



WECC Global PCB Production Report For 2015

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A product of the partnership among these WECC associations
on behalf of their members in the electronic circuits industry worldwide



Association Connecting Electronics Industries



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ABOUT THE WECC GLOBAL PCB STATISTICAL PROGRAM

Development Team

The World Electronic Circuits Council (WECC) is a strategic partnership formed in 1998 by the major industry associations serving member companies in the global electronic circuits industry. Its purpose is to increase the global influence and effectiveness of its member organizations for the benefit and improvement of the industry. The member associations cooperate on standards, market research, marketing, resource development, environmental issues, world trade, and economic and political affairs.

The member organizations of WECC formed a working group in 2005 to pool their statistical resources and produce a global statistical report on printed circuit board (PCB) production for the benefit of their members. This group became the WECC Statistics and Market Committee.

The following associations and their representatives contributed to this report and are active members of the WECC Statistics and Market Committee:

- CPCA – Kevin Yan, Vice President, China Printed Circuit Association, kevin_yyh@cPCA.org.cn
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- HKPCA – Manda Wong, Administration Officer, Hong Kong Printed Circuit Association, mandawong@hkPCA.org
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Please contact a representative at your association with any questions about the report or suggestions for improving this program.

Availability

The *WECC Global PCB Production Reports* are available only from these participating associations to their members. The reports are not available for sale.

Methodology

The *WECC Global PCB Production Report* includes estimates of PCB production by country or region based on the data collected by the WECC organizations from their member PCB companies. The estimates in these reports may differ from estimates published by other organizations due to differences in methodology and sources. No source of data on worldwide PCB production can claim to be 100 percent accurate. There are only estimates based on data collected from representative samples of the companies in the industry.

WECC has published its *Global PCB Production Reports* since 2005. The reports are published annually. The data are collected by the associations and reported here in local currencies so that real growth rates can be shown. For the sake of comparability, all of the estimates are also reported in U.S. dollars. These nominal values are not adjusted for inflation or for fluctuations in exchange rates. Real growth rates are used in most cases to factor out the effect of currency fluctuations. A table of average exchange rates for the period is included as an appendix to this report.

Confidentiality Policy

It is the WECC organizations' policy never to share any company-specific information with other associations (including the other WECC members) or with their member companies. Only aggregate data are shared for the compilation of this report. In this way, the WECC associations maintain complete confidentiality for all of their member companies.

Definitions

PCB production attributed to a country or region reflects the value of the PCBs produced there, regardless of where the companies are headquartered, and should not be confused with the PCB market (i.e., where PCBs are sold).

Many flexible circuit producers also offer assembly and other value-added services. Because these producers sell assembled or partially assembled boards, it can be difficult for them to separate the value of the bare circuits from total sales. Although the contributors to this report have endeavored to subtract estimated assembly and component value from their flexible circuit data, the flexible circuit production estimates in this report might include some assembly revenue.

2015 PCB PRODUCTION VALUE

The member associations collected production data from companies producing PCBs in their countries or regions. Every effort was made to eliminate duplication between the associations' survey samples. The countries and regions included in this analysis produce virtually all of the world's PCBs, based on value.

Estimates of 2015 PCB Production in the World's Major PCB-Producing Areas

In millions of local currencies

Country or Region Where PCBs Were Produced	Rigid 1-2 Sided	Standard Multilayer	HDI/ Microvia/ Build-Up	IC Substrate	Flexible Circuits	Rigid Flex	Others	Total Aggregate Data	Currency
China	12,478	80,391	32,290	4,565	35,322	1,863	0	166,909	CNY
Hong Kong	34	318	62	623	0	0	0	1,038	HKD
India	13,298	6,161	110	0	350	80	600	20,599	INR
Japan	99,088	135,457	58,386	227,117	90,293	8,872	29,715	648,928	JPY
South Korea	690,000	2,240,000	1,350,000	2,430,000	1,254,000	361,000	0	8,325,000	KRW
Taiwan	18,940	59,068	46,415	71,274	48,589	4,984	0	249,270	TWD
Other Asia	59,569	82,887	51,676	63,976	282,141	4,020	2,283	546,552	JPY
Western Europe	471	808	207	0	170	144	67	1,867	EUR
Eastern Europe	70	160	0	0	0	0	0	230	EUR
North America	388	1,566	185	5	249	118	335	2,846	USD
Central & South America	41	21	0	0	1	0	0	63	BRL
Israel, Middle East & Africa	52	52	13	0	0	25	0	142	ILS

