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GERMANY

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MAKING CONNECTIONS

Necessity is sparking new demand for energy efficiency in Germany.

GERMANY'S SMART PORTS

It's full steam ahead for maritime logistics.

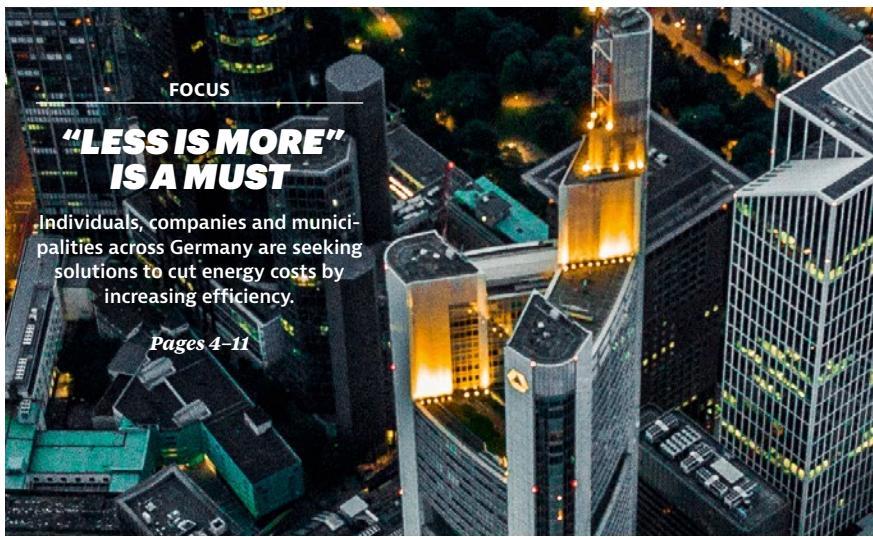
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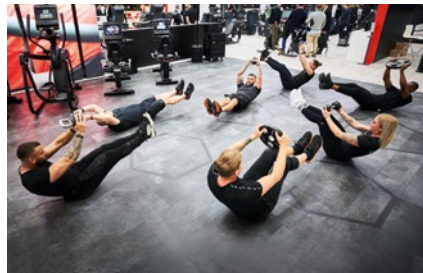


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on the basis of a decision by the German Bundestag



“It stands to reason that Europe’s largest economy must also be a leader in energy efficiency.”

Dear reader,

Energy efficiency is an often underappreciated but absolutely vital aspect of Germany’s energy transition. So we’ve decided to make that our top story this time around.

Efficiency can take many forms. It can be about technology: the classic “get more out than what you put in” model of the heat pump. It can be about maximizing the performance of solar power cells to better capture the sun’s energy. It can be about using surplus industrial heat to keep buildings and whole neighborhoods warm. Or it can be about developing systems that allow us to be more flexible in how and when we use energy. These are all important levers in Germany’s plans to become CO₂-neutral by 2045.

Historically, Germany has been a country that has relied on technology and innovation, not vast stocks of natural resources. So it stands to reason that Europe’s largest economy must also be a leader in energy efficiency. But there is both a demand and space within the market for international companies to come here and prosper as part of this transition.

Energy is a serious topic — perhaps the most critical challenge facing the world today — but we also find time in this issue for a bit of recreation and relaxation. The fitness industry has emerged from the coronavirus pandemic in robust health and more diverse than ever before. And Germans are traveling again, albeit in different ways and to different destinations, which means fresh opportunities in the tourism sector. So we invite you to sit back and enjoy a bit of mental stimulation with this issue of *Markets Germany*.

Dr. Robert Hermann, CEO

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ONE TO WATCH

Photo: NÜWIEL, Anne Gaertner



NATALIA TOMIYAMA: CO-FOUNDER AND MANAGING DIRECTOR, NÜWIEL

Hamburg attracts no shortage of bright young entrepreneurs looking to join the vibrant logistics sector of Germany's largest port city. Natalia Tomiyama is one of them. Raised in Russia by Asian parents, Tomiyama came to Germany to study mechanical engineering at Hamburg University of Technology. While working as a project manager at the university's Startup Dock, she met her future business partner Fahad Khan, and in 2016, they founded NÜWIEL, a company that develops and manufactures electric cargo trailers for bicycles.

Today, NÜWIEL's eTrailers are used by UPS and the Belgian postal service to deliver packages, while Ikea rents out the eTrailers to customers, enabling them to conveniently transport shopping items home without cars. The system's versatility is a major selling

point — it can be connected to electric and conventional bicycles within seconds and serves as a handcart when disconnected. "Our eTrailer automatically synchronizes its movements with the bicycle or person in front, making it very comfortable to use even when moving 200 kilos," Tomiyama explains. "There is no push and pull." The biggest start-up challenge Tomiyama's team faced was developing their prototypes. But Hamburg's support ecosystem for fledgling businesses helped them: "It gave us access to the funding and technical equipment we needed," she says.

2023 is a big year for NÜWIEL: it plans to scale up production and enter new markets. And it plans to complete a EUR 10 million financing round and enter a new European market.

Quick facts

NAME	Natalia Tomiyama
JOB TITLE	Managing Director
QUALIFICATION	M. Sc. Mechanical Engineering / MBA Technology Management
COMPANY NAME	NÜWIEL
LOCATION	Hamburg
INDUSTRY	Last Mile Logistics
HAMBURG-BASED STAFF:	January 2023: 34; January 2024: 40+
CLIENT BASE:	UPS, bpost, Ikea, ADFC



WASTE NOT, **WANT NOT**

All over the world, rising prices have underscored the need to use energy more efficiently. Ordinary German citizens, along with the municipalities they live in and businesses of all shapes and sizes, are eager to use less energy and make it go further. That's good news for both service and equipment providers.

Daimler Trucks is investing in modern waste heat and ventilation systems in its factories. Schott is developing climate-neutral melting technologies to improve the energy-intensive processes in producing glass. And then there are the small and medium-sized enterprises, the backbone of Germany's economy: Bath and heating fixture company Josef Küpper and Sons is self-supplying energy using hydrogen, while BSH Hausgeräte is tinkering with metal processing innovations and GEA Refrigeration is developing a high-temperature heat pump that uses natural refrigerants.

Those were the winners at the latest Energy Efficiency Awards given by the German Energy Agency (dena) for outstanding achievements in energy management. And they're a good representation of the broad spectrum of energy-efficiency innovations currently in high demand in Germany.

Russia's attack on Ukraine made Russian gas imports politically untenable in Germa-

ny. When they came to an abrupt end, they created a sharp rise in supply concerns and calls for private households and businesses to save energy. Germany responded, and the country got through the winter of 2022/23 without significant hardship. At the same time, it became clear that energy thrift and alternative gas supplies won't be enough to help Germany to achieve its clean energy and climate protection goals. In addition to all of the above and to renewable energy, Germans must use power

and heat more efficiently. And nowhere is this truer than in industry.

"What we saw in German industry last year were mainly short-term, fast-acting energy-saving measures in a first step to cope with the energy crisis," says Alexander Sauer, a professor at the Institute for Energy Efficiency in Production (EEP) at the University of Stuttgart. "Because energy prices suddenly skyrocketed and there were major economic uncertainties at the same time, companies were primarily looking to save energy costs quickly — and initially with measures for which they had to invest as little as possible." He predicts companies "will now shift from short-term, low-investment measures to larger-scale, long-term energy-efficiency strategies."

For ten years now, Sauer and his research team have been monitoring German industrial companies' energy-saving methods, publishing an Energy Efficiency Index twice a year. The latest edition offered an important insight. "There is now a great need for information, for

THE BOTTOM LINE

Industrial companies are striving to be more energy efficient in order to cut costs, ensure reliable heat and power supplies, and become climate neutral. The German market for energy-efficiency technologies has a huge potential for growth.



Photo: DENEFF

“WE MUST COMBINE QUICK SUCCESS WITH A LONG-TERM, STRATEGIC APPROACH.”

Henning Ellermann is MD of the energy efficiency initiative DENEFF, which brings together companies from all sectors to learn how to save energy.

How big was the energy price shock last year for companies in Germany?

HENING ELLERMANN: At the beginning of the Ukraine conflict, the main concern was supply security. The main thing was to get through the winter safely! Some companies even reactivated old oil-fired boilers as an emergency reserve and looked everywhere for potential energy savings, especially in the short term.

The issue of energy efficiency is hardly new for German companies. Should they have been better prepared?

HE: Many companies were already fully engaged with energy efficiency measures, but the topic didn't yet have the urgency we see now. Companies that had already set up an energy management system and had carried out energy audits had a definite advantage. They were able to reach into their desk drawers, pull out their consumption analyses and lists of measures, and quickly get an overview of where they could save energy most quickly and efficiently. Many then brought forward measures that had already been planned anyway and implemented them more quickly.

Despite the worries about natural gas supplies, German industry got through the winter surprisingly well. What's the situation now?

HE: Things have calmed down a bit. Companies are now at a point where they are asking themselves: “How do I get away from high

energy costs structurally?” It's no longer a question of sticking Band-Aids on the acute problem areas, but of finding sustainable solutions. In recent months, DENEFF has offered many digital consultations and workshops on efficiency measures. The demand is huge! At times, our platforms were overloaded because so many people have registered. We hope that companies will use the breather offered by the summer to prepare for next winter — and many are already thinking far beyond that.

What specific factors are adding momentum to the demand?

HE: Prices continue to be very high and the regulations around energy consumption and CO₂ emissions are now stricter. This situation is now affecting everyone from German industrial SMEs in mechanical or electrical engineering to the energy-intensive industries. Many of them are looking for service providers who can help them navigate these complex issues, who can also take care of applications for subsidies and who can bring together the necessary experts to quickly implement efficiency measures.

Is it difficult for foreign service providers to gain a foothold in the German energy services market?

HE: Not necessarily. Of course, you need to present certain qualifications if you want to offer energy services on the German market, but the industrial processes and the norms and standards for audits that are involved are simi-

lar worldwide and largely standardized within the EU. Individual framework conditions in Germany naturally require specific attention, but there is a lot to be done and great openness for new and innovative solutions and providers. Those who establish themselves on the German market and can convince demanding German industrial companies are well placed to then gain a foothold in other European countries.

What do providers of energy services and efficiency technologies need to bring to the table to be successful now?

HE: We need to combine quick success with a long-term, strategic approach. After all, the pressure to act and cut costs right now is very high, but at the same time, companies also know that we are in the midst of a profound, longer-term transformation toward a more sustainable and resource-conserving, circular economic world. There is a great need for support on both short-term and long-term challenges. Providers should keep this in mind.

What role do digital technologies play in these developments?

HE: A major bottleneck will be the availability of skilled workers. After all, it takes a lot of people who have the necessary knowledge and experience to then implement all the projects in practice. So anyone who can use digital solutions, such as artificial intelligence and the Internet of Things, to support these experts and implement efficiency measures even faster will certainly have an advantage.

HOW HAS GERMANY'S NATURAL GAS SUPPLY CHANGED SINCE 2022?

advice and for help in implementing energy efficiency measures,” explains Sauer. “Companies are looking for solutions on how to become more independent of volatile energy prices overall and regain planning security.”

