



CBI
Ministry of Foreign Affairs

CBI Product Factsheet:

Electronic Lighting in Germany

Introduction

Political measures and technological innovations are driving forces in the the German market for electronic lighting. Germany is the leader in the implementation of energy-efficient lighting solutions. For electronic lighting exporters from developing countries, –the German market offers solid expertise on electronic lighting through large R&D investments in automotive, outdoor, and industrial applications. Exporters in developing countries should continuously work on improving their competitive advantage, e.g. by increasing LED/OLED life expectancy.

Product Definition

Electronic lighting encompasses two major types, LEDs and OLEDs.

Light-emitting diodes (LEDs), HS code 85414010, are a semiconductor light source. LEDs illuminate when an electrical charge passes through it, converting energy directly into light of a single colour. LEDs are used for very different functions and applications ranging from indoor and outdoor use in residential to industrial areas. LED lighting is fundamentally different from conventional light sources such as incandescent, fluorescent, and gas-discharge lamps. LED lights are more efficient at turning energy into light.

Organic light-emitting diodes (OLED), HS code 85414010, have a film of organic compound which turns energy into light. OLEDs have been mainly used in the consumer electronics, but the ongoing R&D enabled the penetration of OLED into industries such as lighting and automotive. The main differences between OLED and LED are indicated in the table below. However, OLEDs have made significant progress in the development and in the improvement of efficiency in the last two years.

LEDs have a lifetime between 50,000 and 100,000 hours.

Table 1: Advantages of LED and OLED

Advantages of LED	Advantages of OLED
LED is more efficient than OLED	OLED has a larger-area emission
Lifetime of LEDs is three times longer than that of OLEDs	OLED offers better design flexibility
LEDs are 100 times less expensive than OLEDs	OLED has a higher colour comfort

Source: IDTechEx

For the reasons that LED is currently more efficient (efficient lighting is one of the EU requirements) than OLED and its lifetime (the key market requirement) is much longer than that of OLED, LEDs play a more significant role in the electronic lighting market in Germany. The OLED price is much higher than LED, limiting OLED penetration possibilities. For these reasons, the report will focus mainly on opportunities for DEVELOPING COUNTRY exporters in LED and will not be featuring OLED in detail.

Strong brand names are important in electronic lighting in all industrial applications, including automotive, indoor, and outdoor lighting. The leading suppliers of lighting in Germany are [Philips Lighting](#), [OSRAM](#), [Novaled](#), [GE Lighting](#), [Hella](#), [Nichia](#), [BASF Future Business](#), [Tridonic](#), [Merck](#), and [Schreiner Group](#).

Product Specifications

Quality:

German and European buyers in general are becoming increasingly alert to the quality and performance of electronic lighting sold on the market, as low quality LED and OLED could negatively impact perception of this technology and jeopardise its potential as a technology.

European companies are typically looking for high-quality products that meet the following requirements: 1) fulfil the agreed-upon specifications between the supplier and the buyer, 2) are energy efficient and sustainable, 3) and have up-to-date (intelligent) technology.

- In electronic lighting, the expected buyers' specifications may include semiconductor material, wavelength, light colour, voltage drop, as well as life expectancy. According to experts, there is room for DEVELOPING COUNTRY exporters in the improvement of life expectancy of LED.
- Several features of the LED need to be considered in its design, since it is both an electronic and an optic device. Desirable optical properties such as colour, brightness, and efficiency must be optimised without an unreasonable

electrical or physical design. These properties are affected by the size of the diode, the exact semiconductor materials used to make it, the thickness of the diode layers, and the type and the treatment of the semiconductor.

- LED performance is temperature-dependent. Most manufacturers' published ratings of LEDs are for an operating temperature of 25 °C. LEDs used outdoors such as traffic lights or in-pavement signal lights could result in low signal intensities or even failure.
- To assure the durability and safety, products must comply with the relevant EU regulations and standards. The materials used and especially hazardous substances have to comply with RoHS and must meet REACH requirements (see legal requirements in this document).
- Lower energy consumption, sustainability, and lower emissions are the buyers' requirements in Europe, where a trend to "greener" lighting solutions is taking place.
- Use of up-to-date or intelligent technology is gaining importance in Europe. Intelligent lighting may include:
 - Integration of hardware and software (e.g. a contemporary street light is an intelligent solution),
 - Sensor integration for temperature measurements,
 - Connectivity to renewable energy sources such as solar panels,
 - Use of appropriate material as the interface material for LEDs.

