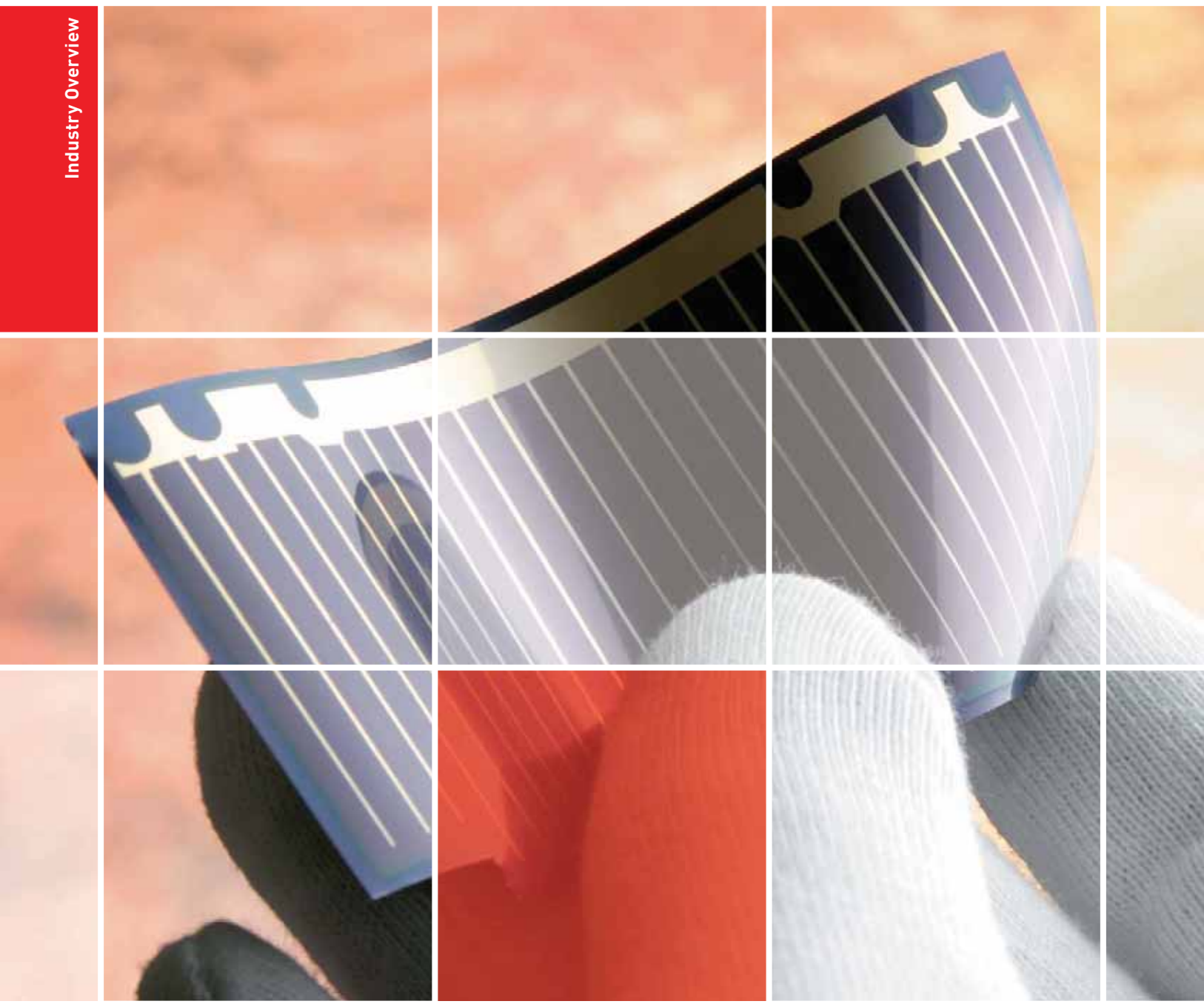
The Photovoltaic Industry in Germany

Issue 2011/2012

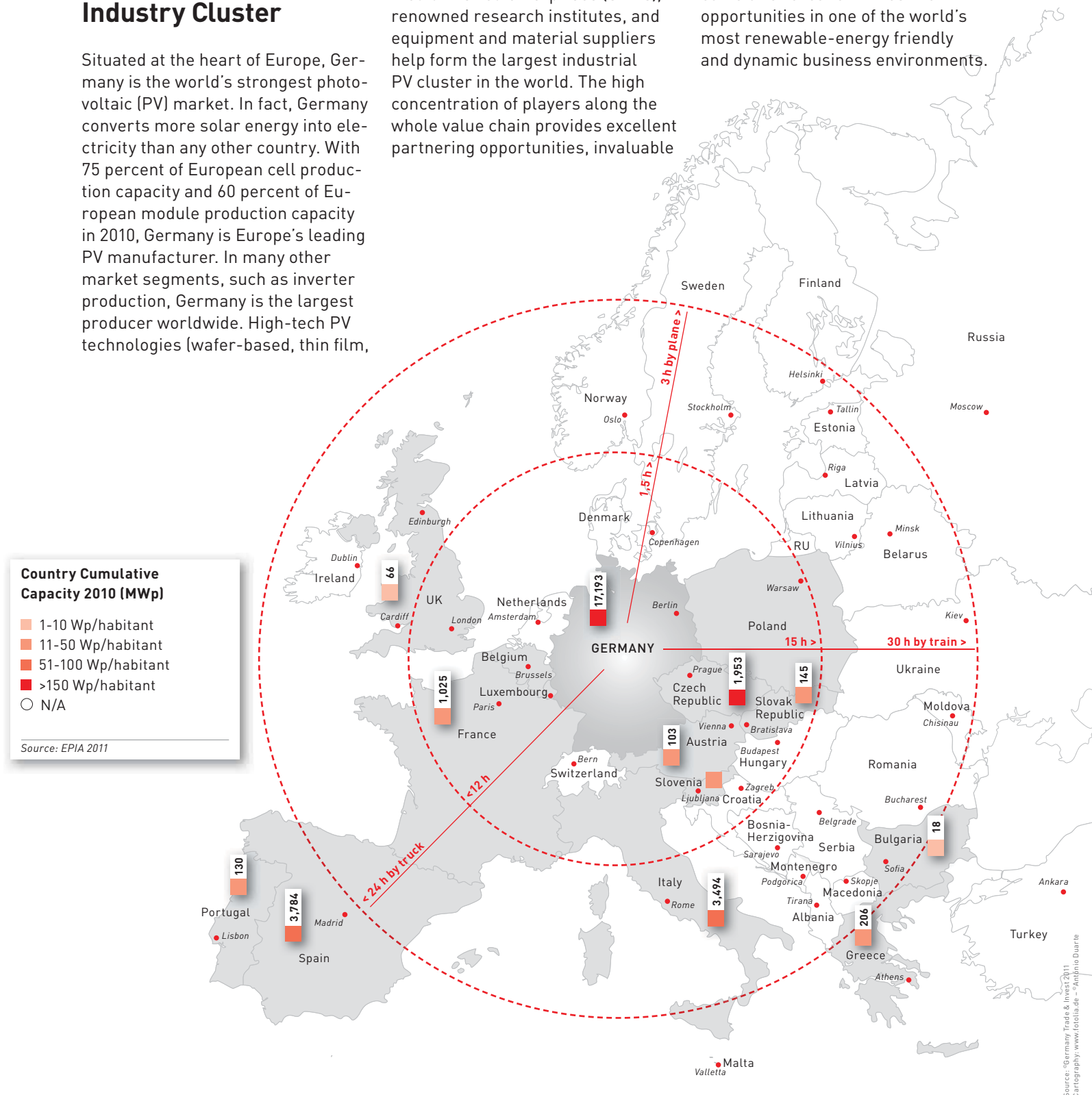
Industry Overview



GERMANY
TRADE & INVEST

Germany – The World's Largest Photovoltaic Market and Leading Industry Cluster

Situated at the heart of Europe, Germany is the world's strongest photovoltaic (PV) market. In fact, Germany converts more solar energy into electricity than any other country. With 75 percent of European cell production capacity and 60 percent of European module production capacity in 2010, Germany is Europe's leading PV manufacturer. In many other market segments, such as inverter production, Germany is the largest producer worldwide. High-tech PV technologies (wafer-based, thin film, and organic PV) are developed, produced and made commercially available in Germany. Leading global PV players, innovative small and medium-sized enterprises (SMEs), renowned research institutes, and equipment and material suppliers help form the largest industrial PV cluster in the world. The high concentration of players along the whole value chain provides excellent partnering opportunities, invaluable first-hand expertise and accelerated commercialization options. The highest forecast installation volumes worldwide for the years to come offer excellent investment opportunities in one of the world's most renewable-energy friendly and dynamic business environments.



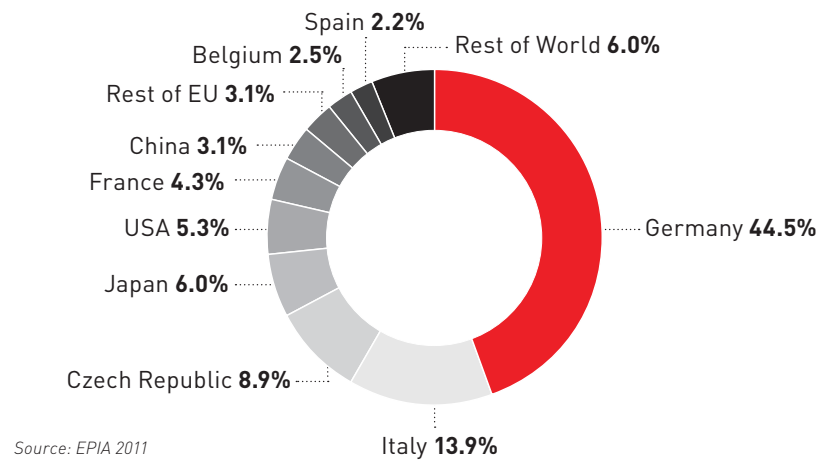
The German PV Market and Industry at a Glance

World's Largest Market