Huge industrial conglomerates in traditionally energy-intensive sectors like chemicals or metals aren't the only ones focusing on efficiency. Smaller companies are just as eager to get more by using less. “This now applies to the entire manufacturing SME sector in Germany,” says Sauer. “There is huge pressure to act.” This pressure from below is being matched by governmental legislation from above.

Saving as much as Spain uses

In March, the European Union agreed to a revision of the bloc's Energy Efficiency Directive, mandating energy savings of 11.7 percent by 2030. That means that EU countries must reduce total energy consumption by about 1.5 percent per year. Targets will be enforced by the European Commission.

“Those who dawdle get homework,” tweeted the German Member of European Parliament Jutta Paulus, a Green Party stalwart who was involved in the negotiations. Paulus added the mandated savings in the legislation would be roughly the size of Spain's total energy consumption.

In late April, Germany's governing cabinet approved draft legislation for the Energy Efficiency Law (EnEfG). It sets a binding target of a 550-terawatt-hour reduction of final energy consumption compared to 2008 levels by the end of this decade, with Germany's national and regional governments directly responsible for a 50-terawatt-hour cut. For comparison, Germany consumed 2407 terawatt hours of energy in 2021, according to the German Environment Agency.

The legislation requires all companies with an annual energy consumption of more than 15 gigawatt hours a year to introduce energy management systems and draw up concrete,

publicly accessible energy efficiency measures. Specifics of the measures will be left up to the companies themselves.

In addition, data centers will have to fulfill energy-efficiency standards and use the heat they generate. Industrial waste heat is to be generally avoided or, where unavoidable, be put to use.

“The new Energy Efficiency Law adds further momentum to the changes that are already going on in Germany society and the German

For many decades, Russia was Germany's main supplier of imported natural gas. But with Moscow's invasion of Ukraine in February 2022, that relationship became politically unviable. It was resoundingly clear that Germany's energy security was threatened by its over-dependence on a single supplier country, and the German government took immediate steps to rectify the situation.

Germany has increased gas imports from other countries such as Norway, the Netherlands and Belgium. It has also stepped up deliveries of liquefied natural gas (LNG) via its European neighbors and terminals built at short notice in its North Sea ports. Some were already in operation by late 2022/early 2023.

Meanwhile, German industrial companies are working on solutions to supply themselves with alternatives to natural gas. They are also hard at work on increasing energy efficiency and reducing the energy consumption of their machinery, buildings and processes.

By September 2022, Germany was importing no gas whatsoever from Russia, and the country suffered no shortages during the winter of 2022–23. In line with Germany's long-term policy of transitioning to clean energy, efforts continue to further reduce the use of natural gas in the country.

economy,” says Germany Trade & Invest (GTAI) CEO Robert Hermann. “It's hard to think of a better time than now for international energy-efficiency companies to expand to Europe's largest economy.”

A new market for new services

No wonder then that consultants and companies that offer services and technology to improve energy efficiency are already noticing increased demand.



SPOTLIGHT: Germany's Food Industry

Food production — encompassing both the agricultural and food industries — currently accounts for around 30 percent of global energy consumption and 28 percent of global greenhouse gas emissions. As the world's population grows, demand for food is also rising steadily — by as much as 60 percent by 2050, according to projections — and that rise threatens to significantly increase the energy consumption of this industry.

The Food and Agriculture Organization of the United Nations says food prices need to be decoupled from fluctuations in energy prices on the world markets. To achieve this, the agricultural and food industries as a whole need to get more energy efficient.

Likewise, the food production industry in Germany is under great pressure to reduce its energy consumption. The food sector is the third-largest industry in Germany, with annual sales of around EUR 216 billion, and currently has the second-highest gas consumption in the country overall, just behind the chemical

industry. Overall, the industry is responsible for around ten percent of Germany's total energy consumption.

The industry encompasses both SMEs and large, international companies; all together there are around 6,000 businesses in the sector. The potential for energy savings is particularly great among companies that require large amounts of heat or cold in their production processes, such as meat processing plants, dairies, breweries and bakeries. All in all, these sectors account for around half of the energy consumption in the food industry.

Chilled food producers hardest hit

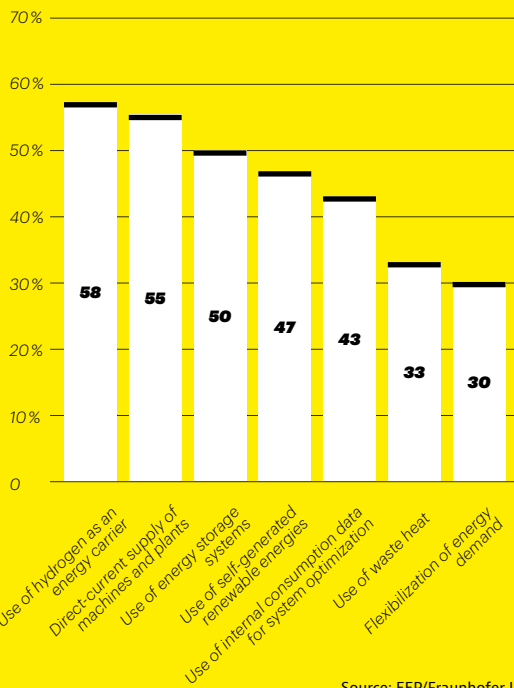
Producers of both frozen food and fresh produce, as well as their logistics providers, are also particularly susceptible to rising energy prices. The main consumers in production are process heating, process cooling, refrigeration and powering electric motors. A large potential for energy savings in the industry therefore arises particularly in the heating and cooling circuits.

In April 2022, the Federation of German Food and Drink Industries (BVE) launched the industry's first energy efficiency and climate protection network. The German Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection is also promoting the industry, with the aim of reducing energy consumption in production and making greater use of renewables.

"I am very pleased that we have been able to launch our first dedicated network," says Peter Feller, deputy CEO of the BVE. "German food manufacturers are working resolutely to produce in a more climate-friendly way. This is demonstrated simply by the fact that even in the predominantly regional cross-sector networks, most committed companies come from the food and beverage industry." The associations and climate protection networks are a good starting point for providers of energy services and energy-saving technologies to enter into discussions with companies in the sector.

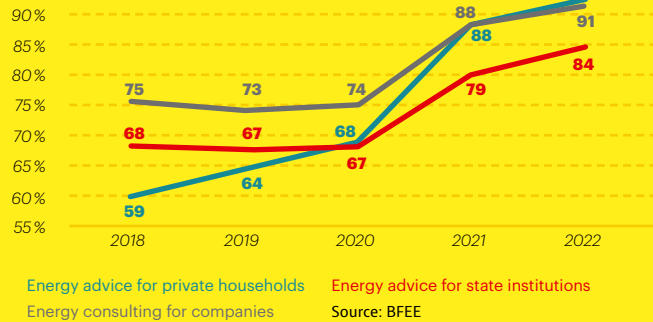
“HELP! I NEED SOMEBODY”

Where manufacturing companies in Germany are looking for advice and implementation support



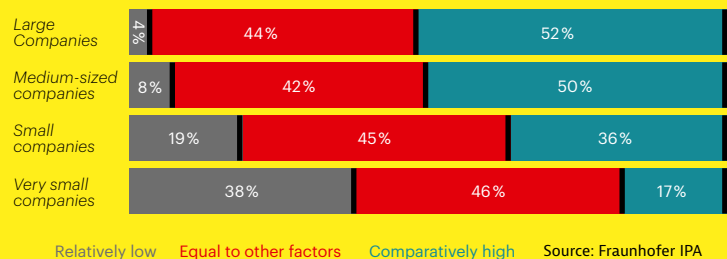
SAVING ENERGY IS A GROWING SECTOR

Proportion of energy service providers in Germany who expect market growth



BIGGER COMPANIES LOOKING FOR BIGGEST SAVINGS

How German companies rate the importance of energy efficiency



“Many customers come to us and ask for our assessment: what is coming from the European Union (EU), what new laws and regulations are we facing at the national level in Germany?” says Attila Kovacs, sustainability and energy efficiency advisor for the Danish consultancy Rambøll.

Rambøll is a perfect example of a company banking on the rapid change in Germany. Headquartered in Copenhagen and operating in the German market from its offices in Hamburg since 2000, the global architecture, engineering and consultancy company plans to focus its entire German consulting and service portfolio on the topics of sustainability and energy transition over the next four years.

“Many companies now want very comprehensive advice and support, which is not just about purely calculating the carbon footprint, energy audits or optimization in individual areas of production or individual processes,” says Rambøll sustainability expert Delia Carls. “They want integrated, holistic solutions and ideas on how energy efficiency measures can

be efficiently combined with other important, strategic issues such as the short- and long-term reduction of CO₂ emissions and other sustainability goals.”

Russia’s war on Ukraine not only drove up energy prices, say the experts, but made more companies worry about the security of their supplies. That has also affected their thinking on energy efficiency. “If possible, they now want fixed all-inclusive prices,” explains Kovacs. “They want to know the costs of energy efficiency measures very precisely and prefer secure, easily calculable solutions.”

Demand is high for systems that provide in-house electricity production. Kovacs describes his clients’ reasoning thus: “Because with those I can calculate exactly, ‘What do I have to invest today, and what reduction in energy requirements will follow the conversion?’”

Greater efficiency means more planning security and less exposure to volatile prices. It is more difficult to convince customers of other services such as digital monitoring systems for the energy consumption of buildings

or machines because the data is sketchier in these areas.

Consultants and service providers are expected to be fully versed and up-to-the-minute on the current political framework not only at the EU level, but also in Germany. It’s a major reason for international companies to invest in local offices to gain a secure foothold in the German market and be ready to profit from the energy efficiency trend.

On the ground in Germany

German industrial customers want reassurance that service and technology providers understand the specific ins and outs of the German market and are fully abreast of the dynamically changing framework conditions.

“It is much easier to win over German companies as customers if you are on site and can act as a German provider,” says Bénédicte Winter, expert in energy efficiency. So it pays for international companies to set up German subsidiaries.



Photo: SpinDrive

Taking the Magma for a SpinDrive:

Janne Heikkinen, CEO of Finnish start-up SpinDrive, modifies some equipment. His company makes customized magnetic bearing systems that increase energy efficiency.

energy-efficiency competition called the *Leitstern Energieeffizienz* (“Lodestar Energy Efficiency”) for its 44 municipalities. Participation in 2023 is at an all-time high, and nearly all the state’s rural and city districts have taken part.

Local and regional governments work closely with research institutes like the Fraunhofer Institute for Solar Energy Systems (ISE), which is located in Baden-Württemberg’s fourth-largest city, Freiburg. Researchers there are working on a wide variety of innovations, including hyper-efficient solar cells and modern heat-pump and heat-exchange systems.

There are plenty of opportunities for international companies to take advantage of this available expertise and the need for new solutions. “In Germany, in the coming years we will see innovative solutions and projects in which industry, research institutions and municipalities work together more frequently,” says Winter. “However, such solutions are also complex. They present major challenges in terms of technology and expertise.”

For this reason, so-called contracting services may also be required to operate and manage these comprehensive energy systems, so that industrial companies can continue to concentrate on their core business.

The government energy efficiency consultancy BfEE (Bundesstelle für Energieeffizienz) has put total annual turnover in energy consulting at just under EUR 900 million. Even before the energy disruptions of 2022 the sector was growing steadily, and it is now set to become considerably more dynamic.