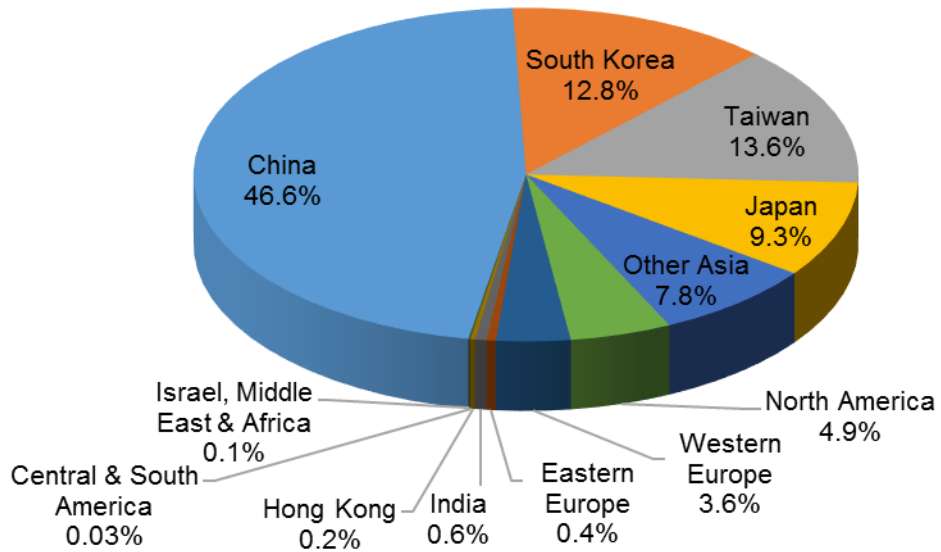
In millions of U.S. dollars

Country or Region Where PCBs Were Produced	Rigid 1-2 Sided	Standard Multilayer	HDI/ Microvia/ Build-Up	IC Substrate	Flexible Circuits	Rigid Flex	Others	Total Aggregate Data in US\$
China	2,007	12,930	5,193	734	5,681	300	0	26,845
Hong Kong	4	41	8	80	0	0	0	134
India	208	96	2	0	5	1	9	322
Japan	819	1,119	482	1,877	746	73	246	5,362
South Korea	611	1,982	1,194	2,150	1,110	319	0	7,366
Taiwan	597	1,862	1,463	2,246	1,531	157	0	7,856
Other Asia	492	685	427	529	2,331	33	19	4,516
Western Europe	523	897	230	0	189	160	74	2,072
Eastern Europe	78	178	0	0	0	0	0	255
North America	388	1,566	185	5	249	118	335	2,846
Central & South America	12	6	0	0	0	0	0	19
Israel, Middle East & Africa	13	13	3	0	0	6	0	37
Global Total	5,751	21,374	9,188	7,621	11,842	1,168	683	57,628

Notes:

1. Flexible circuit and rigid flex estimates may include some assembly revenue.
2. The "Others" product category includes metal clad and LED boards in India, ceramic and metal core boards in Japan and Other Asia, and high-performance boards in North America.
3. The revenue estimates in this report are nominal and have not been adjusted for inflation.
4. Other Asia includes Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. Other Asia data were provided by JPCA and were reported in Japanese yen. Japanese companies account for more than 70 percent of PCB production in Other Asia.
5. Central & South America data, provided by IPC, are reported in Brazilian real, as Brazil was the primary location of PCB production in this region.
6. Please see the appendix on exchange rates to determine the impact on amounts in specific currencies.
7. Totals may vary slightly from the sums of the numbers in the table due to rounding.

