
**The World Markets
for
Transformers
2016 - 2026**

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No 1, Priorsfield, Marlborough, Wiltshire SN8 4AQ, United Kingdom

Tel: +44 1672 513316 Fax: +44 1672 513316

Email: info@gouldenreports.org

Web site: www.gouldenreports.org

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1. INTRODUCTION

1.1 OBJECTIVES AND SCOPE

The objective of this report is to provide a concise overview of the world transformer market. The report gives an estimate of the volume and value of transformer consumption in each national market, broken down by product category. For the purposes of this report the categories of transformers have been defined as follows:

- Generator Transformers - defined as step-up transformers attached to power generation plants. The purpose of these transformers is to increase the voltage from alternator output to transmission level.
- Transmission Transformers - defined as transformers installed in transmission sub-stations. For the purposes of this report, Transmission Transformers are further defined as generally in developing markets having a power handling capacity equal to, or greater than, 5MVA and in industrialised countries nearer 10MVA. Also known as system transformers, the purpose of these transformers is to step-down the voltage from transmission levels to sub-transmission and distribution levels.
- Distribution Transformers - defined as transformers installed in distribution and consumer sub-stations. Distribution Transformers are further defined as generally having a power handling capacity of less than 5MVA.

These categories include all transformers with a power handling capacity exceeding 16kVA. Measuring transformers, instrument transformers or transformers for use in civil aircraft are not included in this report.

The scope for this report is world-wide - that is, every country having a significant transformer customer base. The report is designed to be used as a first line planning tool by companies interested in the global market for transformer products and as a screen on which to identify national markets worthy of further investigation.

1.2 METHODOLOGY

Data in the markets report is presented in both millions of US dollars and in terms of power capacity (MVA). The salient points of the methodology are as follows:-

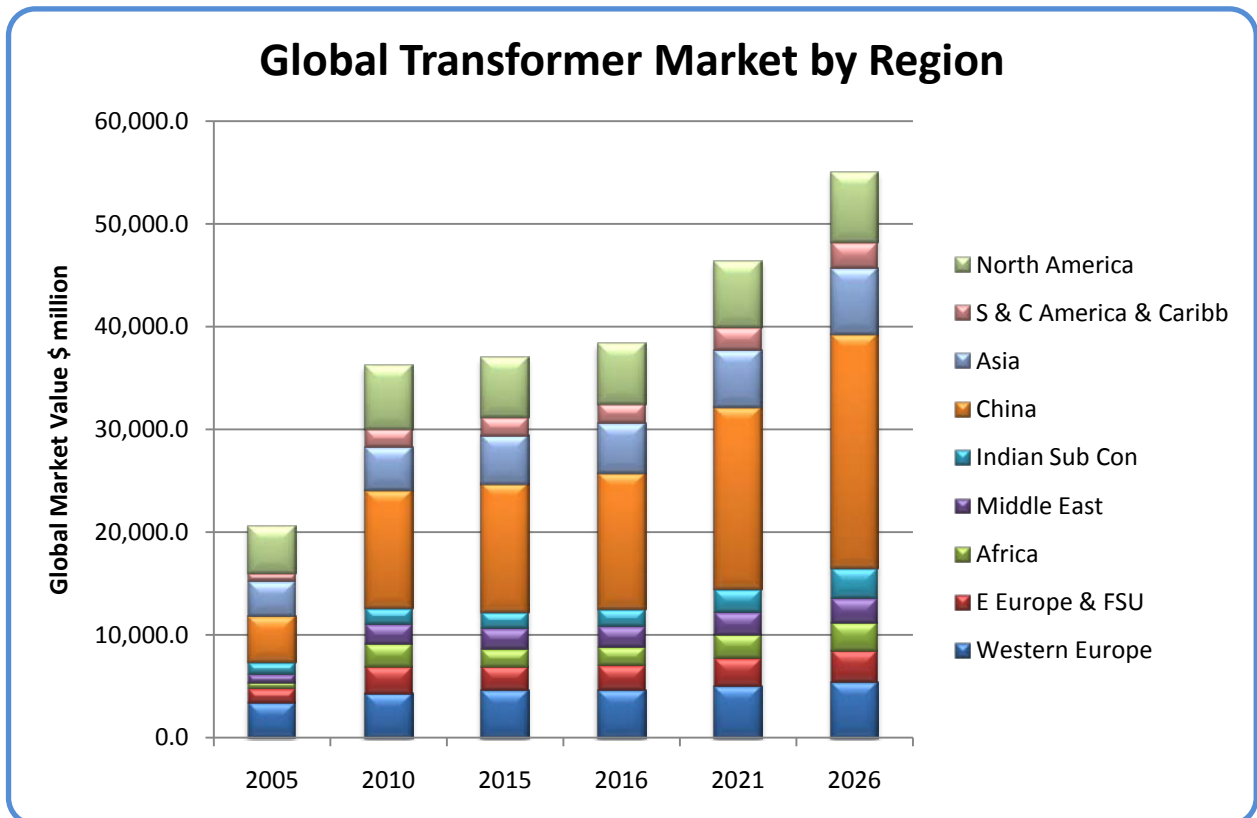
- For the data presented in US dollars, the survey was based primarily on desk research, including a review of available published production and trade statistics. Import and export figures are calculated from national and United Nations' figures for 2010–2015 the most comprehensive and up-to-date statistics available. Market values are assumed to be equal to Production + (Imports - Exports). National production estimates are based on statistics provided by national governments and trade associations. Market sizes for 2016 are estimated by analysing a range of economic indicators together with trends in trade flow and the pattern of market size growth over the period 2010-2015.
- Market values for the period 2016 to 2026 have been estimated based on two separate methodologies. Firstly the past growth rate in market values for each country have been extrapolated and have been compared with general macro-economic indicators such as GDP, GDP growth and inputs to the value added for each economy. Secondly, the development of the electrical power system in each country has been studied to provide indications for future system growth, and hence transformer market growth.
- The future MVA demand for each country has been forecast using the following method. The current year-on-year growth in installed capacity for each country has been tracked for the last 40 years. The development over the last ten years has been used as the basis for establishing the new MVA of generator capacity in each country for the period 2016 to 2026. To this new capacity has been added the power station capacity that is necessary to replace redundant or retired plant. Typical rates for this are based on 2.5% of the installed capacity in the period 1975 to 2015, yielding an assumed plant life of approximately 40 years. The new and replacement generator MVA has then been used as the basis for calculating the transmission and distribution transformer MVA over the forecast period.
- Market values are at factory gate prices - they reflect the prices for the products by the importer and do not include trade mark-ups and installation costs. It should be noted that published classifications of products, especially with respect to trade statistics, are sometimes inaccurate, as products may be shipped under generic titles. It should also be noted that Goulden Reports chronicles shipments rather than contracts. A contract to supply goods over a number of years will not appear as a one-off event in a Goulden Report, but rather will be recorded from the trade statistics. The nature of the market means that demand within countries, especially developing ones, can fluctuate greatly from year to year as purchases are often made on a one-off basis rather than spread evenly over a number of years.
- Within national markets, where published figures were unavailable to us, the breakdown between different product categories is based on intelligence about the pattern of consumption in the country concerned. In these cases the breakdown is made from an estimate of the Total market size rather than the value of the entire market being calculated from the individual product categories.