Germany is the world's strongest PV market with 7.4 GWp of new PV installations and a 45 percent share of newly installed capacity worldwide in 2010. The corresponding investment volume for the same period amounted to around EUR 19.5 billion, generating an accumulated end-of-year PV capacity of 17.3 GWp. This is equivalent to a 43 percent share of accumulated installed PV capacity worldwide, making Germany home to nearly half of the solar modules in operation worldwide.

Commitment to PV Growth
The German federal government has targeted an accumulated national PV capacity of 52 GWp by 2020 and expects grid parity in the private consumer segment by 2012/2013. The estimated PV share of total electricity consumption is expected to rise from the 2010 level of two percent to ten percent in 2020.

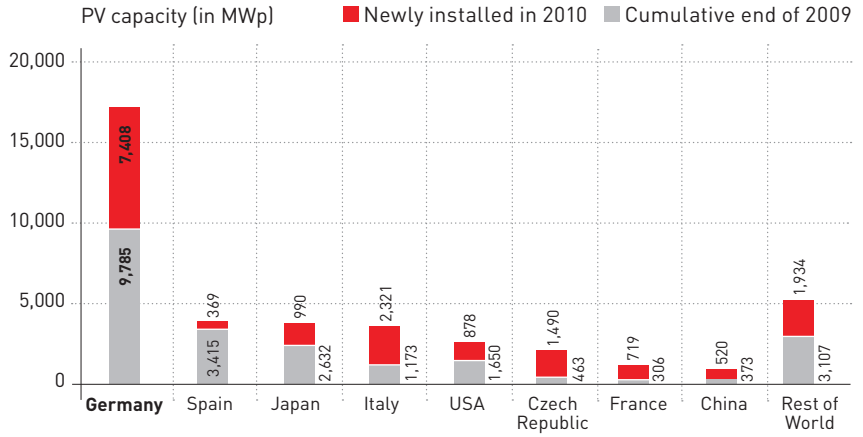
Thriving Industry and Value Chain
Germany is home to around 70 manufacturers of silicon, wafers, cells, and modules. Solar cell production in Germany was at 2,656 MWp in 2010 and module production capacity at 3,200 MWp for the same period. In addition, there are over 200 PV material and equipment suppliers, more than 100 balance-of-system component manufacturers, and hundreds of project development, system integration and installation companies. The German PV industry currently employs around 108,000 people.

Share of New PV Installations in 2010



Source: EPIA 2011

Total Installed Capacity by the End of 2010



Source: EPIA 2011

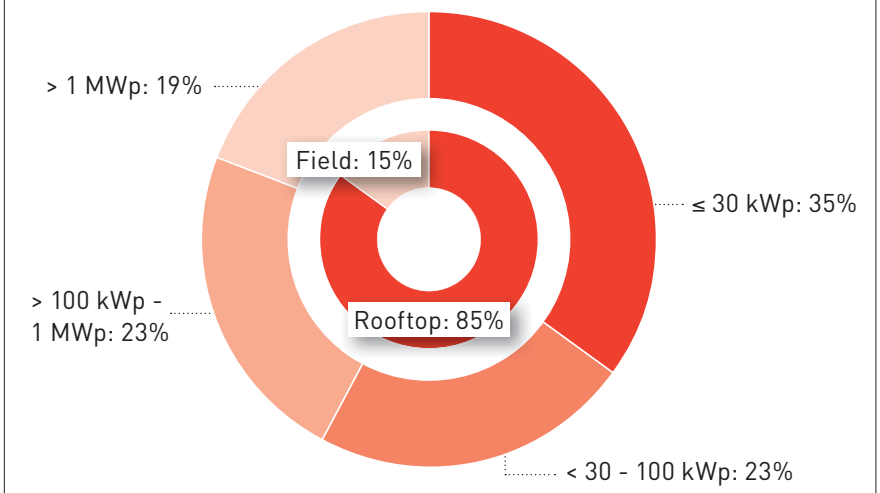
Increased Export and Revenue Levels
Thanks to excellent export conditions and strong international demand for "Made in Germany" PV products, German manufacturers have been able to consistently increase their turnover to EUR 12.2 billion with an export share of 50 percent in 2010. In addition, PV equipment suppliers generated turnover of EUR 2.6 billion and an export share of 88 percent in 2010.

