

Europe, North America and China: The future and is Brexit at all relevant





There are very few similarities between transformer markets in Europe, North America and China; however, together these account for 64 % of the global transformer market

Introduction

The European Union (EU) now comprises 28 member states covering an area of 4.4 million square kilometres, containing 510 million people with a combined GDP of €14,700 billion. As an economic bloc it is second only to the USA and is almost half as big again as China. Total EU trade with the rest of the world was just over €3,500 billion

in 2015 – almost 25 % of the combined GDP; nearly 18 % of that trade was with the USA and 15 % was with China. Overall, the EU maintains an even trade balance with imports and exports both in the order of €1.7 trillion; however, individual countries vary from this. The EU imports twice the value of goods as it exports to both China and Russia.

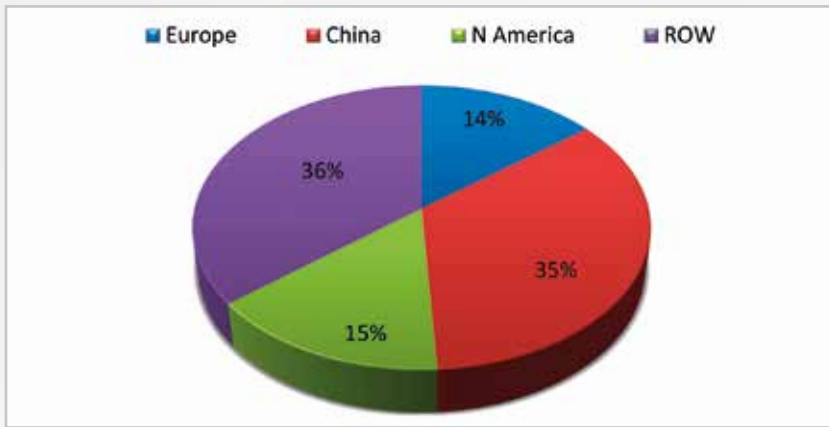


Figure 1. Global transformer market by region 2016

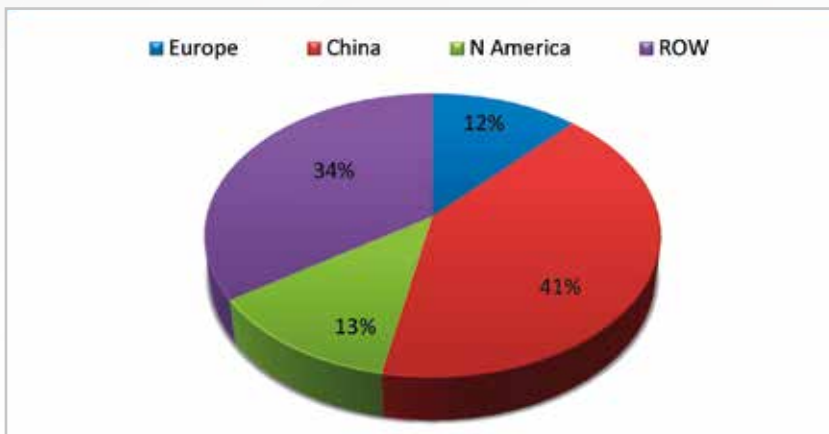


Figure 2. Global Transformer market by region 2026

China is still the most closed market, where local production holds over 99 % market share

As can be seen from Table 1, there are very few similarities between any of the three regions (Europe, North America and China); however, together these account for 64 % of the global market for transformers. This is illustrated in Figure 1.

What is interesting to note, and will be explored in more detail in this article, is that

these three blocs operate as almost stand-alone self-contained markets.

In a recent analysis of the global market trends through to 2026, we conclude that the global market will grow at a compound annual growth rate (CAGR) of 3.7 % to reach \$55.2 billion by that time¹,

¹ \$ stands for US dollar

Table 1. Comparison – basic statistics 2015

	Europe	North America	China
Population in millions	510.1	486.2	1,401.6
Area in km ²	4,475,757	21,775,720	9,596,960
Population density per km ²	113.96	22.33	146.04
GDP in € billion	14,708.2	18,627.6	9,984.4
GDP per capita in €	28,836.4	38,309.9	7,123.6

Various published sources

but growth rates will vary from country to country and region to region. There is little doubt that whilst the Chinese market is unlikely to grow at the rates experienced in the first decade of the century, it is not unreasonable to expect, given the continued need for electricity, that load growth in excess of 5 % and hence transformer capacity increases in that order. Growth in other regions will vary, but as the effects of 2008 fade, these forecasts are not considered excessive.