Clients that have purchased previous editions of this report will note that this edition contains a more detailed analysis of the market in each country. Market data by value, by MVA, by insulation type, by size, by end use and forecasts through to 2026 by value and by MVA are all included in this report.

Figures for non-UN countries are based on data obtained from individual countries and are consequently not necessarily comparable with UN-derived information. Clearly the report is only as accurate as the information upon which it draws - the sources are regarded as being the best and most comprehensive available.

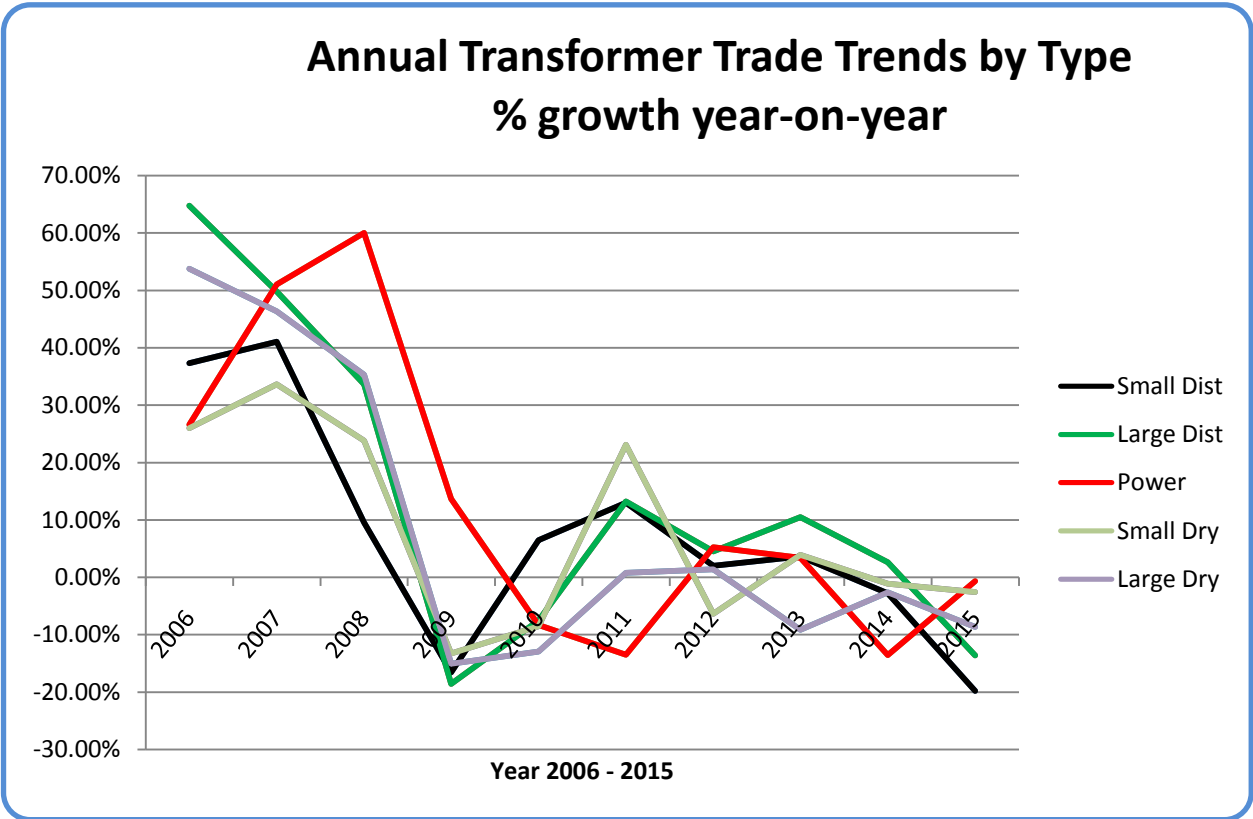
2. SUMMARY

- The global market for Transformers was valued at US\$XXXX million in 2016.
- The largest national market in 2016 is that of China, which was valued at US\$XXXX million and which accounted for 34.6% of the overall world market.
- The second largest national market is that of the USA (US\$XXXXX million) followed by Japan (US\$XXXXX million), India (US\$XXXXX million), and Russia (US\$XXX million).
- The largest regional market for Transformers in 2016 is Asia (US\$XXXXX million) followed by North America (US\$XXXXX million) and Western Europe (US\$XXXXX million).

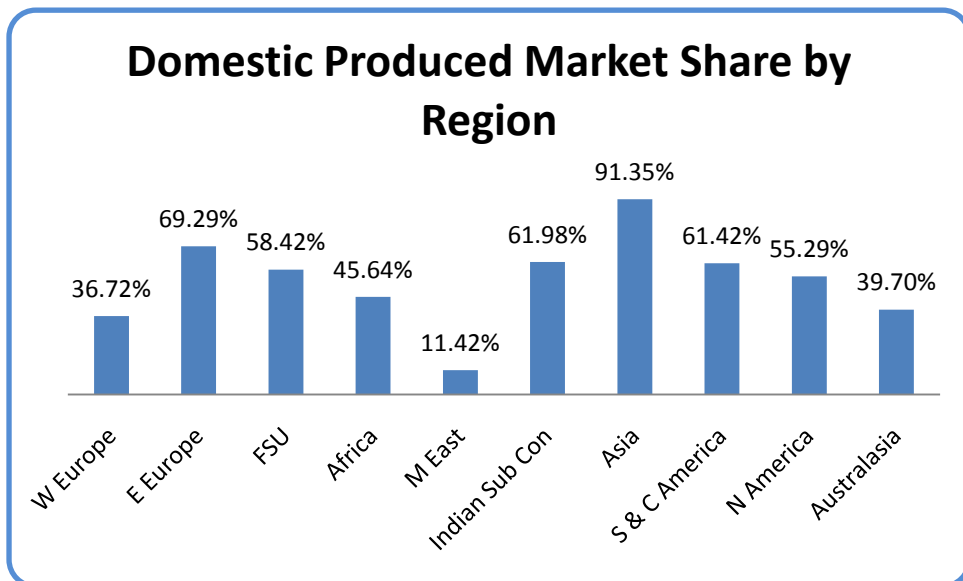


- The largest producer in 2013 was China, with production totalling US\$XXXXX million.
- Reported trade in transformers totalled US\$XXXXX million in 2015. This equates to 29% of global consumption of transformers.
- The largest exporter in 2015 was China (US\$XXXXX million), Mexico (US\$XXXX million), South Korea (US\$XXXX million) followed by Germany (US\$XXXX million), and Turkey (US\$XXXX million).

- The largest importer in 2015 was the USA (US\$XXXX million) followed by Saudi Arabia (US\$XXXX million), Canada (US\$XXXX million), and Germany (US\$XXXX million). The annual trade trends in different types of transformer are shown in the chart below. This shows the year on year growth in trade values for 5 types of transformer.