Planning for the PV Future
In order to meet strong future growth, the German PV industry made a net investment of around EUR 1.8 billion in German production capacities in 2009. A further investment of EUR 1 billion in R&D has been earmarked for the period 2009 to 2013 - double the sum invested in the preceding four-year period.

German PV Market Drivers

More than 860,000 PV systems have already been installed in Germany, with 84 percent of the German public in favor of using solar energy. A capacity of 15 GWp has already been installed on German rooftops, while the potential capacity in the rooftop segment alone is around 120 GWp. In the coming years the flourishing German PV market will receive a further boost and increased innovation as electricity produced by PV systems achieves price competitiveness with domestic household electricity prices.

Photovoltaic Market Segmentation in Germany 2010



Source: Federal Network Agency 2011, BMU 2011

Landmark Legislation
2010 marked the ten-year anniversary of the landmark Renewable Energies Act (EEG); the jewel in the crown of Germany's ambitious green policy framework. Green sector growth is underpinned by long-term feed-in tariffs which guarantee the production of CO_2–free electricity. The act's proven success has led to the implementation of similar pieces of legislation in more than 50 countries worldwide. The EEG guarantees owners of PV installations a fixed feed-in tariff for 20 years (between 21.11 and 28.74 euro cents/kWh subject to type and size of system in 2011). Depreciating feed-in tariffs and the absence of a market cap ensure stable market growth at competitive price levels. Higher income streams can be sourced by taking advantage of the "own consumption bonus."

Integrated Market Structure
The presence of a number of highly experienced project developers, system integrators and installers provides the necessary backbone for a mature sales structure imperative for rapid market growth. High installation numbers are responsible for creating the fastest project realization times and the lowest installation and balance-of-system costs in the world. Industry-specialized banks in the private sector and extensive state funding programs also help safeguard long-term demand for PV technology in Germany. The country's excellent infrastructure and its quick and transparent feed-in tariff application processes allow the German market to maintain higher price elasticity than other global markets: decreasing module prices are reflected by a corresponding growth in demand.

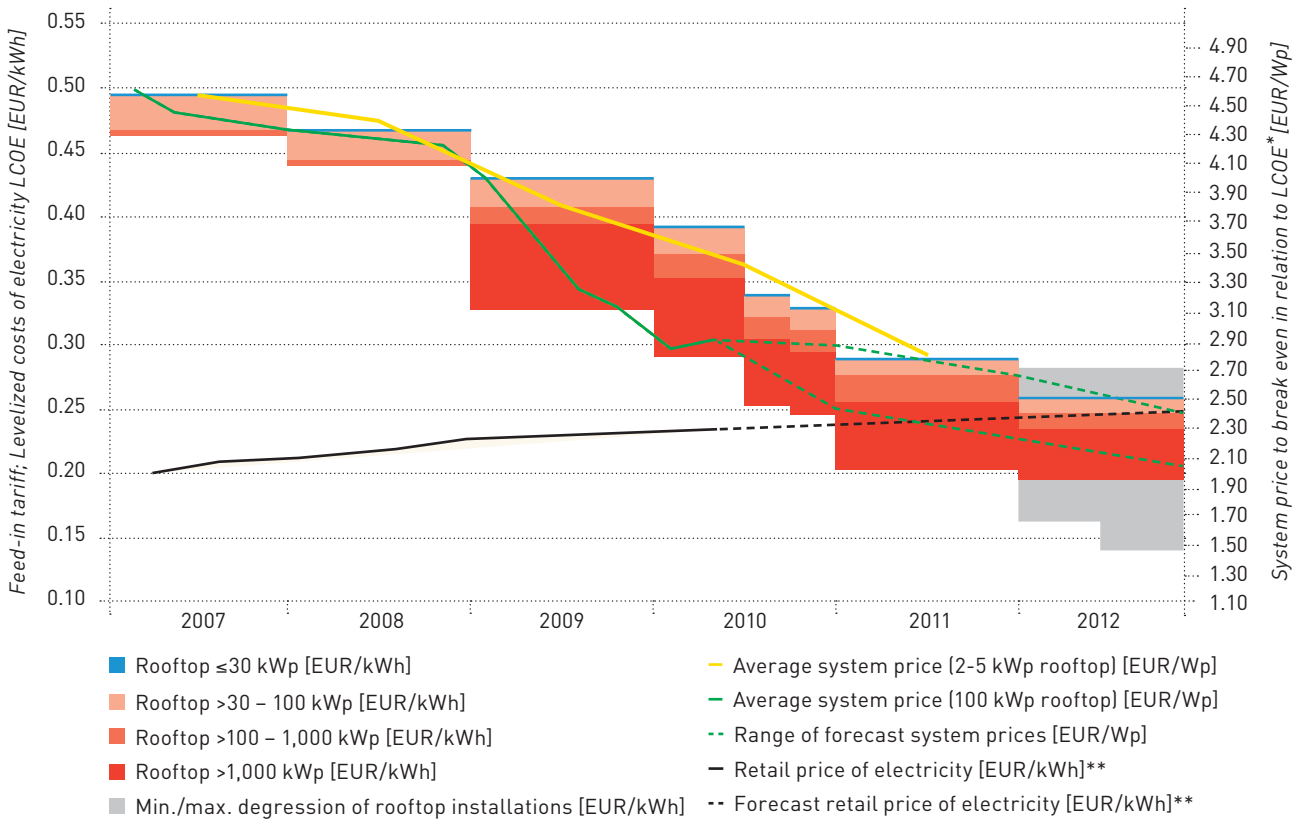
Premium Product Demand
Rooftop systems represent the largest segment by far, with 85 percent of installed capacity in 2010. These are mainly owned by private users who express a stated preference for high-quality, premium products with a local manufacturing presence. As such, manufacturers located in Germany are able to market a "Made in Germany" product for a significant competitive advantage.