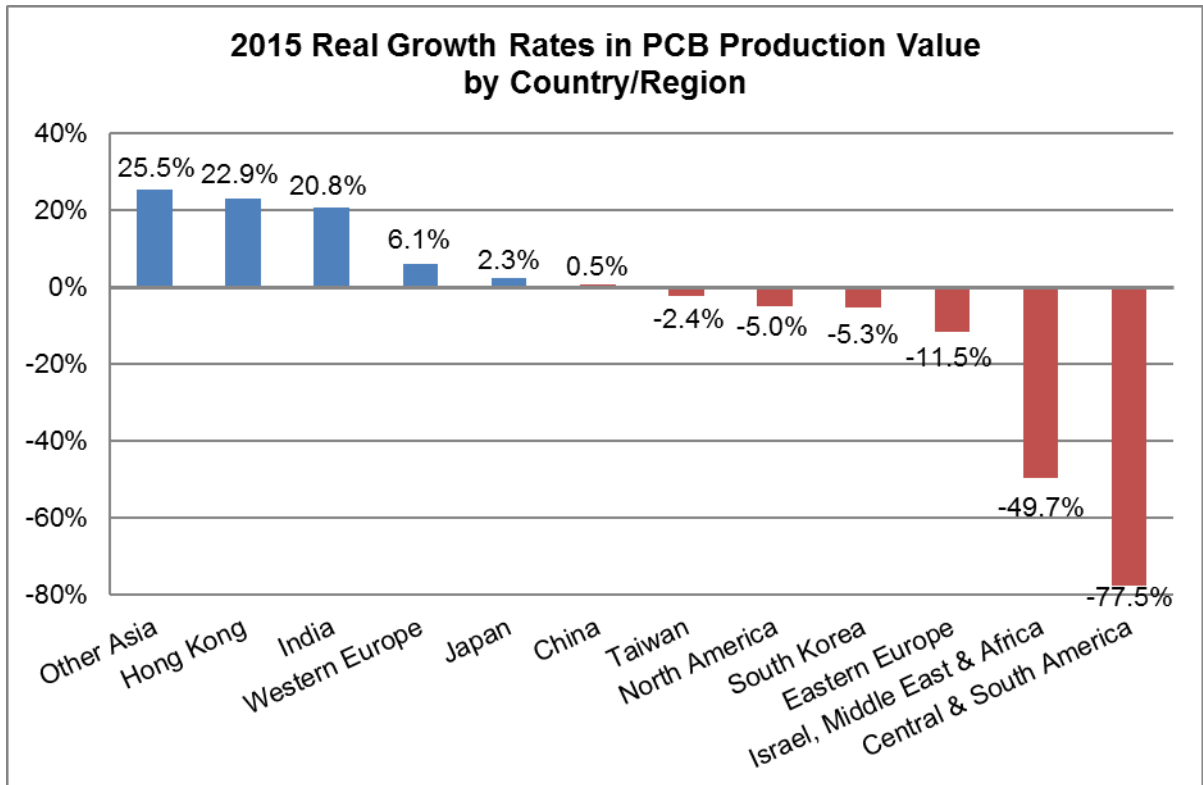
PCB Production by Major Producing Countries and Regions in 2015 Reported by WECC-Member Associations