Labelling:

- LED and OLED would be typically labelled with description of the content, including the following information:
 - type of product,
 - model type,
 - supplier/manufacturer name and location,
 - serial number,
 - lamp lifetime.
- DEVELOPING COUNTRY exporters have to familiarise themselves with the labelling of the energy-related products directive Waste of Electrical and Electronic Equipment (WEEE) in order to formulate labels, indicate all product information, and mark products accordingly (e.g. the symbol of the crossed-out wheelee bin).



Packaging:

LEDs and OLEDs are typically packaged in plastic bags and cardboard boxes to protect them from becoming damaged. The buyer might specify his own packaging requirements.

Legislative Requirements

To assure the durability and safety, products must comply with the relevant EU regulations and standards. Compliance with EU legislative as well as non-legislative requirements is a basic necessity for all exporters in the electronics and electrical engineering (E&EE) sector. Below, you will find the main mandatory requirements that your products must comply with. Make sure you have familiarised yourself with legal requirements in terms of labelling, dangerous substances, product safety and liability. Your products must comply with all EU directives.

Liability for defective products. The liability applies to all products manufactured or imported into the European market. Typically, the company that brings the product onto the European market is responsible, but a claim can be passed on to the producer or exporter.

Tip:

- Familiarise yourself with standards that specifically apply to your products. To ensure that your products are of high quality, review your quality assurance and testing procedure, e.g. through the implementation of an accredited quality management system (ISO 9001). Carefully formulate labels, instructions for use, and disclaimers. Finally, make sure your insurance covers product liability. Check EU legislation on [liability for defective products](#) in this context. Also consult with [EU Export Help Desk](#) and [ITC standards map](#).

CE marking. LEDs must meet several technical standards laid down in the EU legislation. The manufacturer must carry out a conformity assessment and when compliant, the product must be marked with the CE mark. With a few exceptions, all components must be marked with the CE mark. When electronic components are sold as a subsystem or part of a finished good, they do not legally require a CE mark. However, driven by market requirements, nearly all customers will still demand the CE mark for most components, in particular when the components are critical in the application. For LEDs, the following directives may be relevant:

- Electromagnetic compatibility (EMC Directive 2004/108/EC),
- Low voltage equipment (LVD 2006/95/EC),
- Eco-design for Energy related products (Directive 2009/125/EC),
- Equipment for use in potentially explosive atmosphere (ATEX Directive 94/9/EC)

Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive 2002/95/EC).

Tip:

- Apply for the [CE mark](#), which is required by all customers, also in cases when your product is a subsystem or part of a finished good and does not legally require the CE mark. If you are a manufacturer, you have to be familiar with the process of affixing the CE marking to LEDs. The European Commission has a very insightful website that illustrates the key steps to undertake from the beginning to the trading of the product. See the following documents for more information on EU legislation:
 - [CE marking for Electromagnetic compatibility](#)
 - [CE marking for Low Voltage Devices](#)
 - [CE marking for Eco-design of energy related products](#)
 - [Directive 94/9/EC \(ATEX\)](#)

Waste of Electrical and Electronic Equipment (WEEE). If you want to export electronic or electrical products to the EU, you have to take into account that your EU buyers have obligations regarding the waste of these products. EU producers are obliged to participate in product take-back schemes. Although, this does not directly affect exporters from developing countries, its requirements may have an impact when EU buyers ask their suppliers to meet specific design requirements or provide certain information.

Tip:

- Make sure your product design complies with WEEE and enables product recycling, recovery or dismantling. (Note that these requirements may differ per EU Member State.) Carefully formulate labels and mark products in accordance with WEEE (e.g. the symbol of the crossed-out wheeled bin). See the EU document on [Waste Electrical and Electronic Equipment \(WEEE\)](#) for more information.

Labelling of energy-related products. EU producers and exporters are obliged to indicate energy consumption on household appliances and other energy-related products (the list is being extended into industrial used products. Check when importing your products and discuss this with your European customers).

Tip:

- Make sure you indicate all product details (including energy class, performance, capacity, noise level, etc.) required by the EU. See the EU legislation on energy labelling of energy using and energy-related products [at EU webpage](#).

REACH regulation. This regulation applies to the risks associated with chemicals and restricts the use of certain hazardous chemicals. Furthermore, it sets some requirements regarding information provision on the chemicals used as manufacturers are required to provide their buyers with information on properties of these substances.

Tip:

- Ask your buyer for their requirements regarding REACH. List all chemicals, including raw materials and additional materials, used in your production process. See the EU legislation [REACH on chemicals at EU webpage](#).

Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS). The directive bans the placing on the EU market of electrical and electronic equipment that contains more than the agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl and polybrominateddiphenyl ether flame retardants.

Tip:

- Make sure that none of the hazardous substances referred to in RoHS Directive is used in your production process. Exporters of electronic components have to meet the requirements under both RoHS and REACH, since they are complementary. See the EU legislation on the Restriction of Hazardous Substances (RoHS) [at this EU webpage](#).

Non-Legislative Requirements

Although compliance with non-legislative requirements is voluntary, buyers often request it. In effect, 'private' or 'voluntary' standards are often established by industry players themselves. They are perceived by producers as a barrier to entering a market, but compliance equally constitutes an opportunity to gaining a competitive advantage in the export of your product.



Quality management systems (QMS) – ISO 9001. If you plan exporting into Europe, all products must meet buyers' quality demands. ISO 9001 is designed to make sure that the manufactured and/or exported products to Europe meet the needs of customers. This document provides information on the world's most widely used QMS. For automotive application, components within an assembly, subassembly, and a finished good have to meet quality demands outlined in *ISO/TS 16949 QMS*.

Tips:

- Apply for ISO 9001 as quickly as possible. Understand your target customers' requirements and if you plan to target automotive industry, get ISO 16949.
- See the document Quality management systems at the [ISO webpage](#).
- See automotive application-related requirements in terms of quality management systems also on the [ISO webpage](#).



Functional Safety in accordance with ISO 26262. ISO 26262 focuses on the functional safety of electrical and electronic systems in vehicles.

Tips:

- Apply for ISO 26262. Even though these requirements are not mandatory, they will definitely give you an advantage over other DEVELOPING COUNTRY exporters serving partners in the vehicle industry. See the ISO webpage for more information on the guidelines [ISO 26262](#).



Occupational health and safety in the electronic components sector. Occupational health and safety (OHS) issues are all aspects related to labour conditions and are very often part of EU buyers' social requirements for their suppliers.

Tip:

- Consider implementing a management system on OHS (e.g. OHSAS 18000). European buyers are becoming increasingly sensitive and need transparency in the supply chain and in labour conditions at all levels. Even though these requirements are not mandatory, they will definitely give you a competitive advantage over other DEVELOPING COUNTRY exporters if you can comply with them. Find more information on occupational health and safety in the electronic components sector [at ISO webpage](#).



Electronic Industry Citizenship Coalition (EICC) Initiative. The most important sustainability initiative in the Electronics Sector, in Europe and internationally, focuses on social, ethical, health and safety, and environmental issues. Members are required to comply with the Code requirements. Some industry buyers can require their suppliers to follow the EICC code of conduct. This is especially relevant for first tier suppliers

Tip:

- Find out what buyers (what industry) may require regarding the EICC code of conduct. Try to implement this policy; this will give you an advantage over other exporters. Explain your steps in this area on your website and in other company’s literature. See the [EICC](#) webpage for more information on the sustainability initiative.

Trade and Macro-Economic Statistics

Imports and Exports

As the leader in the implementation of energy-efficient lighting solutions, Germany presents outstanding opportunities for LED and OLED suppliers from developing countries. Exporters from developing countries are recommended to target German suppliers/importers of LED and OLED. This includes manufacturers of lighting solutions for various applications, in particular in the area of automotive, outdoor, and industrial lighting. In order to increase the competitive advantage over other exporting countries, exporters in developing countries should work on improving product quality and LED/OLED life expectancy i.e. the most important market requirements.

Figure 1: Imports of Light-Emitting Diodes (LED/OLED) in Germany in 2014 %

	German share of total imports in EU+EFTA, 2014	CAGR of total imports* (2009-2014)	Share of imports from developing countries of imports, 2014	CAGR* of imports from developing countries (2009-2014)
Imports	30%	7.2%	61%	12.5%

*Compound annual growth rate

Source: Eurostat (2014)

Figure 2: Exports of Light-Emitting Diodes (LED/OLED) in Germany in 2014 %

	German share of total exports in EU+EFTA, 2014	CAGR of total exports* (2009-2014)	Share of exports to developing countries of exports, 2014	CAGR* of exports to developing countries (2009-2014)
Exports	53%	4.9%	35%	3.4%