The share of each regional market that is satisfied by “home produced” products compared with imported ones are shown below.



The table shows that the region with the lowest percentage of home produced products is the Middle East where only 11% are home produced and imports have a 89% share of the market. This can be compared with Asia where over 90% of the market is supplied by home produced products. So the conclusion is that the Middle East is the most open market in the world and the imports are from many areas of the world. 30% are from Western Europe, 20% are from other Middle Eastern countries, 32% are from Asia, 5% from Eastern Europe and the remainder are from other regions.

Compare this with Asia where 91.4% of the market is supplied by home production and of the imports 5% of the remainder are from other Asian countries. On the face of it the Middle East is a far more open market but the 5% of available Asian imports are worth US\$1.5 billion and the 89% of available Middle Eastern imports are worth US\$1.8 billion, not so very different.

Western Europe – market size US\$3.6 billion - is another region with less than half of the market supplied by home produced products; the actual figure is 36.7% which leaves over 63% of the market available for imports. This looks like a very open prospect and indeed open it is if you happen to be a manufacturer in a European country. Out of 63% of non-indigenous market 47% of imports are from other intra-Western European countries and 9% are from neighbouring Eastern European countries. Not much joy for the rest of the world sharing US\$160 million of business and very difficult to break into the market for the rest of the world suppliers.