By 2026 the market by region will be as shown in Figure 2.

China

The Chinese market is almost entirely satisfied by home produced products. The share taken by imports is less than 1 % of the total market; this means that the total value of imported transformers is \$115 million. By comparison, exports of transformers from China are currently at \$1.4 billion, meaning that over 10 % of production is exported. It is safe to say that the market is self-sufficient and almost self-contained. The further ramification of these statistics is that Chinese production is sufficient to fulfil domestic demand and has an additional 10 % margin that allows for exports to the volume recorded.

If we compare this situation with the market fifteen years ago, imported products had a 5 % share of the market (actually peaking at nearly 9 % in 2003) and exports were running at about 2 % of production. At that time China was importing twice the value of transformers that it was exporting, and over that fifteen-year period the trend was inexorable. During the 2008 global financial shock, Chinese imports did decrease slightly from over \$100 million annually to \$88 million, but exports actually increased from 5.5 % of production to nearly 8 % of production – to \$850 million.

A longer term analysis of China's trade pattern shows that the value of exports increased in current US dollar terms by a factor of 24 times during the fifteen-year period from 2000 to 2015. For comparison purposes, the global market increased by a factor of three times over the same period.

Not only was this increase dramatic purely in revenue terms, but it is also interesting to plot the geographical spread of those exports and the resultant market

share of the combined Chinese manufacturing base. Table 2 shows the breakdown of Chinese exports by destination over the period 2000 to 2015.

Clearly in 2000 – when exports were only just over \$57 million, the major destination of exported goods was to the neighbouring countries although some orders were being won in the Middle East and in the rest of the world. By 2015 exports had grown not only in value but also in geographical spread. The dependency on local markets had decreased, Africa became a major export trading destination for Chinese manufacturers and some business was also being won in Europe and North America. When this is re-expressed into market share by region the pattern shown in Table 3 emerges.

There are two salient points from Table 3. Firstly, the fact that Chinese exports now account for a 3.74 % share of global transformer markets – not including the home market; and secondly, the near 20 % share of the total African continental market shared by Chinese exporters.

If this pattern continues over the next 10 years – and assuming that the Chinese manufacturers expand to meet the market demand – when this is applied to the global market as shown in Figure 2, their combined position will look even stronger than it does now. Their share of the European market and the North American market is low at under 1 % and 2 %, respectively, but so was the share in Africa 15 years ago.

North America

The North American transformer market was worth \$5.8 billion in 2015, Table 4.

The import market share of the total market is 45 %; nearly 17 % of production is

Table 2. Analysis of Chinese transformer exports by region 2000 to 2015

Region	2000	2005	2015
Africa	0.47 %	17.26 %	18.68 %
Asia	54.58 %	32.87 %	34.02 %
Middle East	25.46 %	4.52 %	10.75 %
Europe	0.82 %	2.40 %	2.16 %
North America	1.04 %	1.29 %	6.67 %
ROW	17.63 %	41.67 %	27.71 %
Total	100 %	100 %	100 %

Source: UN statistics and Goulden Analysis

Table 3. Market share of Chinese transformer exports by region 2000 to 2015

Market share by region of Chinese transformer exports 2000 to 2015			
Region	2000	2005	2015
Africa	0.08 %	3.69 %	19.67 %
Asia	01.31 %	1.24 %	7.02 %
Middle East	3.33 %	0.61 %	3.74 %
Europe	0.02 %	0.08 %	0.66 %
North America	0.02 %	0.03 %	1.59 %
ROW	0.25 %	0.68 %	2.98 %
Total	0.44 %	0.59 %	3.74 %

Source: UN statistics and Goulden Analysis

It is expected that in North America there will be regional growth at a CAGR of 1.65 % between 2016 and 2026

exported and home market production takes a 55 % market share. All very different to the Chinese situation described earlier. However, this overview disguises the effects of the large volumes of products that are imported and exported within the region. 95 % of exports from Canada are to the USA; 92 % of exports from Mexico are to the USA, 41 % of exports from the USA are

to Canada and 10 % are to Mexico. Overall, 83 % of exports are intra-region and nearly 52 % of imports are from within the region.