*Compound annual growth rate

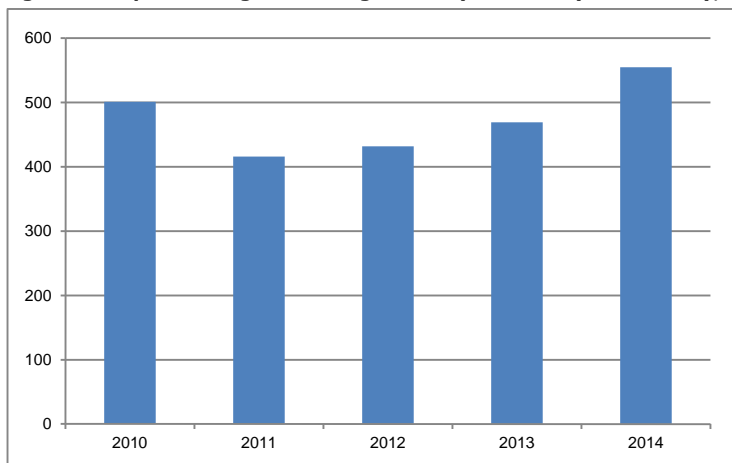
Source: Eurostat (2013)

Most important developments

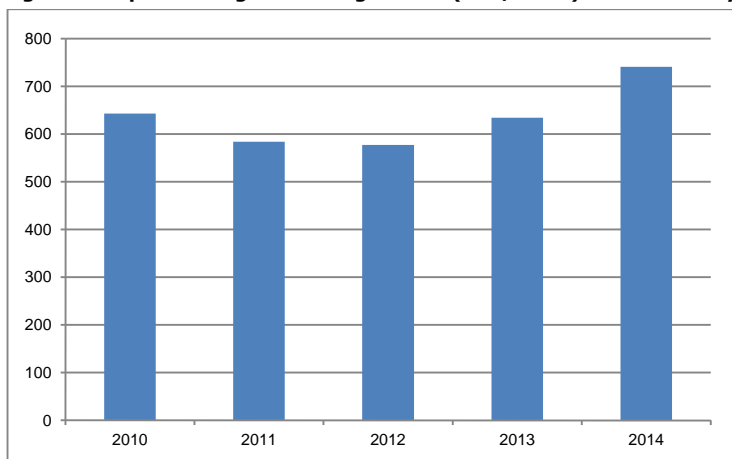
Driven by high demand primarily in the automotive industry, import and export of light-emitting diodes (LED and OLED) has grown in Germany by CAGR 7.2% and 4.9% between 2008 and 2012. The importance of imports from developing countries (DEVELOPING COUNTRYs) to Germany is high, driven by the cost-saving aspects. Thus, the share of LED and OLED imported from DEVELOPING COUNTRYs (out of total in-country imports) increased significantly (from 47% in 2008 to 60% in 2012). Cost pressures, the market trend of separation of high-tech and low-tech products and the growing role of collaboration will drive the importance of DEVELOPING COUNTRYs in LED and OLED supply.

Tip:

- Developing countries have a very high potential in entering Germany with LEDs and OLEDs, as the demand for energy-efficient lighting is increasing in the country with early adopter tendency. Actively look for suppliers/importers of LEDs in Germany, as well as the manufacturers of luminaires and lighting solutions for various applications (e.g. automotive, outdoor, and industrial lighting).

Figure 3: Imports of Light-Emitting Diodes (LED/OLED) to Germany, value in € million

Source: Eurostat (2015)

Figure 4: Exports of Light-Emitting Diodes (LED/OLED) from Germany, value in € million

Destatis (2015)

Analysis and interpretation

Germany is a net exporter of LEDs and OLEDs.

- Exports grow faster than imports, which
- only grew by 2.6% on average between 2010
- and 2014. This shows the attractiveness of the German market for LEDs in particular, but for OLEDs as well.

Tips:

- Be aware of the serious competition Chinese and Malaysian companies pose (the leading importers of LEDs and OLEDs in Germany)
- Work on your *Unique Selling Proposition*, i.e. why should European OEMs buy your product? Improve the product quality and LED/OLED longevity, in order to increase your competitive advantage over other exporting countries.

Germany's export of LEDs and OLEDs within Europe has witnessed a higher growth in the last five years compared to countries outside of Europe (CAGR 3.6% in 2010-2014), signalling the increasing importance of Germany as a trade hub.

The Netherlands, Italy, Hungary, Czech Republic, Portugal, France, Spain, Austria, UK, and Switzerland are the top 10 export destinations in terms of value size. China, Japan and the USA are also important export destinations for German high-tech LEDs.

Tip:

- DEVELOPING COUNTRY exporters can target other European countries through re-exports in Germany.