INDUSTRY GROWTH

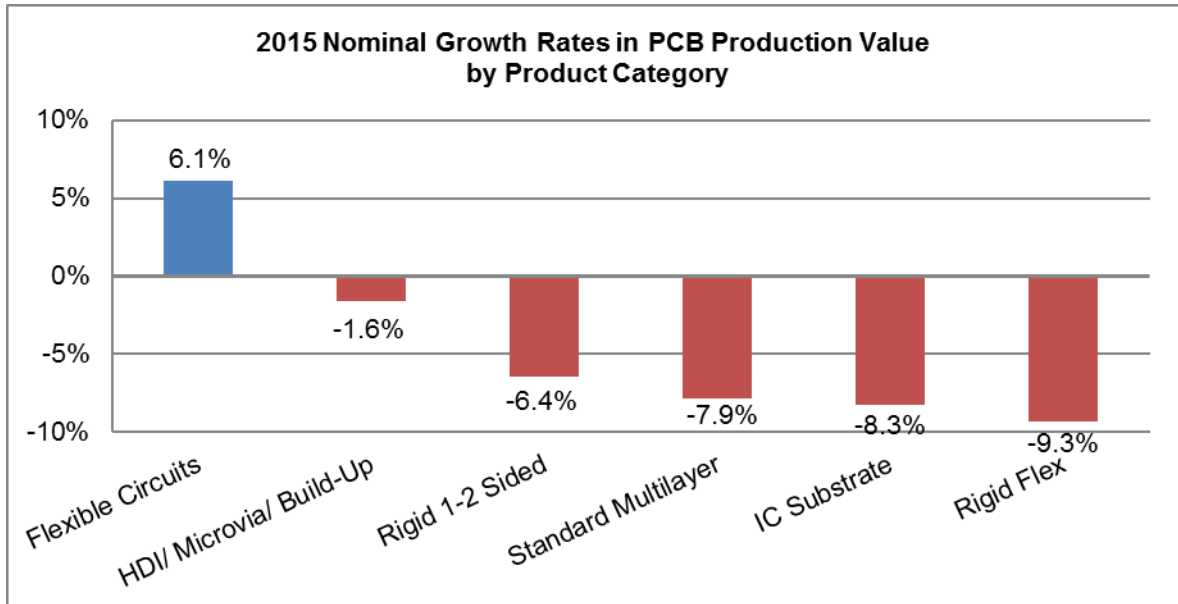
Real Growth by Country/Region

Based on a comparison of the 2014 and 2015 estimates from the WECC PCB production surveys in local currencies, worldwide PCB production increased 1.0 percent in 2015. Other Asia posted the highest growth in PCB production in real terms. It should be noted that the adoption of new sources or methods of data collection by the contributing associations may affect these growth rates.



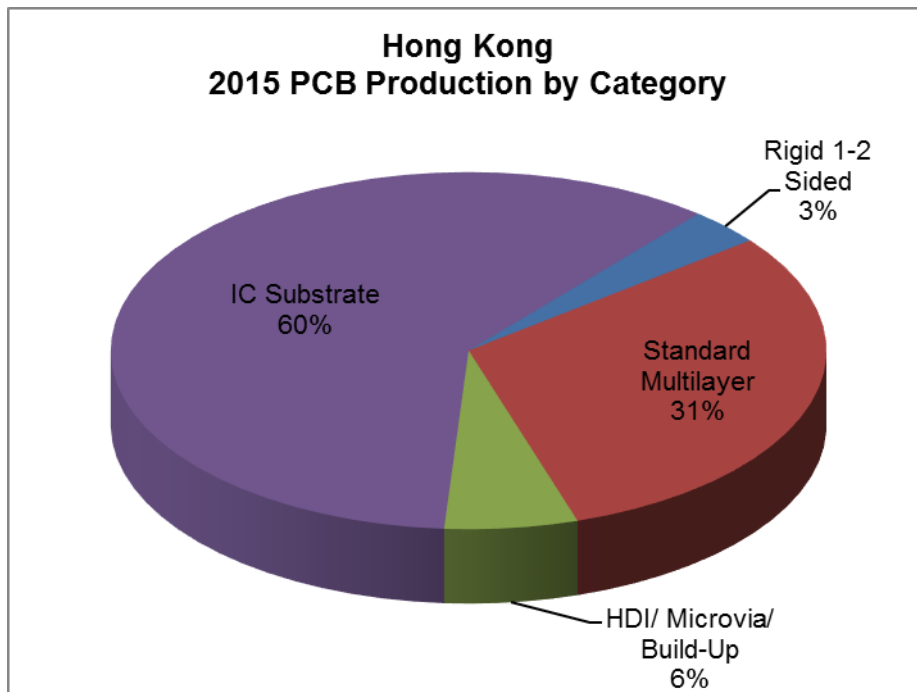
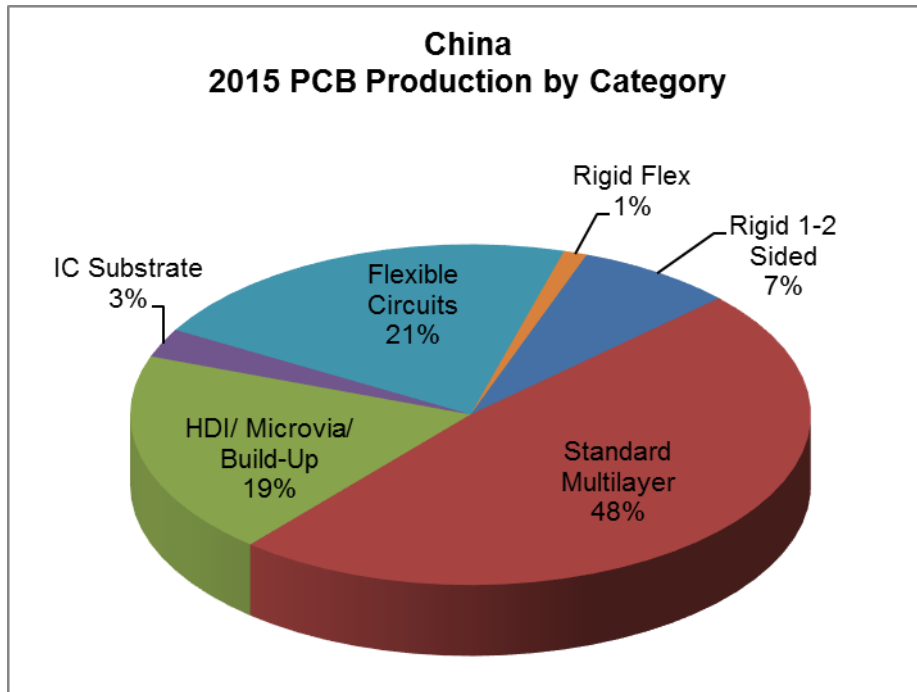
Nominal Growth by Product Category