Remarkably North America only has 55% of products supplied by domestic suppliers and 45% by imported products and of the US\$2.5 billion imports only 8.5% are from intra-region suppliers. This means that US\$2.0 billion of transformer business goes to non-North American suppliers

Region	Intra Regional Share of Imports	Extra Regional Share of Imports	Extra Regional Market Share %
W Europe	74.15%	25.85%	16.36%
E Europe	30.16%	69.84%	21.45%
FSU	53.40%	46.60%	19.38%
Africa	4.86%	95.14%	51.72%
M East	22.65%	77.35%	68.52%
Indian Sub Con	4.90%	95.10%	36.16%
Asia	59.92%	40.08%	3.47%
S & C America	33.68%	66.32%	25.59%
N America	19.15%	80.85%	36.15%
Australasia	14.52%	85.48%	51.55%
Global Total	36.92%	63.08%	20.27%

- World demand in 2016 is estimated to be XXXXX MVA. The largest regional demand is in Asia with a requirement for XXXXX MVA; followed by North America with XXXX MVA and Western Europe with XXXXX MVA.
- In value terms the world market has grown by 1.66% cagr during the period 2011 to 2016. This however includes a period of much lower growth including a fall of 0.23% in 2014 and a small increase of 0.01% in 2015. On a more positive note in 2016 the global market has at last recovered to the the same value that had been attained in 2008 before the global crash that saw the market decline to just over US\$XXX billion in 2011.
- The estimated future growth by value (2016 US dollars) is estimated to be 3.89% from 2016 to 2021 and just over 3.5% during the period 2021 to 2026. This is partially due to the improving global economic situation and also the more direct result of maintenance, repair and replacement programmes once more being implemented. There are also some signs that increased efficiency legislation in the developed world have resulted in a higher price per kVA prevailing in these markets.
- Since the last edition of this report the top of the market shares table has changed very little; XXXXXXXXXXXXXXXX remain the leading manufacturers of Transformers, with a combined market share of just over XX%; but let us not forget that their combined position stood at XX% in the 2008 edition of the report. GE having won the acquisition battle with Siemens to acquire Alstom grid now has consolidated third position at about the X% level.
- These three companies have all expanded their manufacturing capabilities in both India and China and yet it is from these two countries that other manufacturers are growing – commensurate with their home markets – to narrow the gap on the big three. However the global market is still highly concentrated, the top twelve manufacturers account for over XX% of the global market and the top 30 manufacturers have a combined global share of over XX%.
- The dramatic increase in the price of raw materials that occurred in transformer oil, steel and copper which in turn contributed to the equally dramatic cagr figures that have been recorded during the period up to 2008 have now abated. The soft transformer market conditions that have occurred 2011 to 2016 and the more general global fall in oil prices has seen raw material prices falling to pre 2008 levels.

One trend which has become very clear from the analysis of transformer parts trade that is included in this report is that of manufacturers outsourcing the supply of transformer parts and sub assemblies. Part of this is no doubt due to transformer manufacturers rationalising their supply chains but increasingly manufacturers are happy to purchase key parts and to concentrate their skill base on design and assembly expertise. The Henry Ford approach to transformer manufacture where raw materials went into one end of a factory and finished transformers came out of the other end, has long since finished. A tank welding unit and electrostatic paint bay were once considered as much an essential integral part of any transformer plant as a winding shop or testing facility. Finished tanks are now routinely outsourced as are increasingly, windings, complete cores, bushings, tap changers, etc, etc,. Trade in parts grew by a cagr of 10.12% from 2009 to 2013, from US\$8.8 billion to US\$12.9 billion in 2013. This trend continues and it is notable that in 2015 the total trade in transformers and the total trade in parts were numerically equal at US\$10.6 billion.

2.1 Summary Tables

Table 1

The Fastest Growing National Markets for Transformers 2011 - 2016 (US\$ Thousand)

Country	Market Size 2011	Market Size 2016	Cagr 2011-2016

Source: Goulden Reports and United Nations

Note: Only countries with market sizes greater than US\$20 million are included in this section. Smaller markets may display significantly larger percentage changes.

Table 2
**The Fastest Growing National Markets for Transformers
2011 - 2016 (MVA)**

Country	Market Size 2011	Market Size 2016	Cagr % change

Source: Goulde Reports and United Nations

Note: Only countries with market sizes greater than 200 MVA are included in this section. Smaller markets may display significantly larger percentage changes.

Table 3

**The Fastest Declining National Markets for Transformers
2011- 2016 (US\$ Thousand)**

Country	Market Size 2011	Market Size 2016	Cagr 2011 - 2016

Source: Goulden Reports and United Nations

Note: Only countries with market sizes greater than US\$20 million are included in this section. Smaller markets may display significantly larger percentage changes.

Table 4

**The Fastest Declining National Markets for Transformers
2011 - 2016 (MVA)**

Country	Market Size 2011	Market Size 2016	Cagr% Change

Source: Goulden Reports and United Nations

Note: Only countries with market sizes greater than 100 MVA are included in this section. Smaller markets may display significantly larger percentage changes.