Excellent Export Base
Foreign markets are a major driver of the PV industry in Germany. The country's excellent export conditions allow it to play a major role in meeting global PV demand. A number of contributory factors are central to this success. Chief among these are Germany's central location at the heart of Europe and rapid access to major and emerging markets (including France, Italy, Benelux, and the UK). Market forecasts confirm Europe's continued dominance as the world's leading PV market, with Germany as leading sales platform. A number of agencies (including *Germany Trade & Invest* and the global German Chambers of Commerce network) and initiatives (e.g. specialized export initiatives and credit insurances for renewables) provide further support for foreign market expansion.

Grid Parity Market

In the near future, feed-in tariffs will be at the same level as domestic household electricity prices. In order to prepare end customers, banks and installers alike for a grid parity market, the current EEG provides an "own consumption bonus" for the consumption of own PV-produced electricity: every kilowatt hour consumed at source receives between 6 and 10 euro cents of additional income compared to energy fed into the grid. The regulation is optional for rooftop systems equal to or smaller than 500 kWp (100 kWp from 2012 onward) and still allows unused excess electricity to be fed into the grid at normal feed-in tariff rates. The payment incentive acts as an additional spur to implement storage solutions and further develop innovative smart home and smart grid technologies. With the market fast approaching grid parity, innovative financing and leasing concepts, new technologies and services as well as pioneering utility business models could play an increasingly important role. For international PV enterprises and PV start-ups, Germany's approach is not solely limited to providing attractive incentives and market entry support services. Germany also offers an attractive chance to test new business models in a grid parity environment and provides opportunities to design and implement new industry standards for PV solutions beyond subsidies.

Feed-in Tariffs Leading the Way to Grid Parity



With a system price of 3.30 EUR/Wp (right ordinate), the investor will require a feed-in tariff of 0.35 EUR/kWh (left ordinate) in order to receive an ROI of 6%. As soon as the feed-in tariff is lower than the retail electricity price, own consumption becomes more attractive.

** Model calculation for rooftop systems >30 kWp, <100 kWp; based on 802 kWh/kWp (Frankfurt), 100% financing, 6% interest rate, 20 year term, 2% p.a. O&M costs*

*** Private households with annual consumption >2500 kWh, <5000 kWh; prices 2007 – 2010: Eurostat; prices 2010 – 2012: price increase of 2% p.a.*

Source: BMU 2010, BSW 2010, Eurostat 2011, Deutsche Bank Securities Inc. 2010, Photon 2011

Opportunities for Manufacturers

A significant number of the world's leading PV manufacturers are already enjoying the advantages of Germany's optimal PV investment environment and its positive cluster effects.

Access to the World's Largest Market

Local manufacturers profit from direct access to the world's largest PV market. This guarantees flexible market reaction times, eliminates lengthy and expensive transportation times and long-term inventory, and allows foreign exchange rate hedging. The concentrated presence of the whole PV value chain (from large suppliers to end customers) has created highly developed sales channels facilitating distribution and easy access to the end customer. This is especially important when it comes to introducing new products and services tailored to the coming grid parity era. Last but not least, companies active in the world's biggest market can take advantage of leveraged brand awareness afforded by the "Made in Germany" quality seal.

Optimal Export Support

Other European and international PV markets are served by Germany's sophisticated distribution infrastructure. To support these structures and networks, the German government provides excellent export conditions especially designed for the renewable energy sector (e.g. special export credit insurance).

Investment Opportunities for PV Manufacturing Companies

Industry segment	Segment-specific benefits
Wafer/cell production	▪ Transfer of and access to automation and process knowledge from semiconductor and microelectronics industry.
Module production	▪ "Made in Germany" premium brand: easier access to private customers (>35 percent market share and growing). ▪ Direct link to customer (e.g. "transparent factory" concept). ▪ Higher selling price of premium modules "Made in Germany." ▪ Reduced price risks due to Eurozone: single currency means no exchange rate risk. ▪ Easier customization (e.g. BIPV). ▪ Distinction against competitors at home. ▪ Swift market reaction time, just-in-time delivery. ▪ Lower transportation costs and reduced long-term transport inventories. ▪ Moderate production costs, cash grants of up to 50 percent available. ▪ Access to automation expertise and customized equipment suppliers. ▪ Optimized supply chain: excellent supplier base of materials & chemicals and glass.
3rd generation PV production (OPV)	▪ Chemical industry and material science infrastructure & expertise. ▪ Chemical company partnering opportunities. ▪ Specialized venture capital companies.
Glass production	▪ Largest module manufacturing cluster in Europe. ▪ Sand pits with low iron sand. ▪ Excellent power and gas infrastructure.
Other module material & component production	▪ Foils: highly developed chemical infrastructure. ▪ Semiconductor materials: materials expertise, largest semiconductor hub in Europe. ▪ Cables & junction boxes: plastics and electronics expertise. ▪ Frames: excellent metal sourcing conditions.
Inverter production	▪ Power electronics, system integration and smart grid knowledge base. ▪ Own consumption drives introduction of innovative products (e.g. integration of energy storage and monitoring systems).
PV mounting system production	▪ Metal & plastics processing infrastructure. ▪ Excellent material sourcing conditions. ▪ System integration knowledge base.
Energy storage device production (e.g. battery)	▪ Promotion of storage technologies through "own consumption bonus" for PV rooftop systems ≤ 500 kWp (100 kWp from 2012 onward). ▪ Chemical industry and material science infrastructure & expertise. ▪ Strong material supplier presence. ▪ Marketing and distribution partnership opportunities.
Equipment production	▪ Strong and diversified client base with constant innovation need. ▪ Excellent tooling, machine component, and materials supplier infrastructure & expertise. ▪ Easy access to and transfer of technologies and processes from traditionally strong industries (e.g. automotive, chemicals and microelectronics).

PV Manufacturing Know-how
Close proximity to and cooperation with world class R&D institutions, universities, and leading material and equipment suppliers (covering everything from cell-related wet chemistry and vacuum deposition to automation and turnkey lines) helps manufacturers optimize production technologies and processes. The ready availability of superior facility and process engineers also helps save time and slash costs during ramp-up and maintenance phases.

Experienced PV Labor Pool
Germany provides quick and easy access to a flexible labor pool - with a solid PV-related education and training background – drawn from Germany's strongest industries (including mechanical engineering, chemistry, semiconductor, and microelectronics). Competitive labor costs and high productivity rates combine to guarantee new businesses with optimal levels of professionalization and competitiveness from the outset.

Full Service Infrastructure
Diverse partnership opportunities, state-of-the-art cross-sectional infrastructure, regional networks, and experienced local authorities guarantee fast approval processes. This provides a stable investment environment for new manufacturing facilities in Germany.

Financial Support
Financial incentives of up to 50 percent of investment costs (subject to location, company size and investment volume) plus incentives reducing operational costs (R&D and labor) are provided by the EU and the German government to support foreign investors.