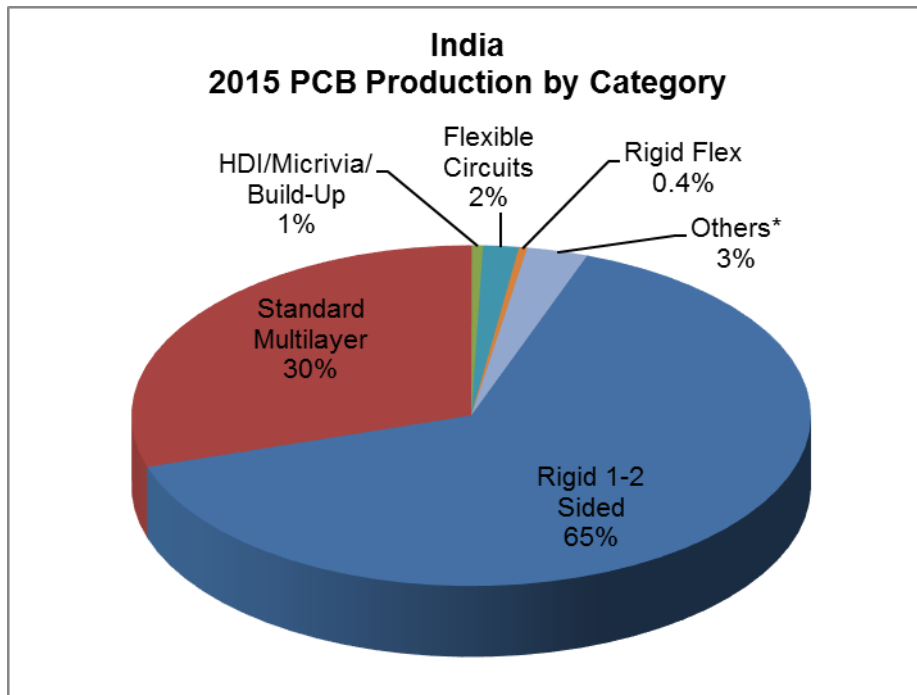
PCB production growth was positive in 2015 only for flexible circuits. These growth rates are based on nominal data, which are not adjusted to eliminate the effects of exchange rate changes.