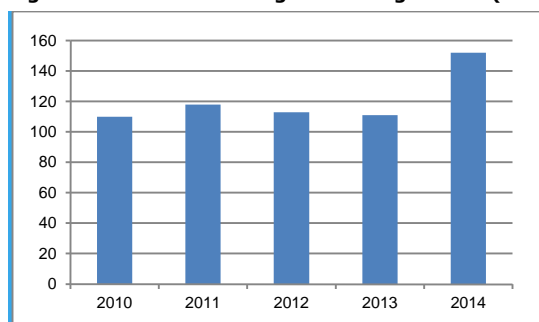
Production and Consumption

The potential for electronic lighting in Germany is huge, as the country is the most populous and industrialised country in Europe. The LED-lighting industry is expected to grow significantly, as a result of:

- political measures (mandatory substitution of conventional bulbs with energy-efficient lighting)
- strong R&D and expertise on lighting for automotive, outdoor, and industrial applications comes from Germany.

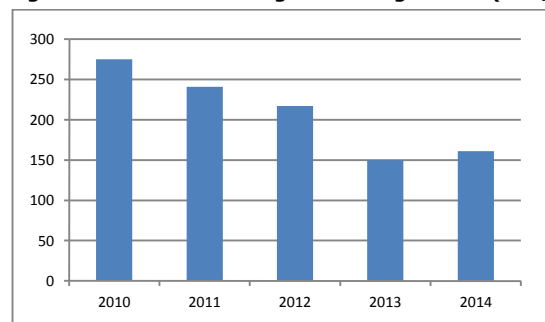
In 2012 LEDs had a market share of around 25% in Germany. The market share for 2016 is expected to reach 50% and 75% by 2020.

Figure 5: Production of Light-Emitting Diodes (LED/OLED) in Germany, value in € million



Source: Destatis (2015)

Figure 6: Production of Light-Emitting Diodes (LED/OLED) in Germany, volume in million units



Source: Destatis (2015)

Analysis and interpretation

Germany is the largest producer of LEDs and OLEDs in Europe. Driven primarily by price increases, LED/OLED production showed a significant increase over the past five years (CAGR 8.4% in 2010-2014) in terms of value. Production of energy-efficient lighting will continue to grow in response to the estimated increase in the demand for electronic lighting in Germany over the next years.

Tip:

- Since Germany is strong in lighting production, DEVELOPING COUNTRY exporters have opportunities in supplying local (German) manufacturers with LEDs and OLEDs on the components level (semiconductors). There are limited opportunities on the system/solution level, because the after-service availability is important and means the necessity of the DEVELOPING COUNTRY exporters' representation through a local partner. Find more information about market channels and segments at [CBI webpage](#).

Volume-wise there is a shift in production away from Germany. A larger production share now comes from other EU countries, but also countries outside the EU and Europe.

Tip:

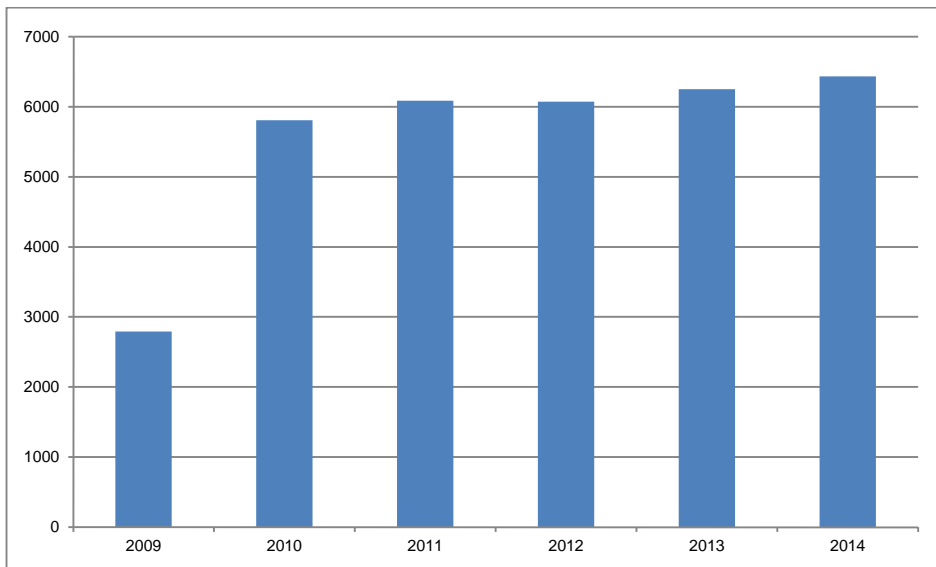
- DEVELOPING COUNTRY exporters have opportunities in supplying German makers of electronic lighting solutions, as well as local suppliers of lighting components. It is important to continuously work on the improvement of know-how and product quality. If you are lacking in product knowledge, look for proof of quality by European partners.