Investment Opportunities for Non-Manufacturing PV Companies

Industry segment	Segment-specific benefits
R&D center	▪ Large pool of experienced scientists and university graduates in PV-related subjects. ▪ Generous public R&D support schemes.
Factory services	▪ Large base of engineering companies. ▪ Easy access to processing and automation expertise.
Project services	▪ Large pool of developers and engineers with unique project development experience. ▪ Access to experienced private and institutional equity investors. ▪ Access to grid integration expertise. ▪ Large customer base for services like insurance, monitoring, and O&M and system optimization.
System integration	▪ Global acceptance of reference projects located in Germany. ▪ Among the lowest installation costs and shortest realization times in the world. ▪ Strong presence of experienced installers.
New services coming with grid parity	▪ Smart home / energy management systems / storage services: strong and growing demand due to higher income streams through own consumption. ▪ Energy trading: EEG sets legal framework for direct sale of PV electricity to the electricity exchange or surrounding consumers.

Opportunities Beyond Manufacturing

Sharing Expertise
Companies seeking to engage in PV service segments (e.g. R&D, PV systems planning, and project development and implementation) can source know-how from the largest pool of specialists in these fields worldwide. Company R&D centers not only profit from cluster knowledge transfer, but also from information sharing with other R&D centers and companies. Generous public R&D support schemes facilitate the development and implementation of new products and technologies.

Market Demand and Infrastructure
Downstream companies (including system integrators and project developers) benefit from continuous market demand and a supportive policy framework. Banks also offer attractive financing.

Local authorities actively support the industry and guarantee fast grid access. Established sales structures facilitate distribution, provide easy end-customer access and the opportunity to design and implement innovative products and services for the coming grid parity era.

Extensive Network for Service Providers
Companies focusing on PV plant services, such as maintenance, monitoring, and insurance as well as technical and commercial operations, benefit from the large pool of existing PV installations in Germany. Supervising the official German PV plant directory, the German Federal Network Agency provides primary data on newly installed PV plants, making it easy for service providers to identify their customer base and to test and measure new products and services on a large scale.

Cluster Effect

Unique PV Environment
Germany's unique PV industry cluster has created an environment in which operators from all sectors are able to prosper in close proximity to other industry actors; enjoying swift and easy access to all parts of the PV value chain as well as investors, academic institutions and research centers.

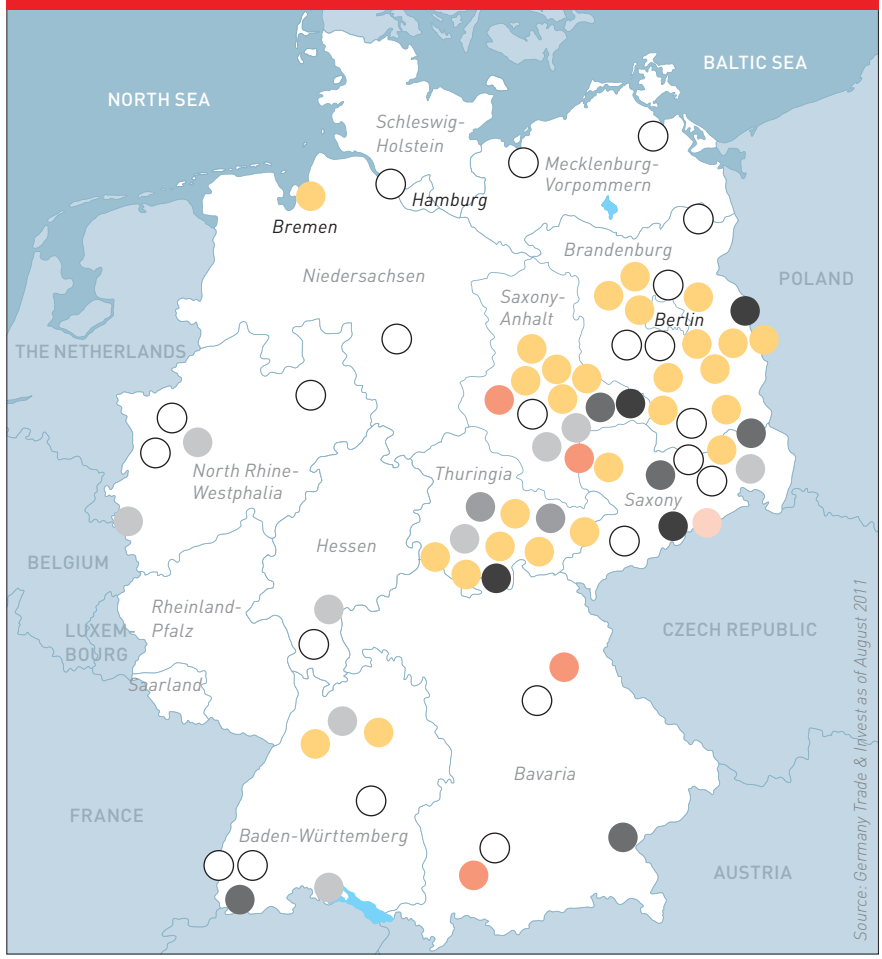
Germany's PV cluster has the added advantage of enjoying density levels around twice those of comparable industry clusters (e.g. automotive, chemicals, pharmaceuticals et al.). The complementary SME landscape in all PV technologies offers broad partnership opportunities with established German PV manufacturers. Ninety percent of all PV companies cooperate with others within the cluster. On average, PV cluster companies typically partner with around six other companies and research organizations. Cluster participants benefit from supply and utility delivery economies of scale as well as the opportunity to play an active role in joint R&D projects with other companies in close partnership with universities and leading research entities (including various Fraunhofer institutes, the Helmholtz Center Berlin, FZ Julich, and ZSW Stuttgart).

Knowledge Transfer
Joint market research and knowledge transfer activities help businesses promote additional know-how, accelerate their learning curve, and consistently reduce costs while increasing product and process efficiencies. State-of-the-art infrastructure - partly supplied by a well developed chemicals industry - provides production sites that offer not only industry-specific utilities and services, but also a holistic approach of closed loops from raw materials to recycling. PV-related university courses and specialized training programs ensure a continuous and strong PV cluster knowledge base.

Networks of Excellence
Industry networks like SolarValley Mitteldeutschland, Berlin Solar Network, Silicon Saxony, Organic Electronics Saxony, and Forum Organic-Electronics help bundle shared interests and strengths. The comprehensive support and service of industry-experienced local authorities ensure that manufacturing projects can be swiftly realized. Utilities are well equipped to meet PV manufacturing project needs. Common process and product development projects significantly reduce the lead times for new technologies and products. Industry-specialized venture capital (VC) companies support start-up and spin-off companies with an optimal network and industry experience.

