has acquired 80 partners since its founding in 2020, including food processors such as mironfell fein & frisch AG and Eurest Deutschland. It received EUR 6 million in a successful founding round in February 2023.

"Today, it is no longer enough to just build a marketplace," says Alexander Piutti, CEO of SPRK.global. "It is important that it is also linked to verifiable goals for a better world, and with SPRK we are doing just that."

[www.sprk.global](http://www.sprk.global)





### THE INTERVIEWEE

**Harry Rønneberg** is CEO and main investor of PlantA, a Norwegian company that makes plant-based dairy products in Anklam, Germany. Rønneberg, who leads a consortium of industrial investors, founded PlantA in September 2020 after getting support from GTAI.

# THE FUTURE OF FOOD

Germany is Europe's biggest market for a product vital to the future of the global food supply: plant-based food. GTAI spoke to CEO Harry Rønneberg about how his company PlantA started — and why it came to Germany.

#### Where did the idea for PlantA come from?

**HARRY RØNNEBERG:** The whole thing started with my good friend and cousin, who was originally a chef. He had been experimenting with new and different types of food production for many years before he got interested in plant-based food. He found he wanted to scale up the production of plant-based yogurt, and he knew — that I had some production experience, so he came to me. That was when we started to search for suitable locations to launch production.

#### THE BOTTOM LINE

The market for vegan and plant-based foods is booming in Europe, with Germany at the epicenter of this trend. International plant-based producers will find a land of opportunity here — as PlantA discovered.

#### Why did you choose Germany for your factory?

**HR:** It turned out that it was possible to get good funding in eastern Germany from European Union grants, so we started discussing Germany. And, of course, if you're a food producer, "Made in Germany" is a stamp of quality. I've been involved in other companies that have operated elsewhere in the region, but we know that, compared to other countries, the same product has added value if it's made in Germany.



## THE GERMAN GOVERNMENT'S NEW FOOD STRATEGY

Led by Food and Agriculture Minister Cem Özdemir of the Green Party, the German government is putting together a new, holistic food strategy. The plans focus on three main areas:



### Creating a sustainable and health-oriented environment

This means making plant-based, sustainable food more available in everyday life, especially where food is eaten communally: in canteens, schools and kindergartens.



### Subsidies for regional and resource-efficient food production

The government's target is to make 30 percent of Germany's agriculture industry organic by the end of this decade. That promises benefits for those willing to invest in new technologies.



### Providing information on healthy diets

The government wants to ensure that vulnerable social groups — children, immigrant communities and people on low incomes — have access to information about better diets. That means more civil initiatives to reach those groups.



The Norwegian company specializes in plant-based dairy products. It's building a large factory in Anklam, northeastern Germany, to serve the growing European market for dairy alternatives.

Also very important for us is that Germany is the biggest locomotive in the plant-based food market in Europe — and in the world, I think. So Germany is also the biggest market for PlantA, and we wanted it to be our home market. Because of these major changes, there are particularly great growth opportunities for companies offering new types of food — Germany is more attractive to the industry than ever before.

### Why did you settle on Anklam, a small coastal city in Germany's northeastern region of Mecklenburg Western-Pomerania?

**HR:** We contacted GTAI, who have been working closely with investors in the region. That's how we found some suitable plots of land in Anklam. And then, when I got to Anklam, the welcome there was simply great. They had lined up with people and engineers from the municipality. Even the mayor was there. We felt that they wanted business to come there, wanted the factory and wanted to create jobs. We immediately felt that Anklam was open to new things being created.

This was important for us because we're not just building one factory. We're planning a whole series of them. We've already started the drawings for a second one, so it was really important to have a good location where there was motivation in the local community.

### How much have you invested in Anklam so far, and how many people are you employing?

**HR:** We invested about EUR 8 million and are currently employing 12 people. But we're expecting to increase that to 18 by the end of 2023. Our plant has a capacity of about 10,000 tons of yoghurt per year.