Flexibility, plus a lot of open questions

Alexander Sauer sees another trend in the making: what are known as energy-flexible technologies. “Increasingly, fluctuating energy sources such as solar and wind mean more volatile prices, so it makes sense to use energy

Winter says that potential industrial clients in Germany are very open to innovative, new solutions, because they see energy efficiency as an essential step on the pathway towards decarbonization and digital transformation.

“However, this is precisely why companies want to select service providers and technology partners for this transformation on a very long-term basis,” she adds. “After all, many energy efficiency measures also involve critical production processes and data that companies don’t allow just any provider to see.”

Getting started in Germany

For equipment providers, a sensible first step into the German market can be to invest in an experienced technical sales representative on site. This was the route chosen by the Finnish start-up SpinDrive, a manufacturer of innovative, customized magnetic bearing systems that increase energy efficiency in industrial machinery.

Initially, the company hired a sales representative in Germany. Then, as the demand for magnetic bearings in German-speaking Europe started to grow, SpinDrive took the next step. In 2022, it registered a subsidiary, SpinDrive GmbH, in Heilbronn, southwest Germany.

“Germany has always been an important market for SpinDrive,” says Nikita Uzhegov, SpinDrive’s chief operating officer. “With the support

of new investments and proven results from customers in different industries, we believe it is the right moment for us to take action in the German market, including in other German-speaking countries. It’s important for us to have a local presence and demonstrate our commitment to the customers by being close to them.”

More suppliers of innovative solutions could follow SpinDrive’s lead and enter the German market, Winter asserts. “Companies are making quick decisions now. And the variety of technologies that are being used is increasing. Furthermore, industrial companies in Germany will also become more involved in the expansion of the country’s energy infrastructure.”

Putting waste heat to good use

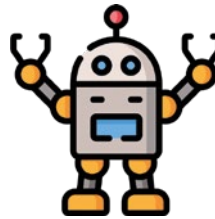
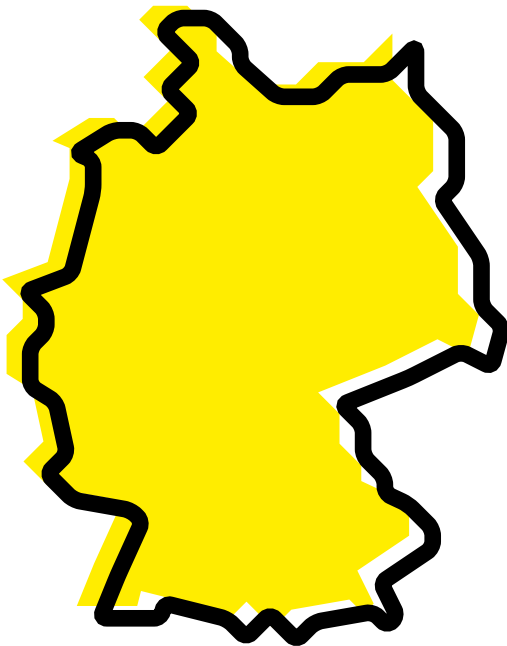
A large part of efficiency is, of course, reducing waste. To take one notable example, the copper manufacturer Aurubis feeds waste heat from its energy-intensive industrial processes directly into the heating network of a residential neighborhood in Hamburg.

This cooperation is typical of the sea change that’s taking place throughout the Federal Republic. Municipalities are taking it upon themselves to become more efficient in energy generation, energy transport and consumption.

Meanwhile the southwest German regional state of Baden-Württemberg runs an annual

EMERGING STRONGER

4 energy efficiency sectors to watch



ROBOTICS

The International Federation of Robotics predicts that companies will increasingly introduce automated and robotic controls capable of converting kinetic energy into electricity and feeding it back into the power grid. The application of an intelligent, power-saving mode for production robots will become critical in manufacturing. Many big German industrial companies are expected to make big investments in these technologies.



RENEWABLES

If clean energy is to supplant fossil fuels, the generation and distribution of electricity will have to become more efficient. Solutions providers will find a fertile market in Germany and high-profile partners for R&D projects. For example, with the help of a new anti-reflective coating, researchers at the Fraunhofer ISE set an efficiency record for quadruple solar cells of 47.6%.



CONSTRUCTION

Energy efficiency regulations and incentives will drive investment in refurbishments and improve operations. There are large incentives for construction and retrofitting — some EUR 750 million in low-interest loans are on offer for first-time purchases of domestic buildings and private homes. The fund is part of a program called “Climate-Friendly New Construction” from the state economic development bank KfW.



HEAT PUMPS

The German government is offering subsidies of up to 40 percent on domestic heat pumps to replace conventional heating systems, and many regional governments provide assistance as well. There are also incentives for commercial heat pumps. The leading makers of heat pumps in Germany all reported record turnover, output and investment in 2022, and the unprecedented growth is predicted to continue in 2023 and beyond.

Illustration: www.flaticon.com

as flexibly as possible — for example, by not buying energy when there are price spikes on the markets,” Sauer says.

The problem is that industrial companies can’t simply ramp up and down their machines at will just because prices are fluctuating. One solution is to use modern production machines that can switch back and forth between different energy carriers during operation. “So, for example, a machine could run on both electricity and gas or hydrogen,” Sauer explains.

Many industrial companies are also hoping to achieve big leaps in energy efficiency

from the switch to electric machinery. “With all these new technologies, there are then a lot of questions around implementation,” says Sauer. Questions like: Where is the best place to put a hydrogen electrolyzer on the factory floor? How can processes be reorganized so that all the machines can be supplied with direct current? How to integrate energy storage into industrial operations? How to use digital monitoring systems most efficiently for tracking energy consumption and emissions alike?

With a long queue of manufacturers, construction companies and SMEs waiting to be

advised on a whole host of questions like these, Sauer is confident that “there will be a lot for consultants and equipment suppliers to do in the coming years.”



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GTAI expert for energy efficiency

IN BRIEF

Germany is admired around the world for its tradition of technological creativity and imagination. Here *Markets Germany* shines a spotlight on some of the breakthroughs made by the country's many research institutes and start-ups.

LIGHT SECURITY

A new approach to data encryption offers enhanced protection from hacking.

Conventional data encryption uses algorithms. The drawback of this method is that any algorithm can potentially be hacked if sufficient computing power is applied. Quantum Optics Jena, a spin-off from Fraunhofer Institute for Applied Optics and Precision Engineering (IOF), has developed a new solution for encoding data and preventing its being stolen: light particles.

"Our invention is special because the encryption functions purely randomly, according to quantum physics, rather than mathematically," explains Quantum Optics Jena's general manager Kevin Füchsel.

The company plans to commence serial production in 2023, with all key software and hardware components being produced in its home city of Jena, a region in eastern Germany known for its optics technology.

www.qo-jena.com



The managing directors of Quantum Optics Jena GmbH: Oliver de Vries (left) and Dr. Kevin Füchsel.



MANMADE PHOTOSYNTHESIS

Synthetic semiconductor leaves can generate energy using photosynthesis.

In October 2022, a team from the Technical University of Ilmenau and its research partners announced a breakthrough in artificial photosynthesis. They unveiled a "leaf" made of semiconductors and catalysts that uses sunlight to turn CO₂ into raw fuels including methane and carbon monoxide. Mimicking nature, the artificial leaf runs tiny power plants along its surface area. The international project is part of the German government's strategy to reduce Germany's reliance on fossil fuels.

"It's my dream as a scientist to use artificial photosynthesis to open the gates to a world where green energy sources contribute decisively to widespread mobility and stable energy storage," says Thomas Hannappel, head of TU Ilmenau's Fundamentals of Energy Materials group.

www.tu-ilmenau.de

CLEANER MEDICAL DIAGNOSTICS

An innovative start-up from Dresden has developed a better way of purifying plasma.



from left:
Dr. Andreas Winkler,
Dr. Stefanie Hartmann,
Dr. Melanie Colditz,
Uhland Weissker

“The completely automatable process can be integrated into existing diagnostic devices.”

Dr. Stefanie Hartmann

µAcoustiX, a spin-off from the Leibniz Institute for Solid State and Materials Research in Dresden, has something to celebrate. The start-up was awarded the Cluster Prize Life Sciences of the IQ Innovation Competition Middle Germany 2022 for a new process of automatized blood plasma extraction.

The CleanPlasma technology increases the efficiency of blood-sample purification, thereby improving the chances of early diagnosis of common diseases, including cancer. Conventional purification requires plasma to be separated from the blood cells in a centrifuge. The CleanPlasma method employs sound waves on a chip to free plasma of blood cells, bacteria and other contaminants.

In 2022, µAcoustiX received EUR 4 million in support from the GO-Bio initial funding program from the German Ministry of Education and Research. “The completely automatable process can be integrated into existing diagnostic devices,” says Stefanie Hartmann of µAcoustiX’s founding team. “That represents a key practical advantage and paves the way for groundbreaking diagnostics in a wide range of fields.”

www.ifw-dresden.de

AUGMENTED VIDEO CALLS

Holograms could improve remote human interaction using augmented reality.

The start-up Gixel, based in the southwestern German city of Karlsruhe, has come up with novel augmented reality glasses the company claims will make remote video communication more natural and effective. The device allows users to address life-sized conversation partners individually, preserves spatial audio and retains eye contact and body language. “We have the lightest glasses in the world and the widest visual field in the world,” Gixel co-founder Miro Taphanel told computer magazine c’t.

www.gixel.de

NANOTECH TO COMBAT DISEASE

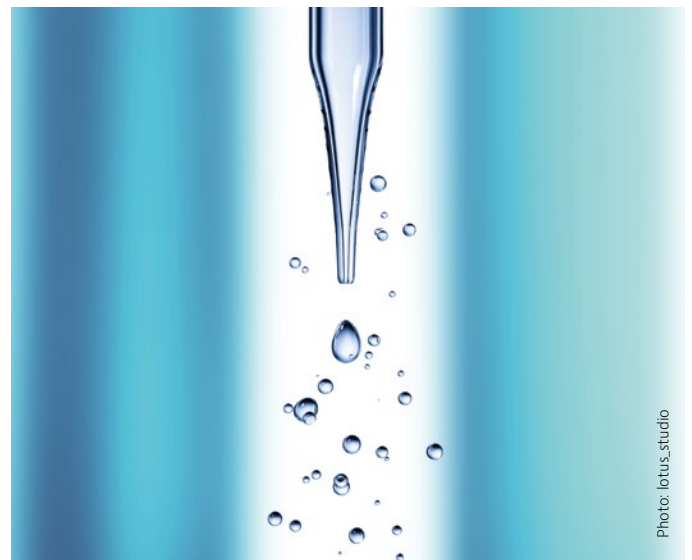
Nanostructural engineering could open the door to a brave new world of DNA design.

Of all the substances in the world, DNA contains the highest density of information, and the possibilities that entails are intriguing to say the least. Two German nanotech start-ups, Tilibit and Nanogami, are developing methods for the programming of DNA to self-assemble into a wide range of defined structures when triggered by an external signal. Nanometer-scale features can then be transferred onto semiconductor materials using lithography. This could shape the future of semiconductor device production. Another potential application is targeted drug delivery to deliver medications to specific parts of the body.