▸ *Germany Trade & Invest* regularly updates its PV fact sheets which provide a detailed and up-to-date profile of the PV environment. These can be downloaded from the *Germany Trade & Invest* website: ***www.gtai.com/pv***

PV Manufacturers in Germany

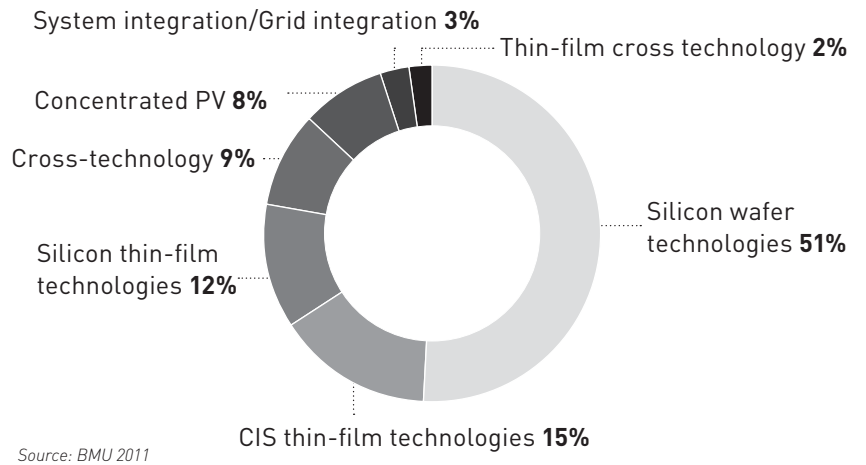


● *Silicon* ● *Wafer* ● *Cell* ○ *Module* ● *Fully Integrated* ● *Thin Film* ● *OPV* ● *PV & Thermal*

Cutting-Edge R&D Landscape

Long-term cooperation with Germany's research institutes has helped the German PV industry to attain its leading position in the world market. Further innovation and R&D investment will fuel future growth in the thriving PV industry.

Governmental R&D Funding by PV Area in 2010



Source: BMU 2011

The World's Leading PV R&D Hub

Three distinct research areas are of particular interest: high-efficiency silicon cell and module development, thin-film solar technology (e.g. CIGS), and the nascent organic PV segment. System technology optimization and grid integration are also areas of particularly intensive R&D activities, which range from new inverter technologies to cutting-edge energy storage options. This situation has been made possible thanks to the German R&D landscape, which has the highest density of PV institutes and companies conducting research worldwide. More than 50 research organizations are capable of meeting PV R&D challenges at all stages of production. The partnership between science and industry increases competitiveness and creates mutually beneficial synergies. Ready access to cutting-edge production technologies and processes helps significantly reduce costs. PV industry R&D investments of around EUR 1 billion are planned in the period from 2009 through 2013 - twice as much as the sum invested in the previous four-year period. An impressive 290 solar patents were registered in Germany in 2010.

Extensive Government R&D Funding

Research and development is considered to be among the greatest strengths of the German economy. Public and private actors have made a commitment to spend around three percent of national GDP per year on R&D activities. This amounts to approximately EUR 70 billion R&D spending each year.

The federal government has concentrated its unprecedented R&D project support in an initiative known as the "High-Tech Strategy." The strategy combines the resources of all government ministries. For 2010/2011, funding of EUR 1.27 billion is reserved for research, technology development and innovation to promote sustainable energy supply. In 2010, a sum of EUR 39.8 million was made available for 45 new PV R&D projects by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) – an increase of 27 percent compared to the sum spent in 2009. Projects from innovative fields in silicon wafer and thin-film technologies, system integration, and grid integration in particular receive funding. From 2011, the new *Innovationsallianz Photovoltaik* ("Innovation Alliance Photovoltaic") will see up to EUR 100 million invested in PV research by the Federal Ministry of Education and Research (BMBF) as well as an additional EUR 500 million invested from the industry. Germany is also pioneering research in new PV technology areas such as organic PV. BASF, BOSCH and the BMBF signed an agreement in 2007 to invest EUR 360 million to develop this innovative technology in the years ahead. The development of storage technologies for PV and other renewable energies is specially promoted by federal government (BMBF, BMU, and the Federal Ministry of Economics and Technology – BMWI). The *Förderinitiative Energiespeicher* ("Energy Storage Funding Initiative") supports collaborative R&D projects with funding of EUR 200 million for the period 2011-2014.

At the EU level, R&D activity grant funding of EUR 53.27 billion has been made available for the period 2007 through 2013. SMEs can take advantage of R&D project expenditures of up to 75 percent. Moreover, companies in Germany can also benefit from a diverse range of regional R&D funding programs.

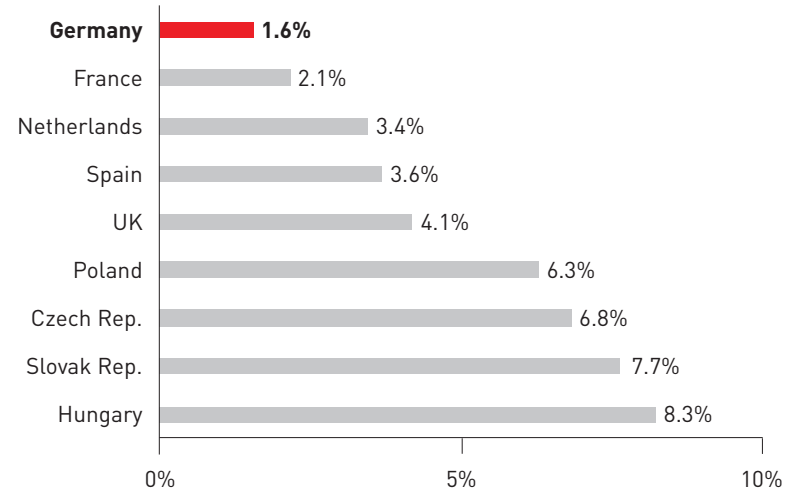
Attractive Pool of PV Expertise

Outstanding Quality through Longstanding Experience
Germany enjoys a long and successful tradition in machinery and equipment development: researchers, companies and employees alike benefit from this world class know-how. The "Made in Germany" quality seal has long been recognized as a sign of engineering excellence and precision across the globe. The PV industry in Germany is ideally placed to profit from this expertise.

Engineering Excellence
Highly skilled and specialized employees are a key feature of the German labor market and will remain so in the future. According to OECD statistics, Germany has one of the highest rates of doctoral degree graduate levels in the world; with 312 PhD graduates per million inhabitants it ranks second in a comparison of OECD countries. German universities have also introduced masters and bachelors degrees for improved international acceptance and recognition. There are more than 240 university degree courses with a strong focus on PV and other renewable energies. Close synergies between the PV and the semiconductor and microelectronics industry create a readily employable workforce.

Dual Education System
Germany provides direct access to a highly qualified and flexible labor pool. The country's dual education system – unique in combining the benefits of classroom-based and on-the-job training over a period of two to three years – is specifically geared to meet industry needs. The German Chambers of Industry and Commerce (IHKs) ensure that exacting standards are adhered to, guaranteeing the quality of training provided across Germany.