### What's special or unique about the vegan food market right now?

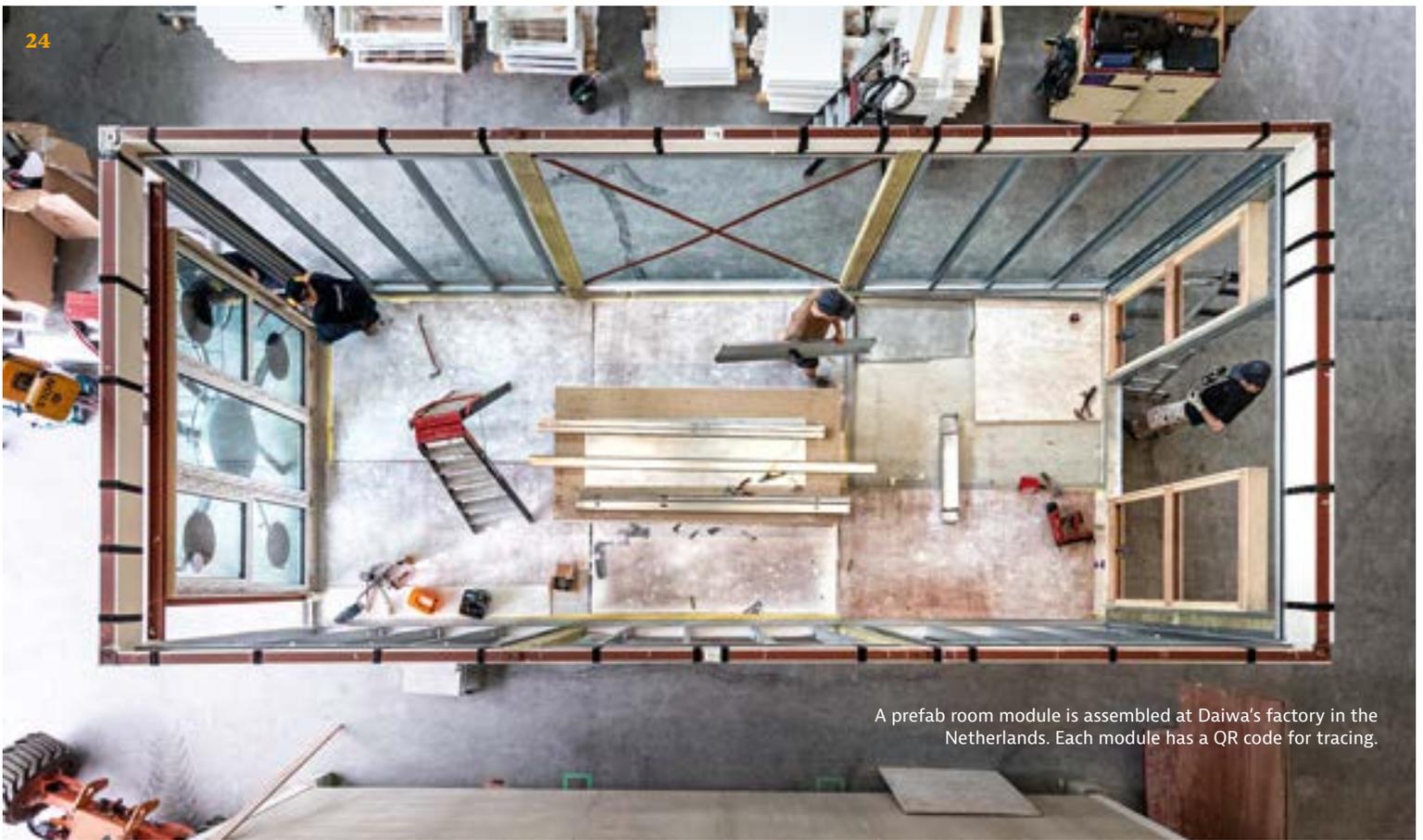
**HR:** Well, we don't actually consider ourselves a vegan company. We use the term "plant-based," because the vegan sector is a very small percentage of the market. If you look at what some people would call flexitarians — people who occasionally want to eat plant-based food — that is actually 75 percent of our market in Germany. The market used to be only for vegans and vegetarians who had a very strong focus on certain ingredients. It's now a market for everyone. Some people see plant-based food as healthier, some as more environmentally friendly. For all those reasons, there is a really big growth in this market.

### You mentioned that you're already planning a second factory. What else are you hoping to achieve in the future?

**HR:** The big picture is to continue to develop the market for plant-based dairy alternatives. We strongly believe that oats are the future of the plant-based industry, so the second factory will be very much focused on producing oat products from scratch: oat milk, oat puddings, oat desserts, oat ice coffees, etc. That's the second factory. In the third factory, which is envisioned for further down the line, we'll be looking at vegan cheeses and cheese alternatives. We want to continue to develop all this in Anklam — hence the need for more space.

### You say that the future of the industry is going to be oats. Why is that?

**HR:** Well, from an environmental point of view it's because they can be grown locally, so you don't have to transport them far. If you compare oats to coconuts, for example, coconuts are produced in Sri Lanka or Indonesia, so first you have to transport the raw materials, and they're expensive. Oats are local and cheap. And everyone already sees oats as something healthy. So for me they tick all the boxes. The trend in the market is very, very clear: plant-based dairy is growing.



A prefab room module is assembled at Daiwa's factory in the Netherlands. Each module has a QR code for tracing.

# Prefab Construction **MAKES A COMEBACK**

The innovative Japanese–Dutch modular construction company Daiwa has successfully expanded to eastern Germany and is ready to provide solutions to the German housing shortage. It's a new take on a familiar idea.

**O**rders for prefabricated housing solutions and modular construction in Germany and central Europe are, you might say, stacking up. That's good news for Daiwa House Modular Europe (Daiwa).

The Japanese–Dutch company opened its first German office in the western city of Bochum more than four years ago. “Since then, we have constructed a student residential building in nearby Essen with 106 apartments in 10 months and have begun a community campus building in Bochum with 737 apartments for students and expats — ready in two years’ time,” says Daiwa’s head of marketing and communications Michiel Gieben. All the modules for these buildings were produced

## **THE BOTTOM LINE**

**The need to make construction sustainable has breathed new life into the idea of prefab building in Germany. International companies can be part of the renaissance.**

in Daiwa’s factory in Montfoort in the Netherlands. “But with increasing housing demand in the German market, we decided to build a megafactory in Fürstenwalde near Berlin, for the industrial production of modular houses,” he says.

## **The Daiwa concept**

The Daiwa process works like this: modules are produced from steel, concrete and timber and fitted with bathroom, kitchen, wallpaper and floors in the factory. They are then transported to the building site, where they are stacked into complete residential buildings. This makes construction quicker and more sustainable, with less waste and disruption, while costs are easier to plan. Many Germans are familiar with the concept of *Plattenbauten*, or prefabricated buildings, from the former communist east. More than thirty years since the end of the Cold War and the reunification of Germany, the idea is experiencing a renaissance.