Table 5

The Largest National Markets for Transformers 2016 (US\$ Million)

Country	Market Size 2016	% of Total

Source: Goulden Reports and United Nations

3. THE WORLD MARKET

Table 6

The World Market for Transformers, by Region, 2011 - 2016 (US\$ Thousand)

Region	2011	2012	2013	2014	2015	2016
Western Europe						
Eastern Europe						
Former Soviet Union						
North Africa						
West Africa						
Central Africa						
East Africa						
Southern Africa						
Middle East						
Indian Sub Continent						
Asia						
South America						
Central America & Caribbean						
North America						
Oceania						
World						

Source: Goulde Reports and United Nations

Table 7

The World Market for Transformers, by Region, 2011/2016 (% Change)

Region	2012/2011	2013/2012	2014/2013	2015/2014	2016/2015	Cagr
Western Europe						
Eastern Europe						
Former Soviet Union						
North Africa						
West Africa						
Central Africa						
East Africa						
Southern Africa						
Middle East						
Indian Sub Continent						
Asia						
South America						
Central America And Caribbean						
North America						
Oceania						
World						

Source: Goulden Reports and United Nations

Table 8

The World Market for Transformers, by Region, by Function Type 2016 (US\$ Thousand)

Region	Generator	Transmission	Distribution	Of Which - Pole Top	Total
Western Europe					
Eastern Europe					
Former Soviet Union					
North Africa					
West Africa					
Central Africa					
East Africa					
Southern Africa					
Middle East					
Indian Sub Continent					
Asia					
South America					
Central America					
Caribbean					
North America					
Oceania					
World					

Source: Goulden Reports and United Nations

Table 9

The World Market for Transformers, by Region, by Number of Units 2016 (US\$ Thousand)

Region	Generator	Transmission	Distribution	Of Which - Pole Top	Total
Western Europe					
Eastern Europe					
Former Soviet Union					
North Africa					
West Africa					
Central Africa					
East Africa					
Southern Africa					
Middle East					
Indian Sub Continent					
Asia					
South America					
Central America					
Caribbean					
North America					
Oceania					
World					

Source: Goulden Reports and United Nations

Table 10

The World Market for Transformers, by Region, by Function Type 2016 (MVA)

Region	Generation Transformers	Transmission Transformers	Distribution Transformers	Total
Western Europe				
Eastern Europe				
Former Soviet Union				
North Africa				
West Africa				
Central Africa				
East Africa				
Southern Africa				
Middle East				
Indian Sub Continent				
Asia				
South America				
Central America And Caribbean				
North America				
Oceania				
World				

Source: Goulden Reports and United Nations

Table 11

The World Market for Transformers, by Region, by Insulation Type 2016 (US\$ Thousand)

Region	Oil Filled	Safety Fluid	Cast Resin & Dry Types	Total
Western Europe				
Eastern Europe				
Former Soviet Union				
North Africa				
West Africa				
Central Africa				
East Africa				
Southern Africa				
Middle East				
Indian Sub Continent				
Asia				
South America				
Central America And Caribbean				
North America				
Oceania				
World				

Source: Goulden Reports and United Nations

Table 12

The World Market for Transformers, by Region, by Size of Transformer 2016 (US\$ Thousand)

Region	Over 150 MVA	50 to150 MVA	5 to 50 MVA	0.5 to 5 MVA	50 to 500 kVA	5 to 50 kVA	Total
Western Europe							
Eastern Europe							
Former Soviet Union							
North Africa							
West Africa							
Central Africa							
East Africa							
Southern Africa							
Middle East							
Indian Sub Con							
Asia							
South America							
Central America And Caribbean							
North America							
Oceania							
World							

Source: Goulden Reports and United Nations

Table 13

The World Market for Transformers, by Region, by End Use Customer 2016 (US\$ Thousand)

Region	Utility Organisations	Construction & Industry	Rail & Transport	Mining, Marine & Offshore	Total
Western Europe					
Eastern Europe					
Former Soviet Union					
North Africa					
West Africa					
Central Africa					
East Africa					
Southern Africa					
Middle East					
Indian Sub Continent					
Asia					
South America					
Central America And Caribbean					
North America					
Oceania					
World					

Source: Goulden Reports and United Nations

3.1 FORECAST WORLD MARKET 2011-2026

Table 14

The Forecast World Market for Transformers, by Region, 2011 - 2026 (US\$ Thousand)

Region	2011	2016	2021	2026	Cagr 11-16	Cagr 16-21	Cagr 21-26
Western Europe							
Eastern Europe							
Former Soviet Union							
North Africa							
West Africa							
Central Africa							
East Africa							
Southern Africa							
Middle East							
Indian Sub Continent							
Asia							
South America							
Central America And Caribbean							
North America							
Oceania							
World							

Source: Goulden Reports

Table 15

The Forecast World Market for Transformers, by Region, 2011 - 2026 (MVA Demand)

Region	2011	2016	2021	2026	Cagr 11-16	Cagr 16-21	Cagr 21-26
Western Europe							
Eastern Europe							
Former Soviet Union							
North Africa							
West Africa							
Central Africa							
East Africa							
Southern Africa							
Middle East							
Indian Sub Continent							
Asia							
South America							
Central America and Caribbean							
North America							
Oceania							
World							

Source: Goulden Reports

4. THE WORLD'S MAJOR TRANSFORMER MANUFACTURERS

This table has been compiled from published sources and are designed to serve only as a general overview.