European Labor Cost Growth 2001-2010



Annual average growth expresssed as percentage of total economy.
Source: Eurostat 2011

Stable Labor Costs
Another decisive argument in favor of Germany as a premium business location has been the significant closing of the labor cost gap between Germany and its eastern European neighbors. Since 2001, the labor cost growth rate in the European business economy (EU-27) averaged 3.3 percent annually. While some countries – particularly those in eastern Europe – experienced a rise of more than seven percent, Germany recorded the lowest labor cost growth within the EU at just 1.6 percent.

High Productivity
Germany has experienced a major increase in productivity over the past decade which has led to falling unit labor costs. In marked contrast to many other European countries (which have experienced an increase in unit labor costs), Germany's unit labor costs decreased by a yearly average of 0.3 percent for the period 2005 to 2010. Highly flexible working practices such as fixed-term contracts, shift systems, and 24/7 operating permits contribute to enhance Germany's international competitiveness as a suitable investment location for internationally active businesses.

Stable Investment Base

Stable and Transparent Legal System
Germany is home to a legal environment rightly renowned for its stability and transparency. The World Economic Forum (WEF) ranked Germany among the leading countries of 139 competitors for its judicial independence. Solid codifications and an effective enforcement system provide investors with a secure legal framework and the possibility to quickly enforce their rights.

Open and Transparent Markets
The German market is open for investment in practically all industry sectors, with business activities free from regulations restricting day-to-day business. German law makes no distinction between Germans and foreign nationals regarding investments, available incentives or the establishment of companies. The legal framework for foreign direct investment in Germany favors the principle of freedom of foreign trade and payment. There are no restrictions or barriers to capital transactions or currency transfers, real estate purchases, repatriation of profits, or access to foreign exchanges.

Reliable Logistics Infrastructure
Germany's infrastructure excellence is confirmed by a number of recent studies including the Swiss IMD's World Competitiveness Yearbook and various UNCTAD investor surveys. The 2010-2011 Global Competitiveness Report of the WEF ranked Germany second for infrastructure; singling out Germany's extensive and efficient infrastructure for highly efficient transportation of goods and passengers for special praise. Accumulated in this score for Germany are high marks for the quality of roads and air transport, excellent railroads and port infrastructure, as well as its communications and energy infrastructure.

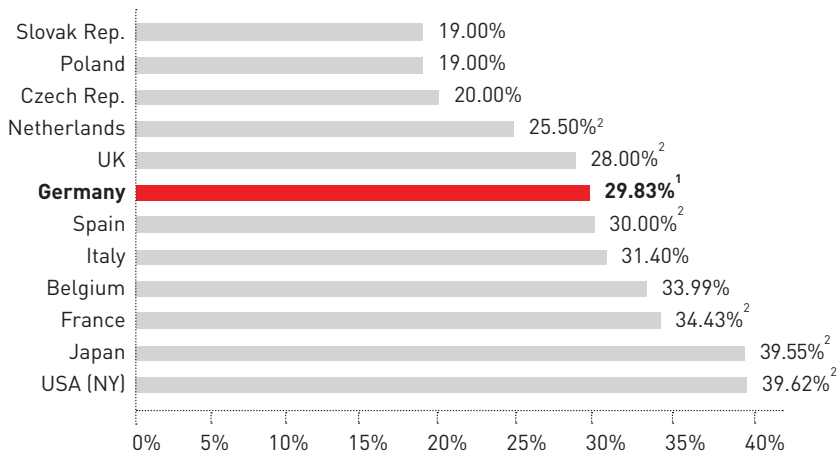
Competitive Tax System
Germany offers a competitive tax system providing attractive tax rates for companies. In recent years, the German government has implemented root and branch reforms of the tax system to make the country a more attractive business location.

The German tax system allows for differing tax rates in German municipalities. On average, corporate companies face an overall tax burden of less than 30 percent. Significantly lower tax rates are available in certain German municipalities – up to eight percent lower. The overall tax burden can therefore be as low as 22.83 percent. This makes Germany's corporate tax system one of the most competitive tax systems among the major industrialized nations.

Germany – The Most Attractive Business Location in Europe

The American Chamber of Commerce in Germany's "AmCham Business Barometer 2011" study finds that US firms consider Germany to be the most attractive business location in Europe in terms of regional investment focus for the years ahead. Surveyed US companies indicated the increasing significance of high product and process quality in the current economic climate; while attaching particular value to the traditional "German qualities" of diligence, reliability, and quality. US firms also cited the decreasing wage cost differences between Germany and eastern Europe as a further reason for Germany's comparatively higher attractiveness level.

Average Corporate Tax Burden of Selected Countries 2009 (in percent)



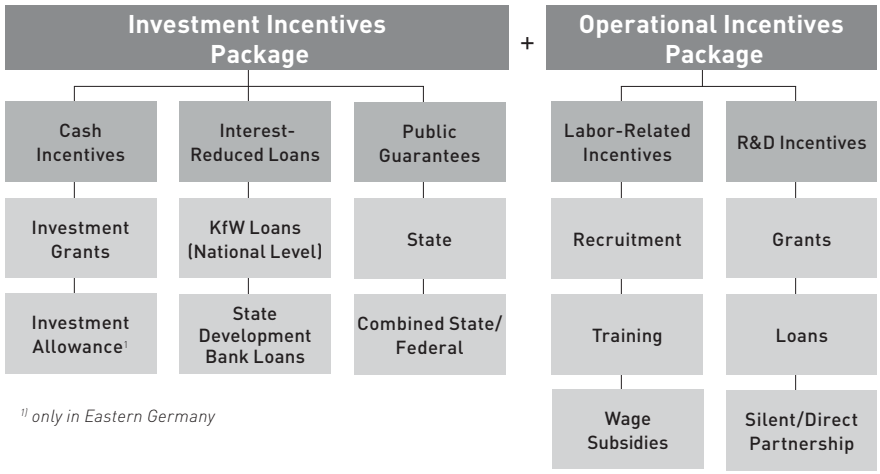
Note: [1] National German average; lower overall tax rates in certain areas are possible, e.g. 22.83% in certain municipalities.
[2] Top corporate income taxation rate; lower starting rates or other special tax rates available. Example USA: progressive rate from 15% to 35%.

Source: BMF 2009

Financing & Incentives in Germany

In Germany, investment projects can receive financial assistance through a number of different instruments. These instruments may come from private sources or consist of public incentive programs available to all companies – regardless of country of origin. They fit the needs of diverse economic activities at different stages of the investment process.