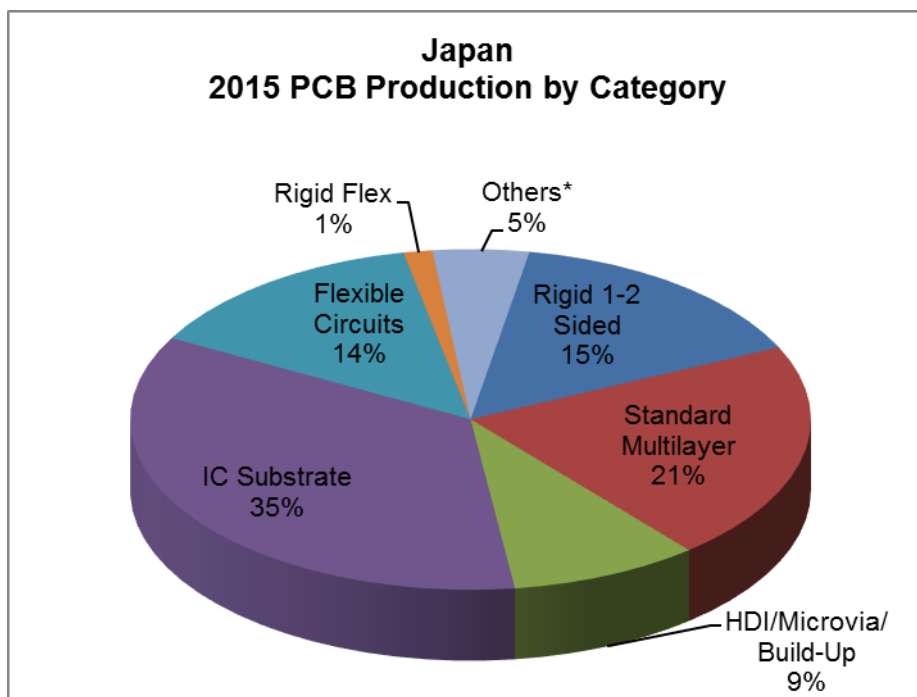
COUNTRY AND REGIONAL PROFILES

PCB Product Categories



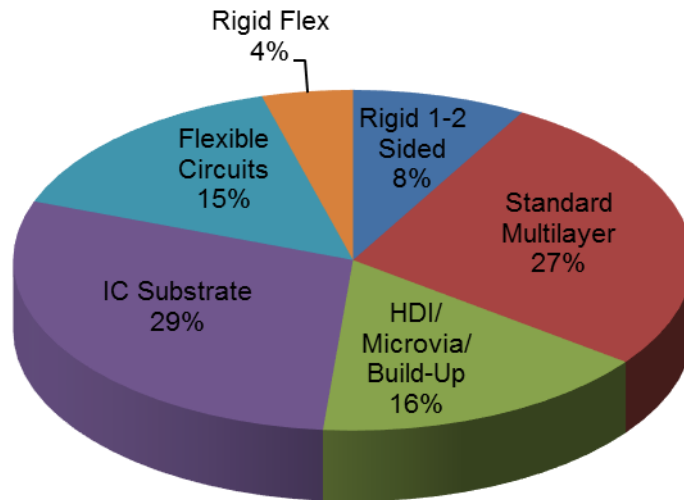


* Others: metal clad and LED boards

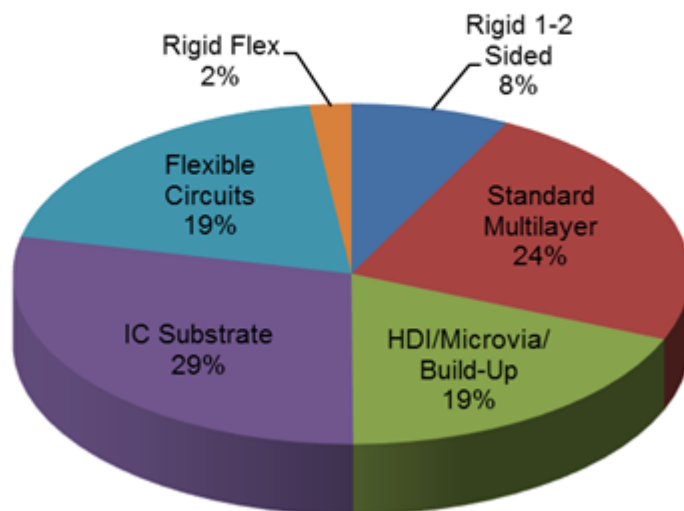