The demand for electronic lighting is expected to grow significantly both in Germany and in Europe. Users realize significant cost savings due to the higher energy efficiency level of LEDs and countries strive to achieve their CO2 reduction targets. The current demand for electronic lighting in Germany is primarily the result of substituting existing lighting in various applications with electronic lighting, following its mandatory introduction in the EU.

Germany supports increasing LED installations through Government incentives. In 2016 - the third year in a row - the Federal Ministry of Environment will provide subsidies to municipalities to replace old street lighting or lighting in publicly-owned facilities with LED technology.

Market

Figure 7: Turnover of the German lighting industry (including equipment), value in € million



Source: Destatis (2015)

Analysis and interpretation

The rapid development of the entire lighting industry in Germany has been significantly impacted by the rise in the demand for electronic lighting (LED-based and OLED-based lighting), which pushed led production of a larger supply of LEDs/OLEDs in Germany. In the upcoming years turnover will remain high at € 6.5 billion and will increase further as classical bulbs continue to be replaced on a large scale by more efficient LEDs.

Tip:

- Be prepared for a further growth in the demand for new LED/OLED suppliers in Germany. Work on your visibility in the Internet and try to visit the major European/German trade shows.

Market Trends

Analysis and interpretation

Political measures: Europe is taking measures to accelerate the switch to more ecological lighting sources.

Tip:

- Familiarise yourself with the latest and pending European legislation acts to understand the growth potential of new and existing markets. If you decide to supply European and German companies with intelligent lighting solutions, consider partnering up with other manufacturers from developing countries in order to strengthen your product portfolio or to co-design electronic lighting solutions. However, be aware that there are considerably more opportunities for the supply of components for electronic lighting than for complete solutions.

Energy infrastructure requirements and incentives are being extended to include efficient building concepts, as illustrated by EU ruling that by 2020 all new building structures should consume "nearly zero" energy.

The demand for electronic lighting in Germany is currently driven by the mandatory substitution of existing lighting in various applications. The German Government has already introduced incentives for electronic lighting solutions (up to 75% of costs can be reimbursed depending on the application) and a number of street lighting projects are currently being carried out in several German cities. Incentives are issued to municipalities and other publicly-owned organizations and companies, including schools, but also churches.

Joining the supply chain with low-cost products: European OEMs start separating high-price and low-price electronic lighting. Electronic solutions (also lighting) become more intelligent and integrated. Thus, there are opportunities for DEVELOPING COUNTRYs in supplying with low-tech components for high-tech solutions.

Tip:

- Supply local (German) manufacturers primarily with LEDs and OLEDs on the components level (semiconductors). You may also think of creating a product portfolio on a modular basis, enabling the possibility to order not only a lighting component, but also a lighting solution. Be aware, that opportunities in supplying electronic lighting at the solution level are limited.

Technological innovations: Germany plays a significant role in the development of electronic lighting through a solid know-how and high R&D investments in automotive, outdoor, and industrial lighting.

- As a result of technological innovations in electronic lighting, new functions of lighting have been introduced recently: modified lighting to create an impact on emotions, adjustment of light colour, position, and micro flickering.
- Germany Trade & Invest (the economic development agency of the Federal Republic of Germany) has identified in 2014 three growth areas for LED technologies:
 1. A growing market in Germany is lighting management and municipal street lighting. Electricity used for street lights accounts for up to half of the electricity used in European cities. Approximately a third of Germany's street lighting points is more than 40 years old. Many German municipalities are under pressure to install energy-saving systems in order to save costs.
 2. As the leading country in the field of automotive research, Germany's car manufacturers are already using LED technology to replace conventional taillights. Setting high standards right from the start, headlights and interior lighting using LED technology will be the next developments in this market.
 3. Alongside the increasing application of OLED technology in cars, German experts are confident that OLEDs will be used for large-scale lighting systems in residential and non-residential buildings in the near future.

Tip:

- DEVELOPING COUNTRY exporters have opportunities in supplying intelligent components for lighting solutions, e.g. semiconductors for electronic lighting solutions. Besides, suppliers of other electronic components and products have opportunities in supplying the electronic lighting industry in Germany, e.g. intelligent power supplies for lighting with a controlling function or power supplies equipped with an integrated sensor (for example, to measure temperature changes).