Industrialised production is increasingly taking place using digitalised and robotised processes. Not only because of efficiency advantages, but also because of the rising shortage of construction workers in western Europe.



In just five months, this student complex in Utrecht with 400 studios was built using a modular construction method.



**GTAI** GERMANY  
TRADE & INVEST

## WELCOME TO GERMANY!

**With GTAI, Daiwa's expansion to eastern Germany was successful.**

The teams in Tokyo and Berlin worked closely together, analyzing the company's needs, helping to find a location and providing on-site support.

even more widespread and that a rethink will take place in the rather conservative building industry," he added.

Germany Trade & Invest's teams in Tokyo and Berlin worked closely together to facilitate Daiwa's expansion. "The team in Tokyo was very close to the company and analyzed Daiwa's needs very precisely when looking for a location," GTAI sustainability expert Bénédicte Winter recalls. "The German GTAI team then assisted in the search for a suitable plot of land and ensured optimal support on site."



### CONTACT

robert.compton@gtai.eu  
GTAI sustainability expert

### Government support

The German government itself has begun using prefab elements in the construction and renovation of state buildings. That's because the system brings greater sustainability, higher energy efficiency standards and an overall lower carbon footprint — important components of Germany's ability to achieve its ambitious climate protection goals in the building sector.

According to the Federal Office for Building and Regional Planning, Germany's estimated annual need for new homes was approximately 350,000 in 2021. A market study by GII Global Information forecasts nearly 6.5 percent annual growth in the German modular construction market between 2023 and 2030. This makes Germany a lucrative market for modular companies like Daiwa.

Daiwa House Modular Europe began life as a company founded in the Netherlands in 1960 by Jan Snel and is now the market leader in the Benelux countries. In 2021 it was bought by the Japanese group Daiwa, the seventh-largest construction company in the world.

With the investment in Fürstenwalde, Daiwa wants to grow its business in Germany, explains Gieben: "We had the opportunity to buy

a large piece of land with two large production halls and an office, perfectly suited for us." The company is convinced it will find a good labor pool in the area. "With the Tesla gigafactory nearby, the region is popular with high-tech suppliers and workers," he says.

### International collaboration in Berlin

Daiwa has already won a major contract in Berlin. Together with the real estate management expert Capital Bay and the housing company Gewobag, it is realizing one of the world's largest modular housing projects there.

Daiwa and Capital Bay signed a joint venture agreement in 2022 with the aim of building capacity for the distribution and production of prefabricated building modules. On the joint website [www.creatingthefuture.eu](http://www.creatingthefuture.eu), they provide information about the advantages of modular construction.

"With our participation in the Berlin housing project, we can help provide more than 2,000 people with a high-quality and affordable home in the near future," Andreas Göbel, senior project developer at Daiwa, told *Deal Magazine*. "We hope that our way of building for the benefit of people and nature will become

# GETTING FLEXY!

Germany's legally enshrined transition to clean energy requires a massive increase in stationary electricity storage capacity. International companies are already benefitting from the energy revolution.

Germany's electricity grid operators are investing heavily in stationary battery storage to increase stability and efficiency.

## RENEWABLES ON THE RISE

Annual share of renewables in net public electricity generation in Germany

**8.9%**  
2002

**25.8%**  
2012

**49.8%**  
AS OF: 08/2023

Source: Fraunhofer Institute for Solar Energy Systems



*“We are currently seeing a new level of business cases for battery storage in Germany.”*

*Lars Stephan, Growth Associate, Fluence Energy Germany*

**T**he small town of Arzberg near the German–Czech border has a long history in the electricity business, even if the coal- and gas-fired power plant there was closed down in 2003. And if MW Storage has its way, Arzberg’s electricity story will begin a new chapter. Together with local partners, the Swiss company is planning to build one of the largest battery storage facilities in Germany there — with an output of 200 MWh.

“The region is innovative and has implemented several energy projects,” CEO Wilfried Karl explained to a local newspaper. “So it makes sense to work together.”

Germany aims to be completely climate-neutral by 2045, and initial interim targets for 2030 and 2040 have been set in climate protection law. German energy legislation, for example, stipulates that renewable energy must count for at least 80 percent of Germany’s gross electricity consumption in 2030. By comparison, the actual figure in 2022 was 46.2 percent.

“Due to the legally required expansion of renewable energy, we will see a massive increase in demand for large-scale electricity storage in Germany,” says Heiko Staubitz, energy expert at Germany Trade & Invest (GTAI).

It would be an understatement to say that the process is proceeding rapidly. In Germany in 2021, the 3.78 GWh of installed battery capacity was able to deliver up to around 2.49 GW of power; by mid-2023, that had more than doubled, with 8.71 GWh of installed battery capacity able to deliver up to 5.90 GW of power.

Staubitz is convinced that “there are attractive business opportunities for international investors in the growing and dynamic market around large battery storage systems.”

### Where arbitrage comes in

When you hear the word stability, you may not immediately think of flexibility. But the battery storage economy doesn’t function exactly as many laypeople might imagine. “Battery storage offers valuable flexibility potential, the use of which is becoming increasingly important the more fluctuating green power there is in the energy system,” Bernhard Strohmayer of the German Association of Energy Market Innovators writes in an article for the energy portal *Energate Messenger*.