“Whether 2- or 3-dimensional, rigid or flexible, solid or hollow, our nanostructures can adopt any shape with nanometer precision,” Tilibit says on its website. “These objects can be stored for months in solution, frozen or dried, and will retain their shape.”

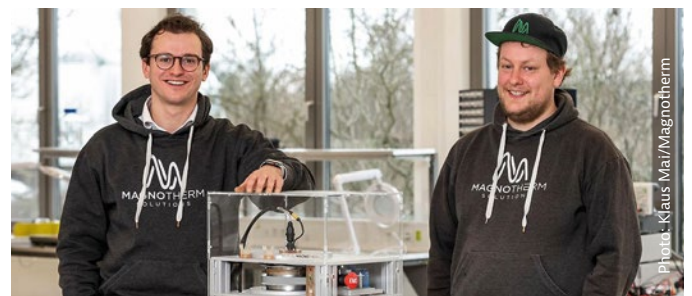
www.nanogami.bio

www.tilibit.com



REFRIGERATION MAGNETS

A new cooling technology could dramatically increase refrigeration efficiency.



Refrigeration accounts for around 10 percent of all greenhouse gas emissions — so making it more efficient is imperative. MAGNOTHERM, a spin-off from the Technical University of Darmstadt, has developed a cooling technology that works with metal, turning respectively warm and cold when magnetized and demagnetized. MAGNOTHERM claims its method is far more climate-friendly and 40 percent more efficient than conventional processes that use cooling gases. The company believes its magnet-powered refrigeration will become common supermarket practice within the next five years.

www.magnotherm.com



DEMAND AND **SUPPLY**

The clouds that hung over the photovoltaic (PV) industry in Germany have lifted, and opportunities are now emerging for manufacturers of PV systems and components. Professor Andreas Bett, director of the Fraunhofer Institute for Solar Energy Systems, tells us what has triggered the revival.

The photovoltaic (PV) systems industry in Germany has seen a strong rebound after a few difficult years. What's driving this boom?

ANDREAS BETT: You have to distinguish between demand and production. The main reason that demand for photovoltaic systems has risen recently is that the proper political framework has been created. The government has set climate protection targets for 2030 that require a rapid, subsidized expansion of solar energy. Initially, companies that sold and installed photovoltaic systems were the ones that primarily benefited from the subsidies. By the end of 2022, solar systems with a total capacity of around 67 GW were installed in Germany — this means that the installed capacity has doubled in the past ten years.

What about domestic production of PV systems in Germany?

BETT: This is a little more complicated. Solar systems consist of many individual components, such as cells, cables and inverters. In Germany, there is only one manufacturer of photovoltaic cells. And the wafers needed for cell production aren't produced here at all. The situation is not much better throughout Europe: currently, almost all components for photovoltaic systems, in some cases up to 99 percent of the world's demand, are produced

THE BOTTOM LINE

The solar industry has largely recovered from the supply difficulties of the past few years, and Germany is getting ready to significantly ramp up domestic production at costs competitive with China.

in China. In Germany, there are a few manufacturers of photovoltaic modules, but they do not fully cover the market demand. This means that Germany imports individual components and partially manufactures the end product, the solar modules, at home.

What does the current market situation look like for solar modules in Germany and Europe?

BETT: During the pandemic, solar module production came to a standstill in Germany. Because production in China stopped due to several lockdowns, Germany lacked the necessary components to manufacture solar modules. In addition, the transport of modules produced in China became more expensive. Together, this led to a significant increase in the price of PV modules. The situation on the German market is currently

easing again, and some German module producers are expanding their production capacities.

The pandemic made it clear that there was a downside to such a heavy dependence on a single supplier country. So we assume that the German government will take measures in the near future to bring production along the entire value chain back to Germany.

What advantages does Germany offer as a location for internationally active manufacturers who want to build new production facilities?

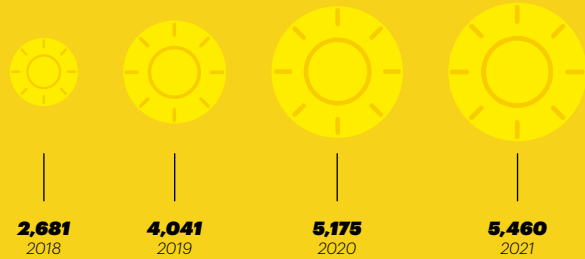
Germany scores points as a strong research location. For example, the country is setting world records in the performance of new types of developmental solar cells. In addition, Germany has a good infrastructure and highly trained experts who can drive innovation. If the German government further improves the framework for the photovoltaic industry, for example by lowering electricity prices for the industry and offering companies support for the necessary investments, Germany will once again be competitive as a location for mass production.

Does this mean that Germany could compete with China in terms of production costs in the near future?

BETT: Yes, that's possible. In a study, we found that solar modules could be produced roughly as cheaply in Germany as in China — if state support here were as high as there. Production costs in Europe would be about

INCREASING NUMBER OF PV SYSTEMS

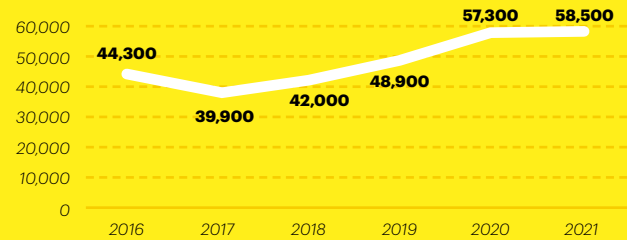
Development of the annual installed capacity of photovoltaic systems in Germany from 2018 to 2021 (in peak megawatt)



Source: Fraunhofer ISE

MORE EMPLOYEES IN THE SOLAR SECTOR

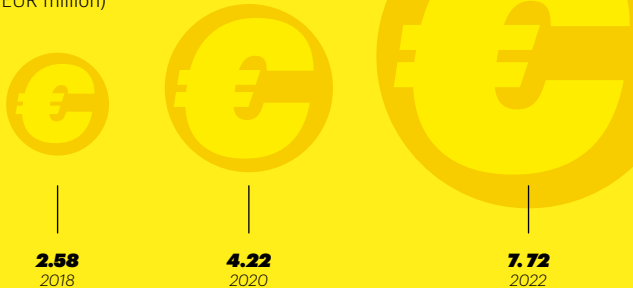
Number of employees in the solar energy sector in Germany from 2016 to 2021



Source: BMWK

HEALTHY RISE IN REVENUE

End customer turnover with photovoltaic systems in Germany (in EUR million)



Source: German Federal Statistical Office

48.3%

of electricity consumption in Germany already comes from **RENEWABLE ENERGY SOURCES**. By 2030, at least 80 percent of the gross electricity consumption is to be covered by renewable energies.

Source: Fraunhofer ISE

95%

is the projected share of China's share of global capacity for **POLYSILICON, INGOT AND WAFER PRODUCTION BY 2025** unless investment into production capacity in other regions is made now.

Source: IEA/ BMWK 2023

10 to 15 percent higher, all other things being equal. Transport costs of products from China to Europe level out this difference. This means that photovoltaic systems can be produced competitively in Germany. However, this calculation only works if companies in Europe have sufficiently large production capacity.

That can only happen with expansion. Where should international companies be looking to invest at the moment?

BETT: Opportunities exist along the entire value chain, from polysilicon to modules. Inverters and installation materials are also in demand. In Germany, the law states that photovoltaic systems with a total capacity of 215 GW are to be installed by 2030 — this corresponds to an annual increase of as much as 22 GW. By 2040, the capacity is supposed to reach 400 GW. This means a huge market is opening up for companies in this country.

Which sub-sectors are particularly promising?



ANDREAS BETT

Director of the Fraunhofer Institute for Solar Energy Systems (ISE) in Freiburg and Professor of Solar Energy Materials and Technologies in the Faculty of Mathematics and Physics at the University of Freiburg. He joined ISE in 1987.

BETT: There are currently two trends shaping the market in Germany. On the one hand, companies are currently researching how they can make solar systems even more efficient and durable. Optimized products are particularly popular with German buyers, who are paying more and more attention to whether their systems are sustainable in the long term. On the other hand, many companies are working on developing photovoltaic modules that can be individually adapted to buildings. The modules are designed to blend into the cityscape better and visually disappear into façades — for example with tailored colors, shapes and patterns.

Products from suppliers who specialize in such solutions are currently in great demand.

Where does the PV sector in Germany stand in relation to other renewable energy sectors?

BETT: The government wants to bring about a transition to clean energy and convert the entire energy sector to renewables in the long term. Photovoltaics naturally play a major role. Last year, solar installations in the country covered 11.4 percent of German electricity consumption. All renewable energies combined came to 48.3 percent. In addition to classic photovoltaic systems, mixed technologies in particular have good prospects for the future. Companies that, for example, offer solar facilities in combination with wind farms or electricity storage systems are likely to determine the market in the future.



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PUBLIC FINANCING FOR CLIMATE PROTECTION INVESTMENTS



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Since the beginning of 2023, there has been additional financial support in Germany for companies who plan to invest in environmental protection and energy efficiency.

01

WHAT'S NEW?

In order to support selected regions in Germany in their transformation to a climate-neutral economy, the national government and the German states realigned the GRW funding program (Gemeinschaftsaufgabe "Verbesserung der regionalen Wirtschaftsstruktur") at the beginning of 2023. The program was upgraded to support investments that serve environmental protection and energy efficiency. Companies can apply for subsidies if they use them to achieve goals that go beyond German or European Union standards.

02

WHAT'S SUBSIDIZED?

Large companies can get reimbursed for some of the investment costs required to achieve the highest tier of environmental protection and energy efficiency. State subsidies can be up to 40 percent of those costs for environmental protection investments and up to 30 percent for energy efficiency investments.* Companies can also receive subsidies if they are struggling to meet their energy needs by investing in energy production from renewables.

03

WHAT'S THE SITUATION WITH SMES?

The GRW also provides for increased funding for small and medium-sized enterprises (SMEs). Investments in environmental protection, energy efficiency and self-generation of energy from renewables in order to meet operational needs are subsidized by an additional five percent in the assisted regions — in addition to the subsidy rates above.

04

WHAT'S THE PROCESS FOR GETTING A GRW SUBSIDY?

Interested companies are required to submit application documents to the GRW office in the regional state in which they are located before making their investment. As a rule, the offices are part of the states' development banks, which also advise companies free of charge on GRW regulations.

*Depending on investment location and respective Federal State Investment Grant regulation



MECHANICAL FARMHANDS

The German agriculture sector is boosting organic production at a time when finding seasonal manual labor is increasingly hard. The next generation of farm machinery — namely, robots — could provide the solution, and international companies are seizing this opportunity.

Erik Jonuks is in no doubt which European market he wants to enter next: Germany. As CEO of Ekobot, a Swedish company that makes autonomous field robots, Jonuks believes he can offer something more and more German farmers need: state-of-the-art machines that remove weeds from crops without using harmful pesticides.

Germany could be very fertile ground for Ekobot as the country pushes forward with its policy to make its agriculture sector more eco-friendly. “Organic production is advancing quite fast compared to other markets, and our services are especially relevant for organic farmers,” Jonuks says. “We also see that a lot of farmers in Germany are very savvy about technology. They are interested in new technology and adapting to it quite fast.”