Product quality: Besides economical advantage, European OEMs are looking for high-quality electronic lighting, i.e. long life expectancy among other factors. High product quality is required, because local OEMs must guarantee the product quality and provide after-service to their customers. LEDs are expected to change the transmission parameter (wavelength) to a wider range for new applications of electronic lighting, what may increase the product-quality expectations towards DEVELOPING COUNTRY exporters.

Tip:

- Continuously work on the improvement of the product quality and LED/OLED life expectancy, in order to increase your competitive advantage over other exporting countries. If you are lacking in product knowledge, look for proof of quality by European partners.

Product design: In addition to product quality, product design is becoming increasingly important. Developing countries need to work on acquiring Europe's best practices not only in the implementation of quality standards, but also in product design and presentation, for example: the product must show no signs of being handled and it must be clean and properly packaged.

Tip:

- Work on the improvement of product design and packaging. Work in line with European standards and follow all the buyer requirements.

Minimisation of the total cost of ownership: With the growing role of international cooperation, European companies will increasingly be facing various risks that need to be measured and managed in order to keep the total cost of ownership (TCO: means financial estimate to help buyers or owners to determine the direct and indirect costs of a product) at a reasonable (low) level. Both smaller and larger companies will increasingly be looking for the most reliable suppliers and will try to eliminate the risk through supplier contract and cost management.

Tips:

- European small and medium enterprises (SMEs) present better opportunities as potential customers for DEVELOPING COUNTRY exporters, but also larger companies may contact you as a potential supplier. That is why visibility on the market is crucial. Develop your sales and marketing strategy:
 - Work on well-structured and up-to-date content on your company's website;
 - Attend trade shows several years in a row. Start preparations for the trade show far in advance (see a list of trade shows in Useful Sources);
 - Work on your *Unique Selling Proposition*, i.e. why should European OEMs buy your product?
- Work on the product pricing.

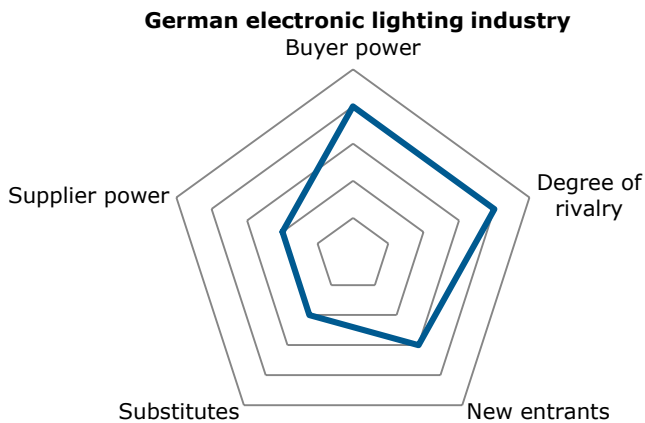
For more information on entering the European market, please refer to CBI [Trends for Electronics and Electrical Engineering](#).

Market Channels and Segments

See [CBI Market Channels and Segments for Electronics and Electrical Engineering](#), because the viable trade route of LEDs/OLEDs does not differ significantly from the general trade route.

Market Competitiveness

Figure 8: Competitive forces in German electronic lighting industry



Analysis and interpretation

Buyer power: The bargaining power of buyers is relatively high for the following reasons:

- Customers are buying LEDs/OLEDs in large volumes;
- LEDs/OLEDs have a low degree of differentiation;
- Switching to an alternative product is relatively simple and is not related to high costs.

Tip:

- Diversify the distribution channel; join forces with other companies from DEVELOPING COUNTRYs in order to diminish the risk of losing volume orders. Enter the supply chain by delivering better-priced components (e.g. LED semiconductors) to producers of high-tech solutions. Distribute your revenues evenly among your customers in different markets.

Degree of rivalry:

Around 90% of electronic lighting market is concentrated in the hands of several leading companies (including [Philips Lighting](#) and [OSRAM](#)), but there is a number of smaller companies on the market (see a list of German electronic lighting companies under useful sources). Major technology firms such as [Sharp](#), [Toshiba](#), and [Samsung](#) are entering the market to compete with both LED chip manufacturers (e.g., [Cree](#), [Lumileds](#)) and traditional lighting players. Cree, a relatively new lighting entrant has significantly increased its market share. By focusing on high manufacturing output, Cree is in search of the tipping point on costs.