### THE BOTTOM LINE

**Stationary battery storage systems are essential to the expansion of renewable energy in Germany, and their applications are rapidly evolving. International companies should take note.**

Battery storage was once mainly used to stabilize voltage in transmission grids. That’s still a lucrative business (see our interview with Christian Schäfer). But in the medium to long term, the expansion of renewable energy in Germany will feature multiple applications of stationary electrical storage.

It was this opportunity that lured entrepreneur Benjamin Henecka back to the country. Having worked for 20 years in sub-Saharan Africa, he

has returned to distribute zinc-powered batteries for industrial and grid-scale applications, produced by NASDAQ-listed manufacturer Eos Energy Enterprises in Germany, Austria and Switzerland.

“I didn’t come back because I’m German,” he says, “but because Germany is currently one of the most exciting markets for stationary energy storage due to the REPowerEU Plan and the ambitious but necessary net-zero goals of the government. Without large-scale batteries, the energy transition will be impossible.”

Zinc batteries have distinct ecological advantages over lithium-ion but are heavier and thus more suited to large-scale stationary storage systems. Meanwhile, stationary battery storage is a crucial ancillary technology for solar parks and wind farms. It’s difficult to forecast when weather conditions will result in large amounts of renewables being produced, so large batteries are needed to buffer excess electricity when wind speeds are high and on sunny days. Conversely, if no storage is available, renewable electricity sources might even have to be switched off. In the worst-case scenario, that could lead to shortages in periods of unfavorable weather conditions.

This can cause the price of renewable electricity to fluctuate wildly, sometimes within a day. With battery back-ups in place, operators can sell the stored electricity profitably when prices surge. “Energy trading as a business case is becoming more relevant as the expansion of renewables results in larger spreads on the spot-market. Storage is the key source of flexibility to support the integration of renewable energy and to generate profit,” says Henecka.



## THE POWER OF SECONDARY RESERVE

Beyond the wholesale energy market, battery storage systems are powerful and profitable applications in ancillary service markets. We speak to Christian Schäfer from the information portal [regelleistung-online.de](https://www.regelleistung-online.de).

**What role do large battery storage facilities play in balancing the energy market in Germany?**

Battery storage has its strengths in the flexible provision of Frequency Control Reserve (FCR), where it already is the key supply technology in Germany. I also see attractive business opportunities in the area of Automated Frequency Restoration Reserve (aFRR).

**How will the market for balancing energy develop in Germany in the next few years?**

The demand for balancing power in Germany will likely not increase overall, but business opportunities for battery providers are emerging elsewhere. Electricity trading has become more efficient and faster thanks to automation and digitalization, and battery storage is well suited to generate revenues from several markets thanks to its flexibility.

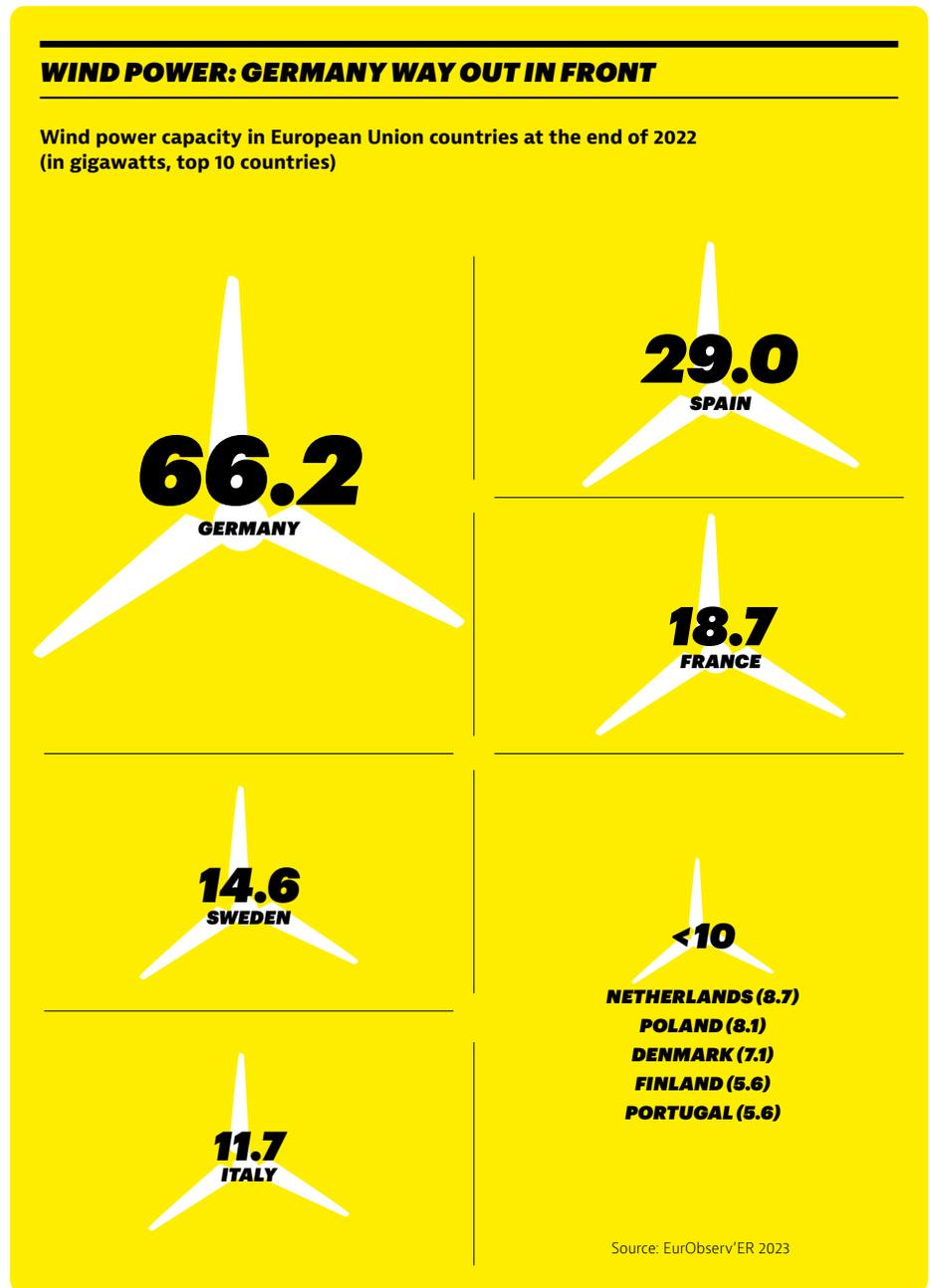
**What other use cases should battery storage operators be looking at besides ancillary services?**