Ekobot’s weeding robots are particularly well-designed for the kinds of crops that are grown in Germany: open-field and cash crops that grow in rows, such as small leaves and sugar beet. But what makes the Swedish firm’s robots unique is its high-precision tool systems, which work well in narrowly-spaced rows. “So we can operate in much more difficult crops, like carrots and onions,” Jonuks says.

Other original equipment manufacturers have already had success in Germany — among them the Dutch company AgXeed, which specializes in manufacturing autonomous, sustainable farming solutions. The company unveiled its AgBot 5.115T2, whose multiple functions include blockage control, clod management and tillage, to German farmers

THE BOTTOM LINE

German farmers are keen to invest in new technology as the government incentivizes organic farming. This represents a substantial opportunity for international agritech companies with autonomous solutions.

on a demo tour in 2021. “Germany is a nearby market with fitting structures for our AgBots, meaning that the field size and the crops produced provide significant potential for autonomy,” the company says. “The geographical proximity also allows us to monitor the first machines in operation very closely.”

New government priorities

Following the announcement by Germany’s Federal Agriculture Minister Cem Özdemir (Green Party) last year, the government wants to see 30 percent of Germany’s agricultural land turned over to organic production by 2030. The result will be a growth spurt.

“The problem with organic farming is usually that you lower productivity: You need more land to produce the same amount,” says Jonuks. “But we’re hoping to prove that you can in fact raise productivity by using robots instead of manual labor.” More organic farming means fewer pesticides to control weeds, and in fact many conventional farmers already use

tractor-pulled weeders. “Those are good, but they can’t do the same job as a robot can,” says Jonuks. “They can only weed between, not in the rows. So a conventional farmer not using pesticides will have lower crop yield.”

To promote the technological evolution of agriculture, the government has set up a variety of investment programs including an accelerator scheme for agritech start-ups and an investment fund for farmers investing in the latest technology.

“The German government is funding research projects and investments to further advance the digitalization of agriculture, and world-renowned research institutes such as the Fraunhofer-Gesellschaft have launched flagship projects in the field of smart farming,” says GTAI digital farming expert Marie-Christin Menke. “Germany also offers international business opportunities for cooperation with leading research institutes and agritech companies.”

An agritech revolution

Germany is home to several innovation clusters that bring research and tech firms together. The Agronym network, based near Dresden in eastern Germany, is one of them. “A lot is happening in the area of field robots, driven by the ban on glyphosates,” says Agronym project coordinator Benjamin Striller. Researchers are now hard at work finding alternatives to the herbicide. Field robots and drones are also becoming increasingly important to compensate for the scarcity of manual labor.



The Ekobot trundles across an open field. The robot's hood protects its precision crop-monitoring and weed-removal tools, which eliminate the need for herbicides..



“Drones are used to monitor stock, and to see how it is developing, and where it might be damaged,” explains Striller. “Robotics can be implemented flexibly and can be less damaging for the soil.”

Henning Müller, the chairman of Agrotech Valley, a business and research cluster in northwest Germany, agrees that technology has become essential for the future of agriculture and the conservation of biodiversity. He adds that Germany is in a strong position to promote mechanization because of a high level of agricultural education. “In vocational schools, on farms, in every aspect related to agricultural education, we are excellent. However, in smart farming we must make sure to keep pace.”



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A FEW FACTS ABOUT FARMING IN GERMANY

Germany is one of the four largest agricultural producers in the EU, with half of the territory used for a farming sector that employs some 937,900 people. Just over 50 percent of the country's arable land is used to feed a livestock population of over 200 million animals, and more than 70 percent is used for crop cultivation. On top of animal products, Germany's farmers mainly produce bread cereals, potatoes, sugar beets, oilseeds, fruit and vegetables.

There are around 262,800 agricultural firms in the country, 82,600 of which cultivate over 50 hectares of land. At 31.5 percent, that proportion puts Germany in the top four EU countries where 50-hectare-plus farms are most common. Furthermore, some 89 percent of German farms specialize in a single product.

More generally, the number of organic farms has risen significantly in recent years, with 35,396 counted in 2020, a 61.3 percent increase on 2010. Those farms account for 10.3 percent of Germany's agricultural land, just above the EU average.

HEADING FOR UNCHARTED WATERS

The digitalization of Germany's logistics sector promises to increase efficiency in harbors and transform the maritime economy. Central to this change is the "smart port" concept — and Hamburg, Germany's second biggest city, is intent on being its flagship.

Imagine an intelligent global logistics system that connects the world's biggest trade routes and can steer sea traffic via a network of intelligent buoys, ships, freight and sensors that are constantly exchanging data. That vision is becoming a reality in Germany's largest port, Hamburg. The city is on a mission to have the most modern, digital and sustainable port in the world and is seeking international partnerships to achieve this goal.

Speaking at the International Port Symposium in September, Norbert Aust, president of the Hamburg Chamber of Commerce, said ports must become engines of economic growth and drivers of Germany's energy transition. International business investment, he added, is particularly important in this regard.

"Capital-rich partners can increase cargo turnover through innovation," he said. Aust called for greater investment by international shipping companies in dedicated terminals and for the government to encourage and facilitate the participation of international players.

Bigger is better in logistics

There are good reasons why international logistics players would want to get more involved in Hamburg and other German ports. Conversely, opportunities abound for international companies in sectors from IT to mechanical engineering to consulting.

The sheer size and diversity of Europe's largest logistics market is what makes Germany especially attractive to foreign investors, says Germany Trade & Invest logistics expert David Chasdi.

THE BOTTOM LINE

Europe's largest logistics market is undergoing a sea change as Germany's ports adopt cutting-edge technologies. That will drive growth, lower costs and increase efficiency, safety and environmental protection — and create opportunities for international companies.

"Germany already accounts for 30 percent of the global container-shipping sector," Chasdi explains. "The country's shipping industry generated annual revenue of more than EUR 50 billion in 2022."

"Germany's location at the EU's geographic center, the leading strength of its economy and its world-class infrastructure all make it one of the world's most important logistics hubs. And the rapid digitalization of its ports and logistics market is creating further growth opportunities for international businesses."

Tech talent wanted

The digitalization of maritime logistics is also attracting young tech companies. A new agreement between business groups in Hamburg and Israel is expected to attract Israeli start-ups and scale-ups to the northern German city. Sectors that could benefit include logistics, maritime economy, fintech and cyber security.

"Israel is an international center of innovation and can offer important impetus for boosting the digital transformation of Hamburg's economy," says Philip Koch, international

director at the Hamburg Chamber of Commerce. Hamburg is encouraging digitalization not only to drive growth and reduce costs but also for reasons of climate protection and energy efficiency.

Sustainability is an integral part of the smartPORT strategy of the Hamburg Port Authority (HPA). The ambitious goal is to become carbon-neutral by 2040. By employing advanced digital intelligence, sensor technology and information systems for better analysis and forecasting, the port has already made huge efficiency improvements that benefit the environment.

State support for a digital twin

The German government is backing this massive transition. Since 2016, the national Ministry for Digital and Transport (BMDV) has been funding research and development projects focusing on innovative technologies for sea and inland ports. Its current Innovative Port Technologies scheme (IHATEC II) provides EUR 64 million for the period 2021 to 2025. It aims to ensure that Germany's ports remain state-of-the-art and internationally competitive.

An example of the sort of projects funded is the EUR 3.65 million "digital twin" project at the Eurogate Container Terminal Hamburg (CTH), one of Hamburg's four container terminals. The BMDV is funding 54 percent of the joint initiative between terminal operator and logistics group Eurogate, the University of Hamburg's Institute of Information Systems and IT company Akquinet Port Consulting. The TwinSim project will create a digital twin simulation of the container terminal visually

Control terminal at the port of Hamburg. Port operators and logistics companies are increasingly using AI and smart technology.

FDI PERSPECTIVE: UTURN

From its office in Hamburg, the young Dutch company pairs carriers looking for capacity with shipping companies in the high-pressure maritime logistics market.

For Dutch start-up Uturn, Germany's logistics sector offered the perfect new market. The company operates an online platform that makes container transport more efficient and sustainable by linking up shippers and carriers. Uturn opened a new office in Hamburg last year after the number of German orders increased.

The company's expansion into Germany is intended to take advantage of the current growth in and around the ports of Hamburg, Bremen and Duisburg. "The current market conditions present a considerable challenge in the German logistics market in the search for capacity among shippers," says Niels Duijvestijn, the company's CCO. "That raises the number of users and matches on Uturn." The start-up's international network brings supply and demand together and includes thousands of shippers and container carriers. It also handles administrative and financial tasks.

"We've noticed that this full-service approach is crucial for German shippers in their decision to start using Uturn," explains Duijvestijn. The logistics platform was among ten companies selected for Hamburg's 2022 Scaleup Landing Pad program, which helps young international companies offering innovative mobility and logistics solutions get started in Germany and the rest of Europe. Paul Hugenholtz, Uturn's German country manager, adds, "I look forward to establishing Uturn on the map in Germany and getting more shippers and carriers enthusiastic about Uturn."

COMPANY:
Uturn

LOCATION IN GERMANY:
Hamburg

CONTAINER TRANSPORT NETWORK:
1000 shipping companies, 3000 carriers

Hamburg is Germany's biggest seaport by a wide margin.

PORT OF HAMBURG IN FIGURES

300,000
jobs

1200
approx. number of weekly freight train arrivals

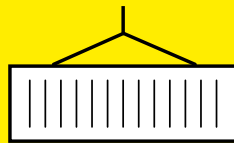
10,000
annual ship calls

12,000
logistics companies in Hamburg

Sources: German Federal Statistical Office

GERMAN PORTS BY THE NUMBERS

(in millions of tons)



279.1

Freight handling in German seaports in 2022

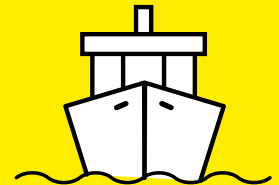
182

Freight transported on German inland waterways in 2022

105

Freight handling in Duisburg, the world's biggest inland port, in 2022

Source: German Federal Statistical Office



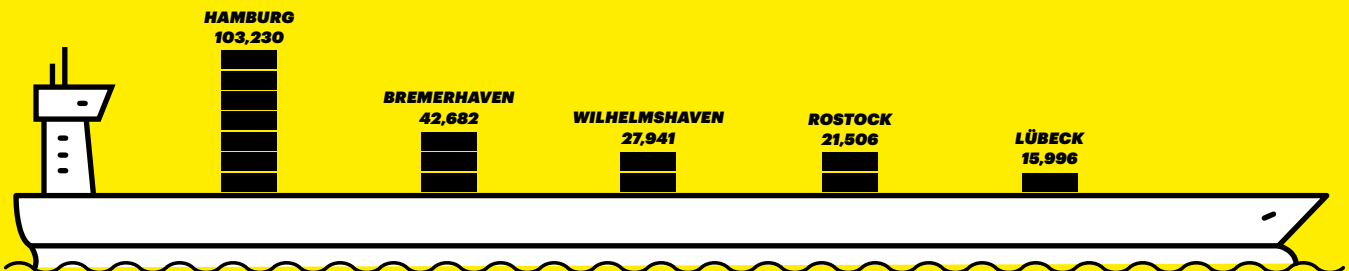
1839

Number of ships in the German merchant fleet — the seventh largest in the world

Sources: German Shipowners' Association

GERMANY'S 5 BIGGEST SEAPORTS

Freight handling at German seaports in 2022 (in 1,000 tons)



Sources: Statista

Photo: Jan-Otto/Gettyimages

depicting in 3D its physical properties, such as container gantry cranes and straddle carriers, and networking operations. The idea is to optimize processes digitally.