If Table 4 is reconstructed to take this into account, the effects are as shown in Table 5.

The resulting profile of the region is that regional production has an 81 % share; im-

Table 4. North American transformer markets by country 2015

North American transformer market 2015 - \$'000's				
	Production	Imports	Exports	Market
Canada	683,330.8	381,433.1	299,430.1	765,333.8
Mexico	1,064,739.8	99,604.5	957,122.8	207,221.5
USA	3,196,061.1	2,112,128.6	533,257.8	4,774,931.9
North America	4,944,131.7	2,593,166.2	1,789,810.7	5,747,487.2

Source: UN statistics and Goulden Analysis

Table 5. The Combined North American transformer markets 2015

North American transformer market 2015 - \$'000's				
	Production	Extra-regional imports	Extra-regional exports	Market
Canada	683,330.8	120,535.8	14,572	789,294.6
Mexico	1,064,739.8	43,976.8	37,900.1	1,070,816.4
USA	3,196,061.1	951,622.7	260,307.7	3,887,376.2
Total	4,944,131.7	1,116,135.3	312,779.8	5,747,487.2

Source: UN statistics and Goulden Analysis

Table 6. European transformer markets 2015

European Union transformer market 2015 - \$'000's				
	Production	Imports	Exports	Market
28 Country Total	6,901,259.0	2,195,512.3	3,922,195.5	5,174,575.8

Source: UN statistics and Goulden Analysis

Table 7. European transformer markets 2015

European Union transformer market 2013 - 2015 averaged - \$'000's				
	Production	Extra imports	Extra exports	Market
28 Country Bloc	7,036,911.5	459,660.9	2,333,850.7	5,162,721.7

Source: UN statistics and Goulden Analysis

ports fall to a 19.5 % share of the market and 8 % share of production is exported from the region. These metrics are more closely aligned to those of China – analysed earlier above. Import market share in North America is higher; however, this is probably indicative of the fact that North America is not self-sufficient for every type of transformer; there is still limited capacity for some types of large power transformers. This is evidenced by examining the source of imports from outside of the region, which shows the top three suppliers as South Korea – \$201 million, Netherlands \$117 million and Austria \$107 million. It is expected that there will be regional growth at a CAGR of 1.65 % between 2016 and 2026, resulting in a total market of \$6.9 billion; this should be comfortably absorbed by local production – even allowing for any push to bring in a “Buy American” policy during the next four years of the Trump presidency.

Europe

In this instance, “Europe” is taken to mean the 28 countries that comprise the European Union (EU). This omits seven European countries; however, these are broadly neutral in terms of imports and exports and together only total 7 % of the geographical Europe market. Of the seven countries that are in Europe but are not in the EU, only two are of any significance in terms of transformer markets – Norway and Switzerland.

The EU market for transformers was worth \$5.2 billion in 2015 and by comparison with China and North America is sustained by high levels of imports and exports. Indigenous production accounts for 58 % of the market, with import levels at 42 %; nearly 57 % of production is exported.

An analysis of the trade patterns similar to that made for China and North America provides a different perspective on the market. Because the analysis encompasses imports and exports from 28 member states, in this analysis three years trade statistics have been averaged in order to eliminate specific highs and lows and to smooth the data.

It can be seen from Table 7 that the percentage of imports and exports changes dramatically once inter-trade between the states has been eliminated. Production from within the EU accounts for 91 % of the market. Imports from countries outside of the EU falls to under 9 % of the market, and exports to countries outside of the EU are equal to 33 % of the total production.

The source and importance of imports into the EU that are not from member states are: Other European – 41 %, Asia – 28 %, Middle East and Africa – 20 %, North America – 8 %, Others – 3 %. The principal suppliers are Switzerland – \$168 million, Turkey – \$78 million, China – \$40 million, South Korea and India – \$36 million and Norway – \$15 million.