A stable and long-term business for battery storage systems is provision of baseload electricity. But battery storage also makes economic sense in behind-the-meter applications for industrial consumers who want to manage energy costs efficiently during peak loads.

### Familiar tech, new application

The use of stationary batteries for grid stability and efficiency is still of fundamental importance — and something that all four German transmission system operators are investing in heavily. For example, grid operator TransnetBW is building one of the first grid boosters in Germany in partnership with the German–American joint venture Fluence Energy. “The innovation is not the storage system, but the application, which we are now implementing in pilot projects in Germany,” says Julian Jansen, head of business development at Fluence Energy.

This is because the power lines in Germany are not fully utilized to protect against overload. In addition, there are so-called re-



dispatch measures, where, for example, wind turbines have to be shut down in advance of a line being downed, and other wind turbines or power plants have to ramp up to bolster the section. These measures are expensive, and an overloaded grid that has to regularly ramp up and down plants cannot transport as much renewable electricity as the country needs.

To ensure that the full capacity of the lines is available for power transmission in the future, the 250 MW grid booster in Kupferzell in Baden-Württemberg will step in if a line should ever fail. Other power lines will still be able to operate close to full capacity and thus be used more efficiently. This reduces costs for grid operation and grid expansion and ultimately makes sense for grid operators. Not least, it

is also a golden opportunity for the battery storage industry.

“We are currently seeing a new level of business cases for battery storage in Germany,” says Lars Stephan, responsible for Fluence Energy’s German market. “A battery can be active in different markets at the same time in order to generate revenues there. Overall, this will result in many exciting business opportunities in Germany over the next few years.” There is plenty of room for other suppliers in Germany.



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GTAI energy storage expert



Jörg Buck, executive board member and managing director of AHK Italy in Milan

## “90% PLAN TO CONSOLIDATE OR EXPAND IN GERMANY.”

Many Italian companies see Germany as an attractive business location, says Jörg Buck, MD of the German–Italian Chamber of Commerce (AHK Italy).

Photo: AHK Italien

**Italy and Germany are both part of the European Union (EU) single market. But how important is Germany for Italian companies as a business location?**

**JÖRGBUCK:** Italy and Germany set the course for a common European economic area at an early stage with the signing of the Treaty of Rome in 1957. Today, the two countries are more closely intertwined than ever before. In 2022, the volume of trade reached a new record EUR 168.5 billion. Germany is the most important trading partner for Italy in terms of both imports and exports, with a clear lead over France and the USA. Given the current trend toward nearshoring, it is reasonable to assume that Germany’s importance as a location for Italian companies will further increase in the coming years.

**How do managers of Italian companies rate Germany as a business location? What advantages does it have from their point of view?**

**JB:** Italian companies see numerous advantages in Germany as an investment location. Our latest AHK study on this shows that the simple administrative procedures, the qualified workforce and the low corporate taxation compared to Italy are rated particularly

positively. A high proportion (74 percent) of Italian companies that already have a location in Germany would recommend investing in Germany. And 90 percent plan to consolidate or expand their activities in Germany.

**Which sectors in Italy are particularly interested in Germany? How does GTAI play a role?**

**JB:** The economic relationship is characterized by industry, predominantly by companies in the steel, mechanical engineering, automotive, chemical and pharmaceutical sectors. In strategic market development in Germany, M&A increasingly plays a role for Italian companies. But firms also make strategic investments in their own production or logistics capacities in the target market. They can also develop the European as well as international market from Germany. In lead generation, we regularly use Germany Trade & Invest’s industry expertise to provide Italian investors with a deeper insight into current and future trends of the target market Germany. The information provided forms the basis for Italian businesses to take the first step towards expansion.