Types of Incentives in Germany



[1] only in Eastern Germany

Early Stage Investment Project Financing

Technologically innovative start-ups in particular have to rely solely on financing through equity such as VC. In Germany, appropriate VC partners can be found through the *Bundesverband Deutscher Kapitalbeteiligungsgesellschaften e.V, BVK* ("German Private Equity and Venture Capital Association"). Special conferences and events like the *Deutsches Eigenkapitalforum* ("German Equity Forum") provide another opportunity for young enterprises to come into direct contact with potential VC partners. Public institutions such as development banks (publicly owned and organized banks which exist at the national and state level) and public VC companies may also offer partnership programs at this development stage.

Later Stage Investment Project Financing

Debt financing is a central financing resource and the classic supplement to equity financing in Germany. It is available to established companies with a continuous cash flow. Loans can be borrowed for day-to-day business (working capital loans), can help bridge temporary financial gaps (bridge loans) or finance long-term investments (investment loans).

Besides offers from commercial banks, investors can access publicly subsidized loan programs in Germany. These programs usually offer loans at attractive interest rates in combination with repayment-free start-up years, in particular for small and medium-sized companies. These loans are provided by the state-owned KfW development bank and also by regional development banks.

Cash Incentives for Investment Projects

When it comes to setting up production or service facilities, investors can count on a number of different public funding programs. These programs complement the financing of an investment project. Most important are cash incentives provided in the form of non-repayable grants applicable to co-finance investment-related expenditures such as new buildings, equipment or machinery. In Eastern Germany, investment grants are complemented by an investment allowance, which is usually allotted in the form of a tax credit but which can also be provided in the form of a tax-free cash payment.

Labor-related Incentives and R&D Project Grants

After the location-based investment has been initiated, companies can receive further subsidies for building up a workforce or the implementation of R&D projects. Labor-related incentives play a significant role in reducing the operational costs incurred by new businesses. The range of programs offered can be classified into three main groups: programs focusing on recruitment support, training support, and wage subsidies respectively. R&D project funding is made available through a number of different incentives programs targeted at reducing the operating costs of R&D projects. Programs operate at the regional, national, and European level and are wholly independent from investment incentives. At the national level, all R&D project funding has been concentrated in the so-called High-Tech-Strategy to push the development of cutting-edge technologies. Substantial annual funding budgets are available for diverse R&D projects.

Best Practice Examples

First Solar
First Solar (USA), the world's largest manufacturer of thin film modules (CdTe), opened its EUR 115 million module manufacturing site in Frankfurt (Oder) in 2006. In 2010, the US giant made a further investment of over EUR 170 million in the Brandenburg-based facility in Eastern Germany. The investment makes it the largest thin film plant in Europe and boosts annual production capacity to 446 MWp. Creating 500 additional jobs, the new investment serves to meet ongoing demand increases in Germany and Europe.

ITS Innotech Solar
The Norwegian cell manufacturer Innotech Solar built a factory to process non-prime cells near the city of Halle (Saale), Saxony-Anhalt, in 2011. Around 80 new jobs are initially created by the investment. Innotech Solar uses industrial production techniques to increase power output and safeguard the quality of the cells. Germany's thriving PV cluster, excellent infrastructure, and innovative technology reputation were decisive factors in the Norwegian company's decision to locate in Germany.

Germany – Essential to Global Success
Both First Solar and Innotech Solar use their German facilities as a test bed for potential technology and knowledge transfer to other plants located around the world. For both companies Germany represents the ideal investment location; providing optimal product quality and market entry in the shortest time possible.

"Germany provides the ideal conditions to strengthen our business activities. A thriving photovoltaic cluster and outstanding infrastructure are essential for us. Halle gives us a unique competitive advantage, enabling us to continue our exceptional growth."

Thor Christian Tuv, CEO, Innotech Solar

Selected Germany Trade & Invest Success Stories

	sovello	First Solar	nanosolar	AVANCIS	sunfilm	ARISE	MASDAR PV	vetro solar	ITS INNOTECH SOLAR
Country of Origin	USA Norway	USA	USA	France	USA	Canada	UAE	Norway	Norway
Size and Type of Facility[1]	100 MWp Integrated Factory (Ribbon Si)	446 MWp Module Factory (CdTe)	500 MWp Module Factory (CIGS)	120 MWp Module Factory (CIS)	120 MWp Module Factory (a-Si/µc-Si)	80 MWp Cell Factory (c-Si)	180 MWp Module Factory (a-Si/a-Si)	PV Glass Processing Factory	100 MWp Cell Factory (c-Si)
Investment Volume[1]	EUR 180 million	EUR 275 million	EUR 25 million	EUR 210 million	EUR 95 million	EUR 50 million	EUR 140 million	EUR 24 million	EUR 42 million
Job Creation[2]	1,400	1,200	120	400	150[4]	85	300	65[1]	160[1]
Time Frame[3]	Sep 2004 – July 2005	June 2005 – June 2006	July 2005 – March 2007	Jan 2006 – May 2007	July 2006 – June 2007	July 2006 – Aug 2007	Oct 2007 – Aug 2008	Nov 2007 – Oct 2009	Dec 2008 – Feb 2010

[1] *As planned by company.*
[2] *Current number of employees.*
[3] *GTAI support: start of project until start of construction.*
[4] *Operating as Schüco TF since October 2010.*

Germany Trade & Invest Helps You

Germany Trade & Invest's teams of industry experts will assist you in setting up your operations in Germany. We support your project management activities from the earliest stages of your expansion strategy.

We provide you with all of the industry information you need – covering everything from key markets and related supply and application sectors to the R&D landscape. Foreign companies profit from our rich experience in identifying the business locations which best meet their specific investment criteria. We help turn your requirements into concrete investment site proposals; providing consulting services to ensure you make the right location decision. We coordinate site visits, meetings with potential partners, universities, and other institutes active in the industry.

Our team of consultants is at hand to provide you with the relevant background information on Germany's tax and legal system, industry regulations, and the domestic labor market. *Germany Trade & Invest's* experts help you create the appropriate financial package for your investment and put you in contact with suitable financial partners. Incentives specialists provide you with detailed information about available incentives, support you with the application process, and arrange contacts with local economic development corporations.

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

Strategy	Evaluation	Decision & Investment		
Project Management Assistance				
Business opportunity analysis and market research	Market entry strategy support	Project partner identification and contact	Joint project management with regional development agency	Coordination and support of negotiations with local authorities
Location Consulting /Site Evaluation				
Identification of project-specific location factors	Cost factor analysis	Site preselection	Site visit organization	Final site decision support
Support Services				
Identification of relevant tax and legal issues	Project-related financing and incentives consultancy	Organization of meetings with legal advisors and financial partners	Administrative affairs support	Accompanying incentives application and establishment formalities

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About Us

Germany Trade & Invest **is the foreign trade and inward investment agency of the Federal Republic of Germany. The organization advises and supports foreign companies seeking to expand into the German market, and assists companies established in Germany looking to enter foreign markets.**

All inquiries relating to Germany as a business location are treated confidentially. All investment services and related publications are free of charge.

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