“Container terminals are important hubs in global supply chains, and they can quickly become bottlenecks,” says Dr. Leonard Heilig, who heads the project. “To make operations run more efficiently in the long term, we need to make them more transparent. The use of modern technologies yields data with which we can precisely understand and steer equipment, infrastructure, activities and procedures.”

Using simulations and AI technology, the digital twin can analyze past operations and predict future scenarios in order to better deal with problems such as ship delays. “On the whole, this ensures better use of resources, and we can reduce negative ecological impacts, for example, by avoiding empty shipments or adjusting speed,” Heilig adds.

More recently, the BMDV funded nearly half of HPA’s EUR 1.1 million HafenplanZen initiative, another a digital port twin. HPA is partnering on the project with Hamburg Port Consulting, the University of Hamburg, Bremenports, the Port of Kiel and Niedersachsen Ports in the regional state of Lower Saxony.

Beyond Hamburg

Bremenports, which manages the eight ports of Bremen and Bremerhaven, recently announced its own smart port strategy.

The company found partners in Eurogate CTH and logistics and transportation group Hamburger Hafen und Logistik AG (HHLA), which operates the Port of Hamburg’s three other container terminals. Hamburg Vessel Coordination Center (HVCC), a joint venture between HHLA and Eurogate CTH, is working with Bremenports on the Digital Outer Weser project, which will enhance accessibility to the ports of Bremen as of 2023. The project is analyzing the present traffic situation in the Outer Weser estuary in order to improve available terminal capacities, enable predictive ship arrival planning and reduce fuel consumption.

Meanwhile, the Port of Duisburg, the world’s largest inland port, recently secured around EUR 1 million from the regional state of North Rhine-Westphalia to fund a 5G test field set up by Deutsche Telekom. A joint venture between port operator Duisburger Hafen AG, the University of Duisburg-Essen and private companies, the project tested the semi-automated control of port cranes via mo-

bile communications technology in order to increase the capacity of container handling operations. This trial could lay the technological foundations for the first semi-automated control of mobile cargo handling equipment in an inland port.

“With this project, we will explore and develop new fields of application for 5G together with our partners,” says Hagen Rickmann, managing director of the Business Customer Division at Telekom Deutschland GmbH. “Digitalization plays an increasingly important role, especially in logistics processes. 5G is an important driver for this. Both the Port of Duisburg and the companies operating there will benefit from this project.”

Aside from government initiatives and subsidies, there’s other support for such projects. Germany’s Digital Hub initiative, located in Hamburg and Dortmund, offers two outposts specially dedicated to logistics. And Germany’s world-renowned research institutions are partnering with international logistics companies in the sector. The French smart network solutions firm Marlink, for example, recently

collaborated with the Fraunhofer Center for Maritime Logistics and Services on a joint project that will analyze ship data to help shipping companies optimize voyages and vessel maintenance, reduce fuel consumption and improve financial returns using enhanced digital solutions.

“Decarbonization is challenging for many shipping companies since it represents a fundamental change to their operations and a transformation in their customer relationships,” says Nicolas Furgé, Marlink’s president of digital. “This research project will help ship-owners implement their decarbonization and optimization strategies and help them plan investment and make decisions on a shorter timeline.”



Photo: Deutsche Telekom

“Digitalization plays an increasingly important role, especially in logistics processes. 5G is an important driver for this. Both the Port of Duisburg and the companies there will benefit from this project.”

Hagen Rickmann, MD Business Customer Division at Telekom Deutschland



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PLASTIC FANTASTIC?

Plastics are crucial in developing better batteries and fuel cells for electric machinery and vehicles. As Germany, the heart of Europe's automotive industry, shifts to electromobility, the sector is attracting new interest from major international players.

Photo plastic pellets: Rattanachai/stock.adobe.com; photo colored wires: fotomowc

The German — and more specifically the Bavarian — plastics sector has a bit of an Asian flair to it these days. In 2018, Japanese plastics manufacturer Sumitomo entered the German market by acquiring Demag in Schwaig, Bavaria. The location was chosen because of the close proximity to manufacturers of all-electric machines, recalls Gerd Liebig, CEO of Sumitomo Demag.

Purchasing a stake in an established German company, he says, allowed Sumitomo to significantly increase its worldwide market share. The Japanese-German company makes the injection molding machines used to process

THE BOTTOM LINE

One of the many knock-on effects of the transition to a low-carbon economy is an increased demand for quality plastics. Germany's know-how in the area offers a clear advantage for businesses looking to expand to Europe's largest economy.

thermoplastic compounds into components for batteries and fuel cells.

"Sumitomo Demag has been able to expand its strong positioning through the merger," Liebig says. "The well-trained engineers and strong market orientation in Germany offer an invaluable advantage."

Sumitomo isn't alone. For Uwe Herold, managing director of Waldrich Coburg, a manufacturer of large machine tools, Germany is one of the most important markets and locations in Europe. In the fall of 2005, the Chinese company Beijing No. 1 Machine Tool took over Waldrich Coburg, also in Bavaria.

Biochemically inert plastic pellets waiting to be molded into a variety of components vital to the production of electric batteries and fuel cells.

HOW THE SKZ ENABLES PLASTICS RESEARCH

“We mutually recognized each other’s different perspectives and constructively combined our strengths,” Herold recalls.

Waldrich Coburg machinery is used, among other things, to mill plastic housings used for batteries. The systems are also in demand in the automotive industry. “Germany as a business location is decisively shaped by small and medium-sized enterprises,” says Herold. “The unique selling points of the German economy are decades of know-how and very high quality.”

A big market prepares to get bigger

Germany’s transition to clean energy is fueling the plastics industry. In terms of EU and German policy, green hydrogen in industry is seen as the next big thing, while cars with conventional combustion engines are living on borrowed time. The importance of batteries and fuel cells in everyday life is set to take a quantum leap, and the same will be true of the plastic components and technologies vital to them. After all, plastics are needed in battery production for the housing and insulation of battery cells. They are also used to manufacture connectors, cables and covers.

“Germany is already the largest market for plastic products in Europe and a global innovation leader,” says Peggy Görlitz, GTAI expert for the plastics industry. “And the energy transition, along with the battery production required for it, now make Germany even more exciting as a location for the industry.”

In 2021, 21.3 million tons of plastic products were produced in Germany. In the field of compounds alone, German companies have a nearly 20 percent share of the total European market. But size isn’t Germany’s only source of appeal.

As one of the largest material research institutes in Europe, the German Plastics Center (SKZ) has been providing practical solutions for the industry along the entire value chain for 61 years. In addition to R&D with direct practical relevance, SKZ offers testing and certification services for quality assurance of materials and finished products. Congresses and conferences for the further education of specialists and industry managers are organized regularly, and practical seminars and training courses are offered. The SKZ is supported by a powerful network of more than 400 companies.

Together with the Center for Fuel Cell Technology (ZBT), SKZ is organizing an international congress on “Plastics for Fuel Cells and Modern Battery Technology” in Duisburg on November 21 and 22, 2023. The focus will be on what role innovative plastics can play in fuel cells and batteries and what properties new materials can offer. Other discussion points will be optimal material selection, sensible application options and long-term stability of the compounds.

Expertise and networks

Foreign plastics specialists who put down roots in Germany benefit not only from proximity to customers in the automotive and mechanical engineering sectors, but also from specialist expertise and strong networks. For example, at the plastics research facility SKZ in Würzburg, scientists and engineers are experimenting with finding the right composition of plastics for fuel cells and batteries.

Quality standards in Germany are high, and there are specific demands on the way plastics interact with various substances. “Any plastics that come into contact with hydrogen must not affect it,” explains Michael Bosse, SKZ group leader of material development. Moreover, plastics will have to be compatible with demands that batteries be recyclable. The

German government has set a binding recycling quota for plastic waste — it has been 63 percent since 2022.

International businesses that expand to Germany can draw on established networks along the entire value chain. They can also benefit from Germany’s cluster structures, which connect business and science, interest groups, chambers of commerce, politics and public administration. These clusters can help companies profit from the momentum that the energy transition has given the plastics industry.



CONTACT

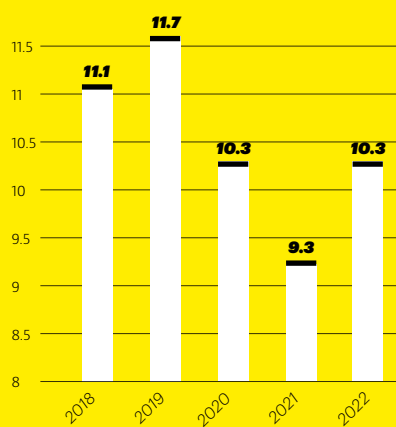
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A group workout at FIBO, the world's largest trade show for fitness, health and well-being, held every year in Cologne.

BOUNCING BACK

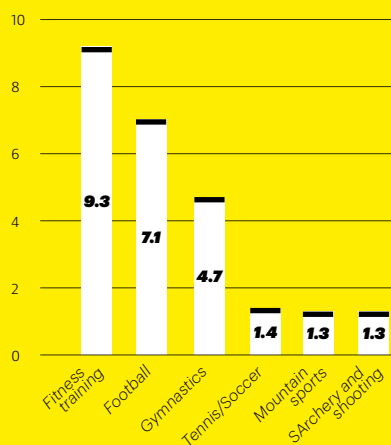
Global fitness industry revenue by country (2019), turnover in billion USD



Source: Statista Market Analytics (Statista Consumer Market Outlook)

FITNESS AND MORE

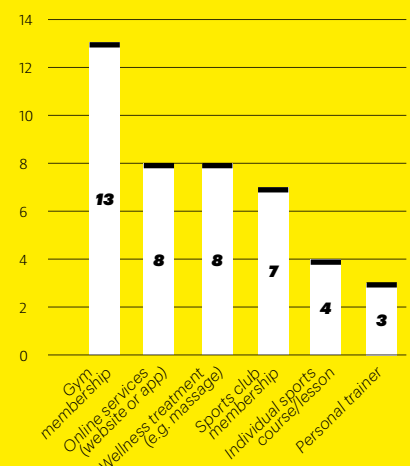
Most popular forms of exercise in Germany in 2021, in millions of participants



Source: DSSV

HITTING THE GYM

Percentage of German population who spent money on fitness and sports in 2022



Source: Statista Global Consumer Survey

FITNESS BUSINESS

BACK IN GREAT SHAPE

Young and old, inside and outdoors: More and more Germans are catching the fitness bug. As new money flows into the sector, international businesses have the chance to pump up their balance sheets.