**What common economic interests and goals do the Italian and German governments have? How do GTAI and AHK work together to communicate this?**

**JB:** The Italian and German governments are planning to further deepen their economic ties in the interest of European competitiveness. Just recently, German Chancellor Olaf Scholz and Italian Prime Minister Giorgia Meloni agreed to sign a German–Italian action plan that promises closer cooperation in areas such as the environment, economic development, and education and research policy. A pipeline project for the delivery of green hydrogen from North Africa via Italy to Germany is also in the works. As AHK Italy, we are shaping the project with the entrepreneurial expertise of our community, for example, through concrete proposals for cooperation in the fields of energy, the circular economy, research and development and vocational training. The German–Italian action plan will result in commercial opportunities in the above-mentioned fields.

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Chambers of Commerce Abroad

The global community has set itself 17 Sustainable Development Goals for social and environmental economic progress.

# FINTECHS

## Support Best Behavior

The need to combat everything from climate change to social injustice and bad governance has created unprecedented demand for ESG (Environmental, Social and Governance) services. Germany is Europe's largest market in the area, as the fintech sector shows.

**A** s temperatures rise and the impact of climate change is increasingly felt across Europe, from severe droughts to devastating floods, insurance companies are adapting to the times. The French insurance provider Descartes is growing rapidly to meet the challenges of extreme weather. It expanded to Germany last year after raising USD 120 million in a Series B funding round from international investors in what was seen as a major deal in environmental, social and governance (ESG) investing.

The dangers of natural catastrophes and extreme weather events are becoming more and more frequent, and new risks will arise in the future, Descartes warns, adding that its parametric insurance solutions protect against the economic consequences of climate change.

As Europe's industrial powerhouse and economic engine, Descartes sees Germany as an essential market, particularly due to its industrial global network. "The reasons are obvious," says Sebnem Elif Kocaoglu Ulbrich, head of the fintech consultancy Contextual Solutions. "Germany offers a significant market potential with 83 million citizens, 3.5 million SMEs and more than 1,500 banks. After Brexit, Berlin is a strong candidate to replace London as the EU's no.1 fintech hub."

### The next stage: sustainability

Fintechs have already transformed the financial services landscape by attracting millions of customers and establishing partnerships with all the leading German financial service



**"German consumers care about sustainability, re-using products and reducing electronic waste, which is what our technology enables them to do."**

**Hendrik Roosna,**  
CEO of Fairown

providers. Now the emphasis is on sustainable finance and ESG consulting.

According to EY, some 50 percent of identified ESG fintechs in Europe offer support services, including carbon offsetting. Around 30 percent provide dedicated investment options like wealth management solutions and project funding. A significant number of companies that started out as non-ESG fintechs have since added ESG products. Neobanks, for instance, now offer green accounts. Prominent German ESG fintechs include Tomorrow, a sustainable online bank that invests in climate projects, and Klima, which enables consumers to calculate and offset their carbon footprint.

Christopher Schmitz, partner and fintech lead at EY Parthenon, says ESG promotion is growing for government, industry and consumers as the negative impacts of climate change are increasingly felt. Fintechs are key drivers

for sustainable transformation. "EY anticipates that most established players will rely, at least to some extent, on support from fintechs to develop ESG-related products and services," says Schmitz.

### Proximity to customers

As Europe's biggest economy, Germany is at the heart of this trend. That's why Estonian start-up Fairown Finance has just opened a new office in Frankfurt and is on a recruitment drive. Fairown uses financial tech to help businesses participate in the circular economy by enabling brands to offer their products on a monthly subscription basis — as an alternative to outright ownership — and driving a cyclical economic effect by collecting and utilizing old products.

The company says coming to Germany was a case of going where the customers were. "First of all, Fairown cooperates with retailers as well as brands that sell their products directly to consumers," says Fairown Finance CEO Hendrik Roosna. "Our international customers such as Apple, LG, STIHL etc. have their

### THE BOTTOM LINE

**ESG is becoming a must in many business areas, and Germany is no exception. This is creating a range of new service niches, as the country's fintech sector shows.**



headquarters or regional headquarters in Germany, which is why the German market is so important to us. We also believe that German consumers care about sustainability, reusing products and reducing electronic waste, which is exactly what our technology enables them to do.” Roosna adds that the company’s lead investor, Germany’s Commerzbank, provided a lot of help in entering the market.

“The German economy is undergoing a sustainable transformation,” explains GTAI’s Josefine Dutschmann. “As the examples given show, fintechs are developing solutions that support this transformation. Germany currently offers a large market for this, and international players are very welcome. GTAI is happy to support them in expanding here.”



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## GERMANY IS SECOND ONLY TO BRITAIN IN ESG FINTECH

VC financing, industry-backed accelerators and incubators, and a heterogeneous economic landscape studded with multiple financial centers, many of which have special focal points, are just some of Germany’s advantages. Another is the government’s own digital hub initiative. Fintech hubs in Berlin, Frankfurt, Hamburg and Stuttgart and insurtech hubs in Cologne and Munich connect SMEs and corporations with promising new scientific innovators and start-ups.

The hubs allow start-ups to network with established, forward-looking players across the sustainability spectrum. Germany last year boasted 53 ESG fintechs, the largest number of such companies in the EU and behind only Britain in Europe. Investments in ESG fintechs in Europe have increased significantly since 2016, due in part to the 2020 European Green Deal, which led to record investments in 2021. In Germany alone, investments in ESG fintechs totaled USD 201 million from 2010 to 2022.



### THE INTERVIEWEE

**Daniel Abbou, managing director of the German AI Association.**

Daniel Abbou has been the top representative of the German AI industry association since May 2020. Previously, Abbou founded AI Hub Europe in Berlin and advised the private sector and politicians.