Tip:

- European small and medium enterprises (SMEs) present better opportunities as potential customers for DEVELOPING COUNTRY exporters, but also larger companies may contact you as a potential supplier. Actively contact SMEs in Germany and participate at trade shows to enable larger market players to find out about your product offering.

New entrants:

Strong brand names are important for electronic lighting suppliers and new companies need to establish the brand recognition on the market. Better-priced and better-quality products are required on the market.

Tip:

- If you aim at supplying Germany with electronic lighting on a solution level, be aware of the entry barriers for unknown brands. Consider selling your products under private labels in Germany. Since the after-service availability is important, look for a local partner who has credibility to guarantee the product quality and to offer on-site service

Substitutes:

Due to the imposed EU regulations, there are few substitutes to LEDs at the moment. Out of the traditional lighting technologies, both halogens and incandescent lights are being phased out. This is one of the reasons that makes the LED market very attractive. Currently, LED lighting offers a better performance and better price than OLEDs. OLED lighting could gain market success if it clearly defines its unique selling points and carves out initial market niches. Intensive R&D of possible applications for OLEDs is still ongoing.

Tip:

- Regularly familiarise yourself about new developments on the LED and OLED markets and new applications of electronic lighting. If you have know-how, consider investing in the R&D or you may co-manage research projects with European peers.

Supplier power:

There is a high level of competition among suppliers that impacts on the product price level. Besides, high volume orders have a negative impact on the bargaining power, since the buyer can cut volumes at any time.

Tip:

- In order to increase the competitive advantage of your product offering as compared to the leading LED chip manufacturers such as Cree, continuously work on the product quality improvement and seek for European proof of quality.

For more information on the market competitiveness, please refer to [CBI Competition for Electronics and Electrical Engineering](#).

Useful Sources

- Eurostat, URL: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>
- Eurostat ProDeveloping Countryom, URL: <http://epp.eurostat.ec.europa.eu/portal/page/portal/prodcom/introduction>
- ZVEI (German association of electronic industry), URL: <http://www.zvei.org>
- Association of electronic lighting promotion, URL: <http://www.licht.de/en/press/>
- European online magazine for LED lighting, URL: <http://ledsmagazine.com/>
- European Lighting Association, URL: <http://www.lightingeurope.org/>
- Statista, URL: <http://www.de.statista.com/>

Leading trade fairs in Germany

- Light + Building, URL: <http://light-building.messefrankfurt.com/frankfurt/de/aussteller/willkommen.html>
- Electronica, URL: www.electronica.de
- CeBIT, URL: www.cebit.de
- Hannover Messe, URL: www.hannovermesse.de
- Belektro, URL: www.belektro.de

Selected German electronic lighting companies with HQ location:

- LED and OLED BASF, Future Business Ludwigshafen
- LEDON OLED Lighting, Dresden
- Merck, Darmstadt
- Novaled, Dresden
- OSRAM, Opto Semiconductors Regensburg
- PHILIPS, Technologie Aachen
- CFL Aura Light, Hamburg
- NARVA, Lichtquellen Brand-Erbisdorf
- RADIUM, Lampenwerk Wipperfürth
- HID BLV Licht- und Vakuumtechnik, Steinhöring
- Havells Sylvania Germany, Erlangen
- Holophane Lichttechnik, Düsseldorf
- Schröder, Wendlingen
- Luminaires Aloys Fischer, Sundern
- Ansorg, Mülheim
- BRUCK, Herne

- Brumberg Leuchten, Sundern
- ELEKTRA, Enger
- ERCO, Lüdenscheid
- Excelitas Technologies Elcos, Pfaffenhofen
- Herbert Waldmann, Villingen-Schwenningen
- Schott, Mainz
- TRILUX, Arnsberg
- Equipment & Solutions Aixtron, Aachen
- ASEM Präzisionsautomaten, Dresden
- BAG electronics, Arnsberg
- Helvar, Rödermark
- Leuchtstoffwerk Breitung, Breitung
- Lichtwerk, Königsberg
- NORKA, Hamburg
- Siteco Beleuchtungstechnik, Traunreut
- Vossloh-Schwabe Deutschland, Lüdenscheid
- Zumtobel Lighting, Lemgo

Source: Germany Trade & Invest, 2014

More information

CBI market information:

- [Trade Statistics for Electronics and Electrical Engineering;](#)
- [Trends for Electronics and Electrical Engineering;](#)
- [Market Channels and Segments for Electronics and Electrical Engineering;](#)
- [Competition for Electronics and Electrical Engineering.](#)
- [Product Fact Sheet Electronic Lighting in other countries.](#)



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February 2016