When a couple of Copenhagen-based designers founded the cycling apparel brand Pas Normal Studios in 2016, it was almost a side project — they never expected their mix of fashion-forward design and performance-oriented apparel to succeed the way it did. In the last two years, the company has more than doubled its staff, and growth is strong, thanks in part to demand from Germany's fitness-conscious consumers. "Our next store is going to be in Munich," says Ricky Buckenlei, Pas Normal's global marketing manager. "The size of the German market makes it easy to gain momentum, and that is important for a brand investing in a new market."

Pas Normal Studios' story is not unique. A combination of factors are adding traction to Germany's fitness market, including a boom in outdoor hobbies and a gradual return to fitness studios. So international businesses won't have to look far for opportunities.

"Over fifty percent of the population say they engaged in physical activity at least once a week," says Stefan Ludwig, head of the German sports division for Deloitte. "Our impression is that the market is growing — more people are interested in physical activity."

But if Germany's fitness culture were a runner or a cyclist, it would be in the middle of the pack compared to its European neighbors. Scandinavian countries and the Netherlands have a higher proportion of their population enrolled in fitness clubs, for example. It's Germany's sheer size that makes it an attractive growth market for those looking to sell products or to buy up fitness studios and spas. And in the last 20 years, Ludwig says, the ecosystem has grown significantly.

Two decades of change

The first big wave of change in the German fitness market came more than two decades

ago, at a time when the German fitness studio market was dominated by single operators. International fitness conglomerates moved in and started buying up smaller outlets, merging them into bigger, more efficient operations.

Around the same time, fitness discounters like McFit also entered the market, prompting business investors from the Netherlands and the UK to follow suit and introduce similar

Cologne, says. "The fitness industry is back, and the numbers are climbing up again."

The great outdoors

Additionally, outdoor sports such as cycling, walking and running are experiencing a boom. With the onset of the coronavirus pandemic, Germans started taking more exercise and working out outdoors. This led many fitness studios to offer hybrid models giving customers the option to train at home with professional guidance using digital technology.

"There is a broad consensus in the industry that in the future, stationary offers will be supplemented by digital services, thus creating a hybrid fitness world for the customer in the long term," says Frank. "The pandemic has challenged companies more than ever to evolve with continuous innovation management and to adapt their service to the needs of a constantly changing market."

But Germany isn't just any old market. Consumers here want to be addressed in their own language. Before launching in Germany, Pas Normal Studios tailored its marketing strategy to include a German-language website. And Ludwig says Germany's fitness market has a few other characteristics investors should know about, like the extensive network of "Vereine," or local clubs, that run everything from youth teams to fitness studios on a non-profit basis.

For businesses that get their pitch right, even Germany's aging population presents a great opportunity. "Older people remain interested in fitness, and their discretionary income is higher," Ludwig says. "Operators catering to that market with special classes or trainers have a lot of potential." As the impact of the pandemic fades, Germany's fitness market is toning up. "There's room to grow," Buckenlei says. "We just need to do the work."

THE BOTTOM LINE

Europe's largest fitness market still has lots of scope for investment. The pandemic drove Germans to exercise outdoors and train inside using apps, but the past year has seen members flock back to gyms.

offerings. Basic-Fit, a fitness discounter based in the Netherlands, recently announced plans to open 600 new locations in Germany over the next few years. "We see a bright future for value-for-money fitness," Basic-Fit CEO Rene Moos said last year, "and the Basic-Fit proposition in particular."

Higher-end brands also appreciate Germany's potential. In 2020, Britain's David Lloyd Leisure acquired the Hamburg Meridian Group, investing an additional EUR 20 million in eight German wellness clubs. And although fitness clubs took a hit during the Covid pandemic, Deloitte's research shows the market recovered remarkably in 2022 and has lots of room for further growth.

"The industry's willingness to invest is slowly increasing," Silke Frank, event director of the FIBO Global Fitness trade show in



Creative **DESTRUCTION**

Pharmaceutical companies worldwide are investing in the promising research area of protein degraders. The US pharma giant Bristol Myers Squibb has signed a billion-dollar deal with its German biotech research partner Evotec to further develop a new class of drugs.

In the field of international pharmaceutical research, the deal could hardly have been bigger. In May 2022, the US pharmaceutical company Bristol Myers Squibb (BMS) and the German B2B life-science company Evotec extended their 2018 research partnership on protein degraders for a further eight years. That entails an investment of an additional USD 200 million. And it's merely a first installment of a total of USD 5 billion dollars BMS is putting into the alliance with German life-science company Evotec.

Together, the two companies want to develop new drugs and active substances based on the

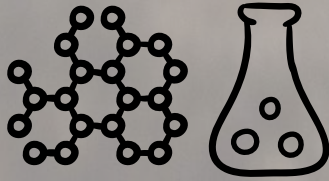
THE BOTTOM LINE

Many international pharma conglomerates are teaming up with German biotech companies to do research. They benefit from Germany's unique R&D environment and position in the greater European market.

principle known as protein degradation, the process by which cells naturally destroy proteins. "Protein degradation is one of the hottest trends in the industry, and it has reached an extremely competitive phase right now," says Matthias Evers, chief business officer at Evotec.

Protein degradation has been in the spotlight since the 1990s. Back then, the effects of early protein degraders were observed on individuals but were not fully understood. Today, the field is well-developed enough that big pharma companies are using it in a targeted way to investigate ways of fighting cancer. With targeted protein degradation, pharmacologists

WHAT IS PROTEIN DEGRADATION?



Many medicines today are designed to bind to a specific target structure, blocking or inhibiting it and thus creating a therapeutic effect. However, this principle has limitations. For example, not every target molecule has to have a suitable site for active substances to bind with. Targeted protein degradation (TPD) offers a way out: instead of blocking the target molecule, it triggers a process that breaks it down completely. TPD also has the advantage that the active substances have a catalytic effect. At least in theory, fewer of them have to be administered. Important findings that paved the way for the development of TPD came from a German-American research project, and the science of protein degraders has evolved over time. Today, protein degraders are being designed to have a specific therapeutic effect achieved by a given action mechanism. Nearly all big pharma companies are investing heavily in research and clinical trials to push forward a new class of drugs based on these mechanisms.

Evotec employees survey a state-of-the-art pharmaceutical reference library.

hope to harness the cell's own mechanics to degrade disease-causing proteins. These proteins have largely been considered "undruggable."

On the cusp of a breakthrough?

"Modern targeted protein degradation techniques like the so-called molecular glues are still in a stage of early research and only just reaching the phase of advanced clinical trials," explains Evers.

This means the time is ripe to build on decades of R&D and cooperation between German-American pharma companies in this field to discover and develop a pipeline of novel

protein degraders for the market. So it is important for international pharma companies to find partners who can help them manage these clinical trials efficiently and productively.

Research service providers like Evotec are rapidly emerging as trusted and risk-sharing partners in the high-barrier, high-stakes business of drug discovery research. Today's pharma and biotech sectors prefer to externalize the process of discovery research from the idea stage to phase one trials in an integrated way.

"Classical Contract Research Organizations (CROs) are moving away from simple service providing to a strategic partnership setting, helping big pharma companies become more agile and innovative," explains Harald Mylord, senior manager of biotech and pharma at GTAI. "International cooperations and strategic partnerships are on the rise."

In Germany, international pharma companies can find many highly specialized and proficient partners for their research projects along the whole value chain. "German biotech companies are particularly good when it comes to highly complex, sophisticated production processes," adds Mylord.

Successful international alliances

Evotec, Germany's third-largest biotech company, aims to cover the entire spectrum of research, discovery, development and manufacturing with what it calls its "data-driven R&D autobahn to cures."

"We are convinced that the challenges the pharma industry is facing are so complex that it needs a shared research and development economy based on international collaboration and partnerships," says Evers. "Our role in these partnerships is to provide digital and technological platforms to push forward medicines that matter."

At its sites in Munich, Göttingen and Hamburg, Evotec has succeeded in building a center of excellence for protein degradation. "We have built data- and AI-driven research platforms both for our own research and for joint research with partners," says Evers.

The alliance with BMS, for instance, makes use of Evotec's platform for high-throughput panomics generation as well as an integrated data analysis software developed by Evotec. Bristol Myers Squibb's Celgene unit has been clearly impressed by the speed, productivity and innovation efficiency in its alliance.

Evotec employs more than 4,500 highly qualified staff at 17 sites in six countries in Europe and the USA. But despite the company's international focus, Germany remains a crucial



"Protein degradation is one of the hottest trends in the industry, and it has reached an extremely competitive phase right now."

Matthias Evers,
chief business officer at Evotec

location. "We find a very high level of talent and know-how here, so we are continuously investing in the expansion of our German sites," says Evers.

Evotec particularly appreciates the close and well-established cooperation between research institutions and industry players in Germany, as well as the international integration into R&D networks. "Our partner network includes all of the top 20 pharmaceutical companies and hundreds of biotechnology companies, as well as academic institutions and other players in the health sector."

This highly efficient ecosystem typifies the German pharma and biotech sector, Mylord explains. "Pharma and biotech companies can find a very agile and tightly knit ecosystem of research and development institutions, technology parks, biotech clusters and top universities here."

Furthermore, firms that set up on the ground in Germany and find partners can use the location as a door opener for to Europe. "All in all, Germany offers pharmaceutical companies very good opportunities to establish strategic collaborations and build an efficient research and development infrastructure," says Mylord.



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DIGITAL WANDERLUST

The coronavirus pandemic battered the tourism industry, but it also accelerated Germany's digital transformation. As Germans rediscover their love of travel, it's springtime again for travel tech and digital services providers.

Today, we all look online for our next get-away destination — whether it be an elegant apartment in New York, a wellness resort on Tenerife or a picturesque Alpine hut. Germans are no exception, even if they might be slower than some to embrace new travel trends. Four out of five companies surveyed by the German Tourism Association say that digitalization is on the rise.

This change in how Germans book their vacations represents an opening for international providers like the Dutch travel portal Booking.com. And as the citizens of Europe's largest economy rediscover their wanderlust following the Covid-19 flatline, companies providing new ways to "get away from it all" are having a field day. "Germans have always been avid travelers, and once restrictions started easing in 2022, their appetite for exploring the world returned," explains Nadine Stachel, Booking.com manager for German-speaking Europe.

Before the pandemic, Germany ranked third internationally in tourism spending. Only travelers from China and the USA spent more money on holidays. The sector was also on a strong growth trajectory: travel spending by German holidaymakers typically increased year by year, reaching around EUR 69.5 billion in 2019. That figure was back up to EUR 58.6 billion, and the industry hopes the remaining gap will be closed soon.

The lure of the new

But as the sector makes a comeback, German travelers' tendencies and tastes are changing, as the president of the German Travel Associa-

tion (DRV), Norbert Fiebig, noted at the end of the 2023 ITB travel trade fair in Berlin in March. It was the first time since the pandemic that the world's largest travel event had been held live. "The booking numbers show the world's top travelers, the Germans, are back, and the world is looking forward to German visitors," Fiebis said. "That was reflected in the mood at

THE BOTTOM LINE

The German travel industry is rebounding from the coronavirus pandemic slump, but times have also changed. Innovative international companies can tap this massive market.

the fair. We had a lot of positive conversation with both classic German tourist destinations like Spain and Turkey and 'newcomers' like Uzbekistan or Saudi Arabia."