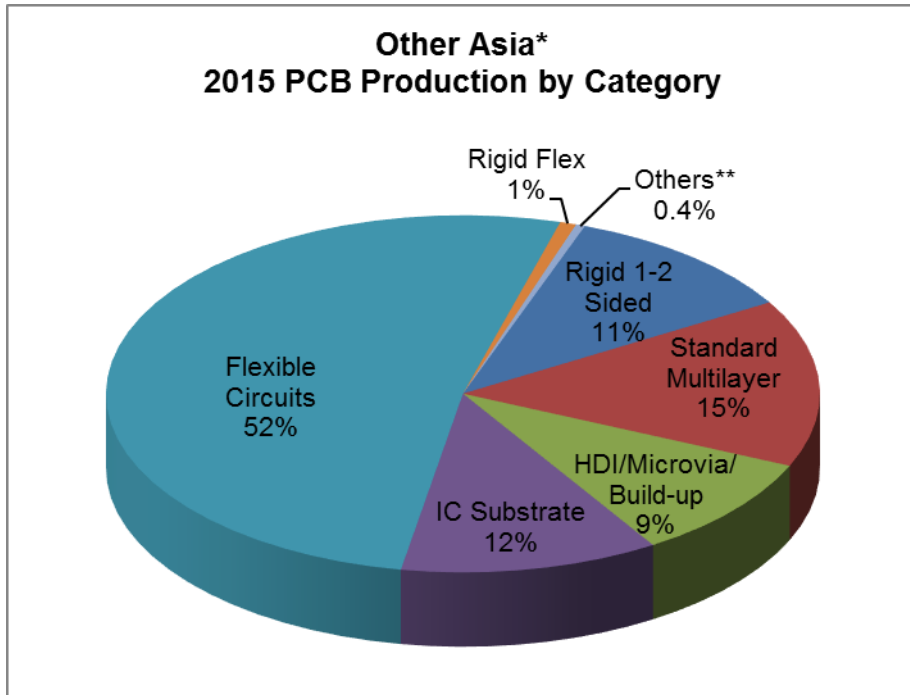
* Others: ceramic and metal core boards

**South Korea
2015 PCB Production by Category**



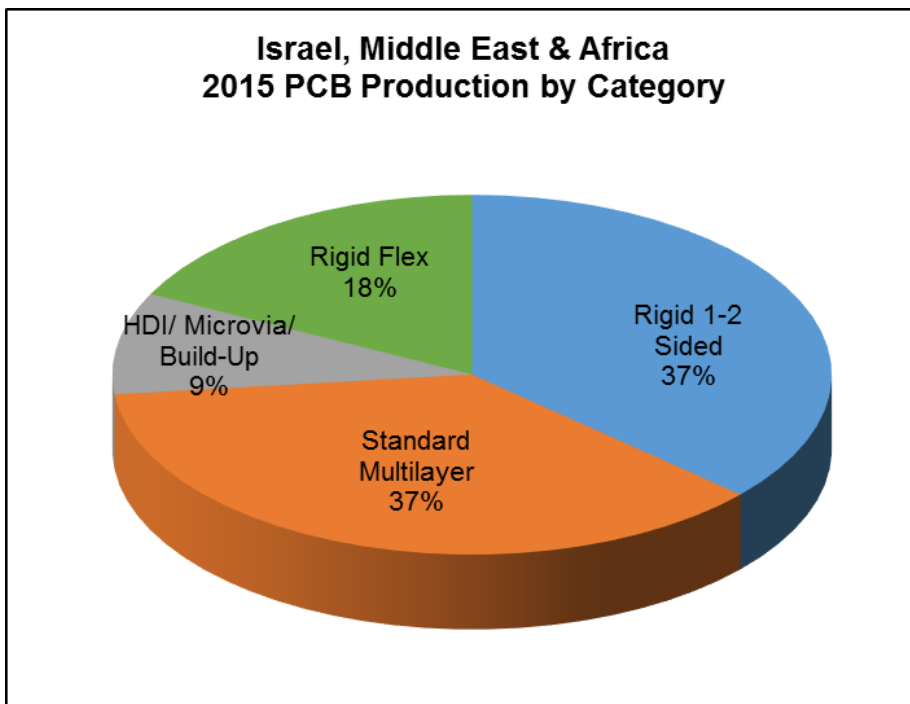
**Taiwan
2015 PCB Production by Category**