Table 16

Leading Manufacturers' Sales of Transformers 2015 (US\$ Thousand)

Company	Country	Transformer Sales 2015	Transformer % Of Sales 2015	Estimated World Market Share %
ABB	Switzerland			
Aichi	Japan			
BHEL	India			
CG Group	India			
Daihen	Japan			
Eaton Cooper	USA			
EFACEC	Portugal			
GE	USA			
Hitachi	Japan			
Howard	USA			
Hyosung	Korea			
Hyundai	Korea			
JHSP	China			
JST	France			
Meidensha	Japan			
Mitsubishi	Japan			
Nissin	Japan			
Schneider	France			
SGB Group	Neth/Germany			
Siemens	Germany			
SPX Waukesha	USA			
Takaoka	Japan			
Tamini	Italy			
TBEA	China			
Toshiba	Japan			
TWBB - Baoding Baoling Transformer Co Ltd	China			
WEG	Brazil			
Wilson	Australia			
XD Group	China			
ZTR	Ukraine			
Sub-Total				
Other				
Total				

Source: Goulden Reports

Table 17

Leading Manufacturers' Sales of Transformers, per Region, 2015 (US\$ Million)

Company	Western Europe	Eastern Europe & Former USSR	Africa	Middle East
ABB				
Aichi				
BHEL				
CG Group				
Daihen				
Eaton Cooper				
EFACEC				
GE				
Hitachi				
Howard				
Hyosung				
Hyundai				
JHSP				
JST				
Meidensha				
Mitsubishi				
Nissin				
Schneider				
SGB Group				
Siemens				
SPX Waukesha				
Takaoka				
Tamini				
TBEA				
Toshiba				
TWBB - Baoding Baoling Transformer Co Ltd				
WEG				
Wilson				
XD Group				
ZTR				
Sub-Total				
Other				
Total				

continued...

Table 18

Leading Manufacturers' Sales of Transformers, per Region, 2015 (US\$ Million) - continued

Company	Asia-Pacific	North America	South & Cen'l America & Caribbean	Total
ABB				
Aichi				
BHEL				
CG Group				
Daihen				
Eaton Cooper				
EFACEC				
GE				
Hitachi				
Howard				
Hyosung				
Hyundai				
JHSP				
JST				
Meidensha				
Mitsubishi				
Nissin				
Schneider				
SGB Group				
Siemens				
SPX Waukesha				
Takaoka				
Tamini				
TBEA				
Toshiba				
TWBB - Baoding Baoling Transformer Co Ltd				
WEG				
Wilson				
XD Group				
ZTR				
Sub-Total				
Other				
Total				

Source: Goulden Reports

4.1 TRANSFORMER INDUSTRY CONTACT DETAILS

4.1.1 ABB

ABB Ltd
Corporate Communications
P.O. Box 8131
CH-8050 Zurich
Switzerland
Tel: +41 (0)43 317 71 11
Fax: +41 (0)43 317 79 58
www.abb.com

ABB Inc Transformers
Affolternstrasse 44
8050 Zurich
Switzerland
Tel: +41 0 43 317 7111`
Fax: +41 0 43 317 4520

--00000000--

5. REGIONAL MARKETS

5.1 WESTERN EUROPE

Table 19

Western Europe: The Market for Transformers, by Country, 2011 - 2016 (US\$ Thousand)

Country	2011	2012	2013	2014	2015	2016
Austria						
Belgium						
Cyprus						
Denmark						
Finland						
France						
Germany						
Greece						
Iceland						
Ireland						
Italy						
Luxembourg						
Malta						
Netherlands						
Norway						
Portugal						
Spain						
Sweden						
Switzerland						
United Kingdom						
Total						

Source: Goulden Reports and United Nations

Table 20

Western Europe: The Market for Transformers, by Country, 2011 - 2016 (% Change)

Country	2012/2011	2012/2012	2014/2012	2015/2014	2016/2015	Cagr
Austria						
Belgium						
Cyprus						
Denmark						
Finland						
France						
Germany						
Greece						
Iceland						
Ireland						
Italy						
Luxembourg						
Malta						
Netherlands						
Norway						
Portugal						
Spain						
Sweden						
Switzerland						
United Kingdom						
Total						

Source: Goulde Reports and United Nations

Table 21

Western Europe: The Market for Transformers, by Country, by Type 2016 (US\$ Thousand)

Country	Generation Transformer	Transmission Transformer	Distribution Transformer	Of Which Pole Top	Total
Austria					
Belgium					
Cyprus					
Denmark					
Finland					
France					
Germany					
Greece					
Iceland					
Ireland					
Italy					
Luxembourg					
Malta					
Netherlands					
Norway					
Portugal					
Spain					
Sweden					
Switzerland					
United Kingdom					
Total					