# "GERMANY PLAYS IN THE AI CHAMPIONS LEAGUE."

Germany will be a magnet for international providers of Artificial Intelligence in the coming years, says Daniel Abbou, managing director of the German AI Association. He also explains why Germany is attracting so many digital big data and sustainability companies.

**Artificial intelligence (AI) will be a huge growth market in the coming years. What role do companies in Germany play?**

**DANIEL ABBOU:** Germany is well positioned in this B2B business. AI solutions from Germany are truly diverse. They're used in industrial production, but also quality control or detecting shoplifting, for example. Germany is also very active in generative AI.

**How great is the potential of generative, i.e. content-creating, AI? Start-ups play a big role, don't they?**

**DA:** In Berlin, for example, a start-up called

### THE BOTTOM LINE

**From HR to assembly lines, the possibilities of AI are almost endless. Germany offers numerous advantages to international companies as a location for AI development and sales.**

Nyonic was recently founded that wants to develop a basic model for AI. It should be suitable for special applications in business and support several European languages. Another start-up that is already very successful is Aleph Alpha from Heidelberg. It has developed a language model called Luminous that can create texts and answer questions. Users can also see the source the information comes from.

**What advantages does Germany offer for international companies looking for an AI development location?**

**DA:** First of all, there is the education. Uni-

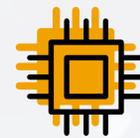
# DIGITAL ECONOMY AREAS



## GERMAN AI: POWERFUL RESEARCH, SMART USE CASES

Germany's strategy to promote itself as a leading location for AI began long before the hype about ChatGPT. In November 2018, the government unveiled a plan that foresaw EUR 3 billion in state investment in AI by 2025. In 2020, that commitment was increased to a total of EUR 5 billion. Many new research institutes were founded with these funds, new AI academic chairs were created at universities and existing research centers were strengthened. Academia and industry work closely together in Germany to translate the latest findings in R&D into value-creating use cases and new business models.

AI projects in healthcare, industry and mobility are particularly advanced. Of all start-ups founded in Germany, only three percent originate from research, for example as spin-offs from universities and research institutes. The rate is significantly higher for AI start-ups: 40 percent of AI start-ups are spin-offs from the scientific sector. German research into generative AI can certainly compete with the world's elite. The software for Stable Diffusion, for example, originated at Ludwig Maximilian University in Munich.



## BIG DATA FOR BETTER BUSINESS

In order to successfully implement AI projects, companies need large data sources processed in a special way. But generating and making sense of this data requires bespoke technologies, approaches and systems. Data skills are becoming increasingly important and are now required of new employees in every fifth job advertisement in Germany. Many international companies are helping German businesses to handle Big Data. For example, Solita, the Nordic market leader for data-driven digital transformation, has established an expertise unit for generative AI in Germany. Last year, its workforce grew by 70 percent, and it has since opened offices in Munich and in Berlin.

"The first wave of data science was about making data usable in business decision-making. In the second, there was an understanding that data must be made more usable by making it available on platforms and not hidden in silos," says Florian Disson, Solita's MD Germany. "Many companies in Germany are currently in the third phase — improving the quality of the collected data — and are interested in better data governance and data management."

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universities in this country produce excellent graduates in the field of AI, and companies can also find qualifications that are important for AI business, for example, well-trained economists. In addition, foreign companies located in Germany have excellent access to the entire European market. That's a big plus. Moreover, "Made in Germany" is still a sign of quality, and this also applies to AI.

### How does Germany compare with other European countries as a location for AI companies?

**DA:** The legal framework in Germany is still significantly more stable than in many other

European countries. This contributes to the fact that Germany plays in the Champions League in the field in Europe.

### AI solutions are increasingly being used in German manufacturing. How important is proximity to these sorts of customers?

**DA:** Physical proximity is always useful when companies want to establish new customer relationships. This is especially true for companies that want to sell their products to small and medium-sized enterprises (SMEs). And this customer group is huge in Germany — especially in manufacturing. A gigantic market is

opening up here, because many of these SMEs do not yet use AI solutions. For German and international AI vendors and service providers, this market segment is at least as exciting as that of large companies.

### How important is AI for the German economy?

**DA:** AI can automate many tasks and processes that are currently still very personnel intensive. This includes everything that runs according to predefined rules. Thus, AI can mitigate the major problem of a shortage of skilled workers in the domestic economy, which will become

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## DIGITAL ECONOMY AREAS



### ON THE ROAD TO AUTONOMOUS DRIVING

Digitalization, electromobility and autonomous driving are the triad that will shape the future of the automotive industry — and Germany is Europe's largest e-car manufacturer. Between 2023 and 2027, the German automotive industry will invest around EUR 250 billion in R&D, reports the German Association of the Automotive Industry (VDA). A further EUR 130 billion will flow into the conversion and digitalization of automotive production.

International firms can offer their services to German OEMs and suppliers as providers of hardware and software. For example, chip manufacturer Sima.ai from California recently poached Harald Kröger, an automotive production expert, from Bosch. He's currently setting up a location for the Silicon Valley start-up in Stuttgart. Car-makers also have a growing need for big data services and consulting. Mercedes-Benz has enlisted the French IT consultancy Capgemini to help deal with massive data sets.