The destinations of exports to non-EU states are: Other European – 9 %, Asia – 7 %, Middle East and Africa – 30 %, North

Table 8. Market measures for major geographic regions 2015

Market measures for major geographic regions 2015			
Metric	EU	North America	China
Adjusted production % market share	91.10 %	80.58 %	99.08 %
Adjusted import market share	8.90 %	19.42 %	0.92 %
Exports as % of production	33.17 %	8.14 %	10.05 %

Source: Goulden Analysis

Table 9. The UK transformer market in an EU context 2015

The current status of the UK within the EU 2015 - \$'000's				
	Production	Imports	Exports	Market
United Kingdom - value	433,049.3	343,441.5	60,415.0	716,075.8
UK percentage of the EU	6.27 %	15.64 %	1.54 %	13.84 %
EU Total	6,901,259.0	2,195,512.3	3,922,195.5	5,174,575.8

Source: Goulден Analysis

European, North American and Chinese markets operate as almost stand-alone self-contained markets

America – 26 %, and Others -28 %. The principal destination markets are: USA – \$532 million, Saudi Arabia – \$180 million, UAE – \$117 million, Switzerland – \$91 million, Iraq – \$85 million, Norway – \$70 million, Canada – \$52 million and China, Russia and India – \$50 million each.

The projected growth rate for the EU transformer market is a CAGR of 1.7 % through to 2026, reaching \$6.6 billion by that time. The EU manufacturing base can easily accommodate growth at these rates from within existing capacity without increasing imports.

Summary

When the three major regions are considered as cohesive markets, the true picture of the market structure becomes clear, Table 8.

Still the most closed market is China where local production accounts for over 99 % of the market. When viewed as a homogenous market, the EU is only marginally more open to international suppliers, with imported transformers accounting for less than 9 % of the market. The region with most successful international competition is North America, where imports have a market share of just under 20 %. Whether this is because the market is truly more open or whether this is the result of the particular product gaps that have existed is not entirely clear. This would require a more detailed analysis than we have produced here; these lacunas are in the process of being plugged so a re-examination in two to three years should indicate the effects of the changes that have been made to the North American production capabilities.

Reverting to exports from these regions, clearly the EU has a manufacturing base that is more successful in export markets, with 33 % of production being exported to countries outside of the region. The Chinese export success has been commented on earlier, but it is worth reiterating that a 10 % export ratio equates to total transformer exports of \$1.4 billion, still far less than the EU total of \$2.4 billion – it remains to be seen what the actual figures will be in 2026.

Brexit

What difference, if any, will it make if the EU post 2019 contains, or does not contain the UK? Let us examine the composition of the UK transformer market, Table 9.

Without the UK, the total EU market will be reduced by 14 % from \$5.2 billion to \$4.5 billion, and the production base will be reduced by 6 % or \$430 million, to \$6.5 billion. Neither of these two reductions seem to be earth shattering; so the next step is to examine the trade situation.

The UK exports \$60.4 million – a value equal to 1.54 % of total EU exports. Of that total, 37 % or \$21 million goes to the EU and 64 % goes to the rest of the world (principally areas where for historic rea-

sons the UK has a strong influence). The \$21 million of the UK exports to the EU is equal to 1 % of total EU imports.

The UK imports \$343 million – a value equal to 15.6 % of total EU imports. Of that total, 74 % or \$224 million are from the EU. This equates to 6 % of EU exports.

So, the doomsday scenario is as follows. From a UK perspective, there will be a need to replace \$21 million of export market – approximately 5 % of production – and a need to find an alternative source for \$224 million of imports. From an EU perspective, the available market will reduce by 14 %, they will have to find an alternative source for 1 % of their imports and 6 % of their exports. If the UK exits with no mutually acceptable trade deal, then UK exports to the EU may face a tariff barrier of up to 10 % – however, this is only \$2.1 million – and the UK may be free to purchase internationally at advantageous prices with no tariff barriers.

Fortunately, in the final analysis it will be engineers, not accountants and not politicians that will be making the decisions as to what is purchased from where, and they are an eminently practical and sensible breed. If and when Brexit happens, the world will not cease to turn, the sun will still rise in the East each day, the lights will stay on and the effects will be as dramatic as those resulting from the long feared millennium computer bugs that were foretold to bring the world to an end on 1st January 2001.

Author



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