Source: Goulden Reports and United Nations

Table 22

Western Europe: The Market for Transformers, by Country, 2016 (MVA)

Country	Generation Transformers	Transmission Transformers	Distribution Transformers	Total
Austria				
Belgium				
Cyprus				
Denmark				
Finland				
France				
Germany				
Greece				
Iceland				
Ireland				
Italy				
Luxembourg				
Malta				
Netherlands				
Norway				
Portugal				
Spain				
Sweden				
Switzerland				
United Kingdom				
Total				

Source: Goulden Reports and United Nations

Table 23

Western Europe: The Market for Transformers, by Country, by Insulation 2016 (US\$ Thousand)

Country	Oil Filled	Safety Fluid	Cast Resin & Dry Types	Total
Austria				
Belgium				
Cyprus				
Denmark				
Finland				
France				
Germany				
Greece				
Iceland				
Ireland				
Italy				
Luxembourg				
Malta				
Netherlands				
Norway				
Portugal				
Spain				
Sweden				
Switzerland				
United Kingdom				
Total				

Source: Goulden Reports and United Nations

Table 24

Western Europe: The Market for Transformers, by Country, by Size of Transformer 2016 (US\$ Million)

Country	Over 150 MVA	50 to150 MVA	5 to 50 MVA	0.5 to 5 MVA	50 to 500 kVA	5 to 50 kVA
Austria						
Belgium						
Cyprus						
Denmark						
Finland						
France						
Germany						
Greece						
Iceland						
Ireland						
Italy						
Luxembourg						
Malta						
Netherlands						
Norway						
Portugal						
Spain						
Sweden						
Switzerland						
United Kingdom						
Total	922,111.8	766,733.6	1,010,357.3	875,979.0	486,816.2	574,634.8

Source: Goulde Reports and United Nations

Table 25

Western Europe: The Market for Transformers, by Country, by End Use Customer 2016 (US\$ Thousand)

Country	Utility Organisations	Construction & Industry	Rail & Transport	Mining, Marine & Offshore	Total
Austria					
Belgium					
Cyprus					
Denmark					
Finland					
France					
Germany					
Greece					
Iceland					
Ireland					
Italy					
Luxembourg					
Malta					
Netherlands					
Norway					
Portugal					
Spain					
Sweden					
Switzerland					
United Kingdom					
Total					

Source: Goulden Reports and United Nations

Table 26

Western Europe: The Market for Transformers, by Country, 2011 to 2026 (US\$ Thousand)

Country	2011	2016	2021	2026	Cagr 10-15	Cagr 15-20	Cagr 20-25
Austria							
Belgium							
Cyprus							
Denmark							
Finland							
France							
Germany							
Greece							
Iceland							
Ireland							
Italy							
Luxembourg							
Malta							
Netherlands							
Norway							
Portugal							
Spain							
Sweden							
Switzerland							
United Kingdom							
Total							

Source: Goulden Reports and United Nations

Table 27

Western Europe: The Market for Transformers, by Country, 2011 to 2026 (MVA Demand)

Country	2011	2016	2021	2026	Cagr 11-16	Cagr 16-21	Cagr 21-26
Austria							
Belgium							
Cyprus							
Denmark							
Finland							
France							
Germany							
Greece							
Iceland							
Ireland							
Italy							
Luxembourg							
Malta							
Netherlands							
Norway							
Portugal							
Spain							
Sweden							
Switzerland							
United Kingdom							
Total							

Source: Goulden Reports and United Nations

7. TRADE ANALYSIS

7.1 TOP 25 EXPORTERS

7.2 TOP 25 IMPORTERS

7.3 EXPORT VALUES

7.4 EXPORT PERCENTAGES

7.5 IMPORT VALUES

8. TRADE IN TRANSFORMER PARTS

9. APPENDICES

9.1 COUNTRY PROFILES BY REGION

9.1.1 Western Europe

Table 29

W Europe – Country by Country Profiles

Country	Country Area (Sq.Km)	Population (Thousands) 2015	GDP (US\$ Millions) 2015	GDP per Capita (US\$) 2015	Load (GWh) 2014	Average Load (kWh/Capita) 2014	Installed Capacity MW 2014	Transmission cctkm 2015	Distribution cctkm 2015	Low Voltage cctkm 2015
Austria	83,859	8,621	374,261	43,414	64,872	7,525	24,024	13,913	76,178	153,649
Belgium	30,519	11,209	454,288	40,529	81,330	7,256	20,919	7,612	87,327	113,366
Cyprus	9,251	847	19,330	22,822	3,929	4,639	1,699	1,066	3,480	10,260
Denmark	43,094	5,660	295,091	52,139	32,260	5,700	13,655	7,109	74,268	108,859
Finland	338,145	5,472	232,077	42,414	80,874	14,780	16,245	17,225	86,424	220,608
France	551,500	64,275	2,420,163	37,653	430,999	6,706	129,069	75,131	760,709	678,460
Germany	356,733	82,176	3,365,293	40,952	533,020	6,486	198,416	147,943	589,128	1,070,578
Greece	131,957	10,858	195,320	17,989	52,628	4,847	18,895	11,132	102,394	101,348
Iceland	103,000	333	16,718	50,277	17,497	52,543	2,766	1,967	8,640	6,540
Ireland	70,284	4,635	283,716	61,206	24,736	5,337	9,078	7,641	168,668	67,358