### THE FUTURE OF ESG IS DIGITAL

Without smart tools, it will be hard to accelerate the transformation to a more sustainable economy and achieve Germany's ambitious goal of being climate-neutral by 2045. The German government is therefore providing targeted support for companies developing solutions for sustainable cities, the circular economy, new forms of mobility, energy supply and healthcare. International suppliers take note!

A survey by the German digital trade association bitkom showed that 9 out of 10 companies are implementing their climate goals with the help of digital tech, and many will need third-party solutions. But there's a challenging side to this: increased energy consumption and CO<sub>2</sub> emissions, electronic waste and shortages of raw materials. And AI is **particularly** energy-intensive. Providers who can show firms how to achieve their digital goals while conserving resources will thrive in Germany.

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even more acute due to demographic change. Employees will then have more time to focus on the tasks only humans can do. This is actually a great opportunity. Companies can use AI to grow.

#### Which locations are particularly suitable for AI companies?

**DA:** The focus is clearly on the major urban centers, especially Berlin, Munich and Hamburg — that's where most of the established AI companies are to be found, as well as most

AI start-ups. But other locations outside of the major metropolitan areas have their attractions too. For example, Heilbronn in southwestern Germany has the Innovation Park Artificial Intelligence (ipai). It will soon boast Europe's largest infrastructure for AI companies. There is also a similar project in Hürth, near Cologne.

#### AI is just one growth area. What other markets and fields are there in Germany that are attracting global digital companies?

**DA:** Above all, big data and sustainability. Many

industries, including automotive manufacturing, plant engineering and the technology sector, all of them German strengths, are facing digital transformation in the coming years. As a general rule, the entire digital value chain is in good hands in Germany.

#### CONTACT



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# How Germany Works

## **GMBH: THE GERMAN LIMITED LIABILITY COMPANY**

The enduring popularity of the German limited liability company (GmbH) is down to a combination of factors: the flexibility it offers founders along with the confidence it gives investors, banks and potential business partners. It is the preferred option for many foreign businesses looking to set up in the heart of Europe.

International companies setting up shop in Germany often opt to establish a **LOCAL SUBSIDIARY.**

The German limited liability company (*Gesellschaft mit beschränkter Haftung* — GmbH) is the **MOST WIDELY USED LEGAL FORM FOR CORPORATIONS** in Germany, combining flexibility with relatively few obligations.

Engaging with business partners, suppliers, public institutions and banks **IS GENERALLY EASIER BY ESTABLISHING A GMBH** rather than setting up a branch office of a foreign corporation.

**LIABILITY FOR GERMAN BUSINESS ACTIVITIES IS LIMITED TO THE ASSETS OF THE GMBH** as it represents a separate legal entity from its owners.

It's possible to conduct the **NOTARIAL PROCEDURE FOR GMBH FORMATION ONLINE.** That requires special eIDs either from Germany or some other EU countries.

### **MOST COMMON LEGAL STRUCTURES**

Number of companies with a specific legal form (selection) in Germany in 2021



GmbH:

**566,351**



Partnerships — non-corporate entities, no capital required (*Personengesellschaften*), including GbR, OHG and others:

**417,082**



Public limited corporations — capital required (*Aktiengesellschaft* — AG):

**7,277**

Source: Statistisches Bundesamt, 2021

### **REVENUE OF LEGAL FORMS**

Total turnover of specific forms of companies in Germany in 2021

GmbH  
**EUR 3,154 BILLION**

PARTNERSHIPS — NON-CORPORATE ENTITIES, NO CAPITAL REQUIRED (*PERSONENGESELLSCHAFTEN*), INCLUDING GBR, OHG AND OTHERS:

**EUR 1,688 BILLION**

PUBLIC LIMITED CORPORATIONS — CAPITAL REQUIRED (*AKTIENGESELLSCHAFT* — AG):

**EUR 1,018 BILLION**

Source: Statistisches Bundesamt, 2021

### **STEPS TO FOUNDING A GMBH**

A GmbH can be set up within a few weeks by following these procedures

**01**

DRAFTING OF ARTICLES OF ASSOCIATION

**02**

NOTARIZATION OF ARTICLES OF ASSOCIATION

**03**

PAYMENT OF SHARE CAPITAL

**04**

COMMERCIAL REGISTER REGISTRATION

**05**

TRADE OFFICE REGISTRATION



READY FOR BUSINESS!

Source: GTAI \* A business license or permit is not necessary for registering the business in the majority of cases. In some sectors, a permit or authorization may be required.

At your service!

# SET UP BUSINESS IN GERMANY

Want to be part of Europe's largest market? We're your first point of contact. **Germany Trade & Invest** (GTAI) provides international companies looking to expand with free, reliable information on the latest opportunities in the German market.

## GETTING STARTED IN GERMANY

*Our experts are there to help  
you in all phases of establishing  
a business in Germany.*

[www.gtai.de/gtai-en/invest](http://www.gtai.de/gtai-en/invest)

Germany Trade & Invest (GTAI) is the foreign trade and inward investment agency of the Federal Republic of Germany. We advise and support international companies planning to expand into the German market and assist German companies seeking to enter global markets.

### **Our consulting services for international companies looking to expand and seeking to establish an own subsidiary or branch office in Germany include:**

- Assistance with finding the right site location for their business
- Information on financing and incentives for businesses
- Tax and legal information on setting up a company
- Information, data and statistics about key industries in Germany

All investment-related services and inquiries are treated with the utmost confidentiality and are provided free of charge.

### Get in touch with our Investor Support Service Team



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