Booking.com agrees with that assessment. Germans are not booking their holidays in the same way they used to before the crisis and are now particularly open to new providers and new destinations. A recent survey by the company showed almost a third of German travelers want to experience "a complete culture shock."

"Culture shock means traveling somewhere with completely different cultural experiences and languages or exploring lesser-known cities with hidden gems that aren't already on the radar," explains Stachel.

Booking online and going green

But the changes are not just about *where* to go but *how* to get there. German consumers now book trips online more often than at a travel agency. A good internet presence and up-to-date online booking tools are therefore a prerequisite for providers thinking of entering the German travel market, which is the biggest in Europe. Thus it was no surprise to see lots of exhibitors from the tech travel industry at the ITB.

Also, many Germans now attach particular importance to sustainable travel offers — more than a third say that recent reports about climate change have influenced them to make more sustainable travel choices.

The demands on travel providers are therefore great. They must find out what exactly their German customers want and how their booking and travel behaviors have changed. They also must be able to answer new questions about travel destinations. What can I experience there? How sustainable is my hotel? How can I offset CO₂ emissions from my trip? Online travel customers expect to find offers that directly match their own personal criteria.

"The competition of the future will be the competition for customer trust," explains Fiebig. Travel providers must also offer German consumers maximum flexibility. Ben Brahim, managing director of the German branch of the French hotel chain Accor, observes: "Whereas people used to book long-term with noncancellable and therefore cheaper rates, many of our guests now prefer to be more flexible."

Travel to Berlin in booming. Berlin Brandenburg Airport recorded almost 20 million passengers in 2022, double the number of the previous year.

500

employees

30,000

customers

€8.3M

turnover in 2020

€30M

turnover in 2022

FDI PERSPECTIVE: WEROAD

The Italian start-up, which now operates in Berlin, provides tailored adventure packages and city tours.

Travel providers have weathered many challenges in the past few years: lockdowns, reduced travel volumes and a shortage of skilled workers. But despite all the obstacles, Italian start-up WeRoad has managed to take off with a new business model. The young company offers three services: First, it acts as a tour operator. Depending on their tastes, customers can book city trips, party tours or nature holidays in small groups. Secondly, the start-up has built up a large community of travelers — by now, more than 1.5 million people follow the brand on social media. Thirdly, WeRoad is a travel tech company that has developed all its digital services inhouse. Since its founding in 2017, the company has expanded rapidly. It now has more than 30,000 customers and is one of the fastest-growing travel companies in Europe. WeRoad aims to become Europe's largest adventure travel provider by 2025. To this end, the company, which already had bases in Italy, Spain and the United Kingdom, expanded last year to Germany, Europe's largest travel market.



Photos: picture alliance/dpa/Bernd von Jutrczenka, picture alliance/dpa/dpa-Zentralbild

“A welcoming culture is
an essential factor for
SUCCESS.”

The German government is making it easier for people from outside the EU to get jobs in Germany. Alexander Wilhelm from the Federal Employment Agency explains how the changes will benefit employers and employees alike.

German Minister of the Interior and Community Nancy Faeser and German Minister of Labor and Social Affairs Hubertus Heil present the government draft for the new Skilled Worker Immigration Act.

Since the pandemic, there has been a shortage of skilled specialists in Germany. The German government is addressing the issue head on. What's the plan?

ALEXANDER WILHELM: The government has presented an overall strategy intended to make it easier for job seekers from abroad to look for and find employment in Germany. It involves various improvements, especially in the legal framework for targeted labor migration. The recognition of professional qualifications obtained abroad will be simplified. In addition, job seekers outside IT professions who do not have a qualification recognized in Germany but who do have relevant professional experience are to be given faster access to the labor market.

The shortage of skilled workers in Germany is not new. Why the change right now?

AW: The German labor market is characterized by three trends. First, the demographics in Germany are negative: we have fewer and fewer young people in the labor market and more and more older people leaving it. The second challenge relates to digitalization. It causes jobs to be lost but also creates new employment relationships. So, for example, there's very high demand for labor and skilled workers in IT professions and the expanding digital infrastructure. Last but not least, measures to combat climate change will have to be implemented in the course of decarbonization, creating a need for workers in a wide range of occupations: from the construction industry to the electrical industry to the skilled trades.

Where is the demand greatest for highly trained workers at the moment?

AW: Our analyses have shown increased demand for labor and skilled workers in a great many sectors, as well as bottlenecks in the labor market. This does not automatically mean that there is a need for labor immigration from abroad everywhere, but it clearly shows that in many areas we are unable to meet demand. This



ALEXANDER WILHELM
Head of international relations at the German Federal Employment Agency (Bundesagentur für Arbeit, BA)

The public agency is responsible for the job placement and the qualification of workers in Germany. Wilhelm oversees all matters relating to skilled labor immigration.

is particularly true for skilled trades and social professions such as healthcare and education.

Immigration seems an obvious solution. What exactly is the government planning to do to simplify the procedures?

AW: Job seekers from abroad will benefit from simplified framework conditions as a result of the planned new regulations in immigration law in Germany. The government has just announced its first plans for this. As a key element, the hurdles for proving formal qualifications will be lowered. In the future, the introduction of a points system may also allow skilled workers to enter the country to look for work. Qualified immigrants can receive a job seeker's residence permit for up to one year, based on a points system that recognizes foreign degrees, language skills and work experience. During the job search, probationary and part-time work will be allowed. This gives employers and foreign specialists time to discover if they are a good fit for each other.

Recruiting skilled workers from abroad can be a lengthy process for German employers. How will these new laws benefit them?

AW: In the future, it will be easier for employers to hire foreigners who have relevant professional experience but do not have a degree recognized here. This option previously applied only to the IT sector and will be extended to more industries under defined conditions in the future. Furthermore, applicants with recognized training are to be allowed to work in any qualified occupation, not just the one they learned. Overall, the government's planned measures will create more flexibility; however, it is also important for employers to have realistic expectations: recruiting from abroad needs a forward-looking HR strategy and investment and is not a short-term solution in most cases.

How do the government and the Federal Employment Agency support skilled workers from abroad in their job search?

AW: One example is the "Make it in Germany" online portal, where job seekers can get a lot of information about what requirements have to be met for employment here. They can contact us by email, phone or video chat for advice. We also help applicants go through the complicated process of having a degree earned abroad recognized here in the Federal Republic. In addition, we carry out targeted recruitment programs in selected countries and professions.

How important is a "welcoming culture" for attracting skilled specialists?

AW: It's an essential factor for success and a prerequisite for people not only coming to us, but also staying with us. We have made a lot of progress in recent years. The task now must be to have good structures for integration, not only in large cities but also in rural regions.



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“GERMANY HAS GAINED IN IMPORTANCE FOR CANADA.”

In 2022, Berlin and Ottawa reached a major deal that will see Canada supply Germany with copious amounts of green hydrogen. Germany Trade & Invest (GTAI) talks with Yvonne Denz, the President & CEO of the Canadian German Chamber of Industry and Commerce (AHK).

Photo: Canadian German Chamber of Industry and Commerce (AHK)

What role does trade with Germany now play for Canada?

YVONNE DENZ: With its wealth of natural resources, Canada wants to become one of the largest producers and exporters of hydrogen and related technologies. The German-Canadian Hydrogen Alliance was launched last year during Chancellor Olaf Scholz’s visit to Canada. It envisages Canada supplying green hydrogen to Germany starting in 2025. However, that requires a rapid market ramp-up for hydrogen on both sides of the Atlantic. The alliance agreed to create the conditions for this.

For Canada, Germany is number 4 in imports and number 6 in exports — in other words, an important trading partner, but clearly in the shadow of its big neighbor, the USA. Canada is trying to diversify its trade. The CETA trade agreement, provisionally in force since 2017, has already led to an increase in trade between Canada and the EU. But there is still room to grow.

Canadian companies are also looking to Germany as a business location. What is Germany best known for among Canadian companies?

YD: Canadian companies are increasingly realizing that the European market can only be served to a limited extent from Canada and are therefore

looking for locations in Europe. Historically, for Canada, Europe has meant France and the UK. This changed due to Brexit, among other things. Germany has gained in importance. Germany’s central location, well-qualified workforce, high productivity and quality of life, as well as its stable, innovation-friendly environment and unique ecosystem of infrastructure, suppliers and customers all speak in its favor.

Which sectors in particular have had Germany on their radar in recent years?

YD: Recently, Canadian companies from the service sector have shown particular interest in Germany: for example, software companies with innovative IT solutions, consulting firms and personnel service providers. GTAI has also supported Canadian projects in the environmental technology, chemical and health sectors. GTAI’s business expansion consulting services are very much in demand.

What are your predictions? Which Canadian sectors will likely see the most expansion to Germany in the coming years?

YD: Germany and Canada will cooperate more closely. Similar sustainability goals create opportunities for business investment in the energy and clean tech sectors. We also see

potential in the aerospace, automotive, mining and service sectors. Future-oriented areas such as artificial intelligence and quantum technology remain exciting. In January, the Canadian government published its quantum strategy, and Canada is striving for a leading role internationally. In addition, the start-up landscape is booming. Some of those companies certainly are looking to Germany.

And how do AHK and GTAI work together to support companies looking to expand?

YD: We work closely and successfully on the ground with GTAI, and we share our Toronto office. We connect Canadian companies with an interest in Germany as a business location directly with our GTAI colleagues because we know they will be in the best hands.

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How Germany Works

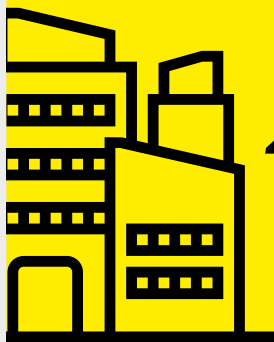
NATIONAL AND REGIONAL INVESTMENT PROMOTION AGENCIES (IPAS)

Many economically powerful countries have Investment Promotion Agencies (IPAs) to assist international companies expanding and setting up subsidiaries. These government agencies work for free — after all, any country benefits if a foreign company sets up operations there. Germany is no exception, but its IPAs operate slightly differently

because of the country's structure as a federation of 16 regional states. Firms interested in expanding to Germany often first contact the national IPA, Germany Trade & Invest. There, they get important information on fundamentals like tax structures, labor laws and business incentive programs. They can also find out about numerous cities and

regions in Germany where they could potentially find a home. When a location has been selected, the regional state IPA takes care of any further advisory steps needed to make the expansion a success. For instance, this was the process by which US chipmaker Intel expanded to Magdeburg in the state of Saxony-Anhalt.

PROJECTED VALUE of international business expansions to and in Germany in 2022



25.3
billion euro

Source: GTAI

ESTIMATED TAX BREAKS for companies in Germany

in 2022, granted by the national government, in billion euro

19

Source: BMF

NUMBER OF INTERNATIONAL BUSINESS EXPANSIONS to and in Germany in 2022

+ 1783



Source: GTAI

Estimated **FINANCIAL ASSISTANCE** for companies in Germany

in 2022, granted by the national government, in billion euro

27.7



Source: BMF

SOME PROMINENT BUSINESSES that are expanding to Germany

INTEL	TESLA	CATL	S-VOLT
GLOBAL FOUNDRIES	ROCKTECH	MICROVAST	

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you in all phases of establishing
a business in Germany.*
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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.

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