Source: Goulden Reports

W Europe – Country by Country Profiles - continued

Country	Country Area (Sq.Km)	Population (Thousands) 2015	GDP (US\$ Millions) 2015	GDP per Capita (US\$) 2015	Load (GWh) 2014	Average Load (kWh/Capita) 2014	Installed Capacity MW 2014	Transmission cctkm 2015	Distribution cctkm 2015	Low Voltage cctkm 2015
Italy	301,268	60,796	1,815,759	29,867	291,268	4,791	121,762	64,918	451,719	875,763
Luxembourg	2,586	563	57,825	102,717	6,157	10,936	2,022	98	2,816	5,006
Malta	316	429	9,752	22,713	2,012	4,690	629	342	2,401	2,607
Netherlands	40,844	16,937	750,696	44,323	107,704	6,359	31,758	11,110	116,696	148,161
Norway	323,877	5,205	388,315	74,598	116,302	22,344	33,664	21,014	104,729	88,226
Portugal	91,982	10,411	199,032	19,117	46,042	4,422	19,125	6,732	112,897	138,906
Spain	505,992	46,423	1,199,715	25,843	234,498	5,051	106,192	55,881	210,849	394,131
Sweden	449,964	9,851	493,042	50,050	127,201	12,912	38,699	35,560	173,712	261,367
Switzerland	41,284	8,238	664,005	80,603	57,721	7,007	19,291	9,978	140,095	130,081
United Kingdom	244,100	65,110	2,858,482	43,902	309,406	4,752	96,445	40,918	440,299	407,910
W Europe	3,720,555	418,049	16,092,880	38,495	2,620,455	6,268	904,353	537,290	3,713,430	4,983,182

Source: Goulden Reports

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9.2 EXCHANGE RATES

Table 30

Exchange Rates for Major Currencies against US Dollar 2010-2015

Currency	2010*	2011*	2012*	2013*	2014*	2015*
Argentinean Peso	3.17	3.72	3.90	4.12	4.53	5.46
Australian Dollar	1.19	1.28	1.09	0.97	0.97	1.04
Brazilian Real	1.84	1.99	1.75	1.67	1.95	2.16
British Pound	0.55	0.64	0.65	0.62	0.63	0.64
Canadian Dollar	1.10	1.14	1.03	0.99	1.00	1.03
Chinese Yuan	6.96	6.82	6.76	6.46	6.30	6.19
Czech Koruna	17.10	19.00	19.07	17.66	19.54	19.54
Danish Kroner	5.10	5.35	5.62	5.36	5.79	5.62
Egyptian Pound	5.49	5.51	5.59	5.92	6.03	6.84
Euro	0.68	0.72	0.75	0.72	0.78	0.75
Hong Kong Dollar	7.79	7.75	7.77	7.78	7.76	7.76
Indian Rupee	43.82	48.42	45.72	46.84	53.45	58.49
Indonesian Rupiah	9,684.9	10,387.2	9,056.7	8,724.7	9,328.0	10,397.6
Israeli Shekel	3.59	3.92	3.73	3.57	3.85	3.61
Japanese Yen	103.47	93.58	87.78	79.72	79.78	97.71
Malaysian Ringgit	3.34	3.51	3.21	3.05	3.08	3.14
Mexican Peso	11.17	13.48	12.63	12.42	13.15	12.75
New Zealand Dollar	1.43	1.60	1.39	1.26	1.23	1.22
Nigerian Nair	120.19	148.30	149.30	154.24	157.54	157.75
Norwegian Kroner	5.65	6.28	6.04	5.60	5.82	5.88
Polish Zloty	2.41	3.11	3.01	2.96	3.25	3.16
Russian Rouble	24.87	31.63	30.31	29.33	30.98	31.84
Saudi Riyal	3.76	3.75	3.74	3.75	3.75	3.75
South African Rand	8.28	8.40	7.30	7.23	8.20	9.65
South Korean Won	1,102.8	1,272.7	1,153.3	1,105.8	1,123.0	1,091.1
Swedish Kroner	6.59	7.64	7.20	6.49	6.77	6.51
Swiss Franc	1.08	1.09	1.04	0.89	0.94	0.93
Taiwanese Dollar	31.56	33.01	31.52	29.26	29.49	29.65
Thai Baht	33.27	34.08	31.51	30.30	30.91	30.64
Turkish Lira	1.31	1.55	1.51	1.68	1.80	1.91

*Average rates January to December
Source: OANDA and Goulden Reports

9.3 ESTIMATED PRODUCTION BY COMPANY BY COUNTRY

Table 31

Estimated Production by Company by Country Millions US Dollar 2015

Country	Company	Power Transformer	Distribution Transformers	Special Transformers	2015 Production US\$ Million
WESTERN EUROPE					
Austria					
Belgium					
Denmark					
Finland					