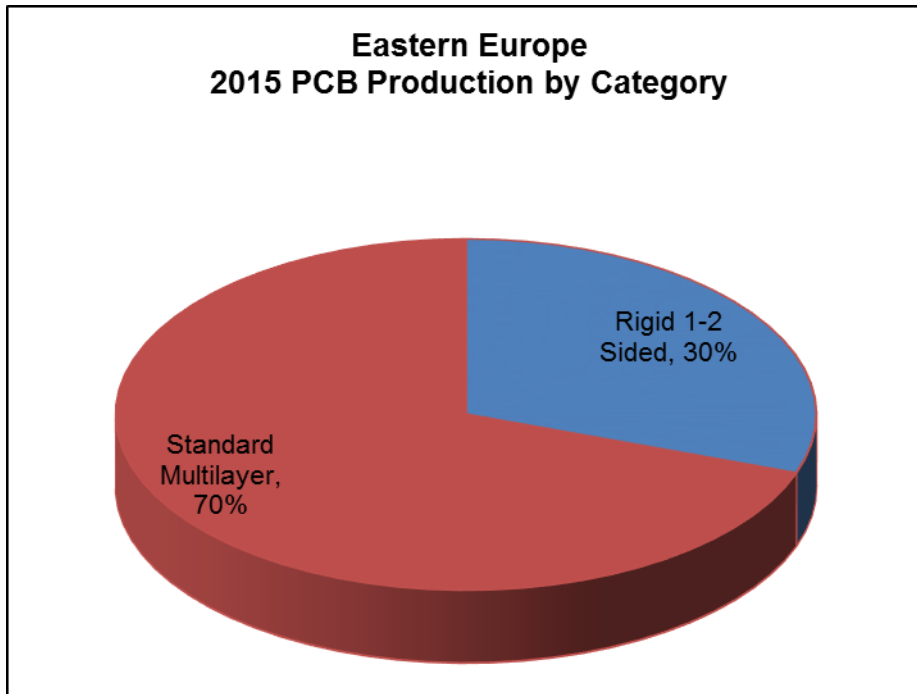
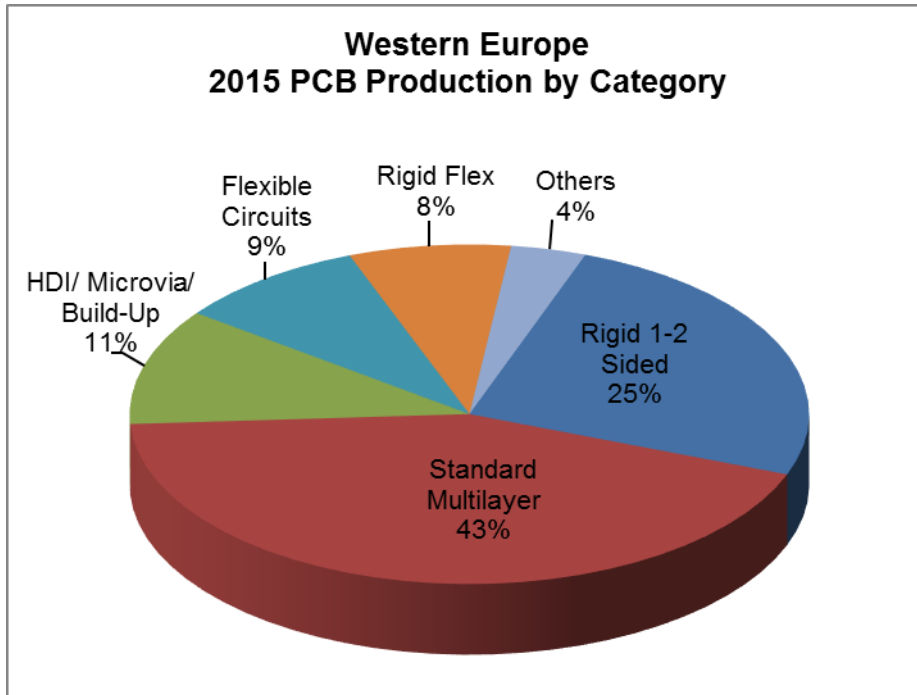


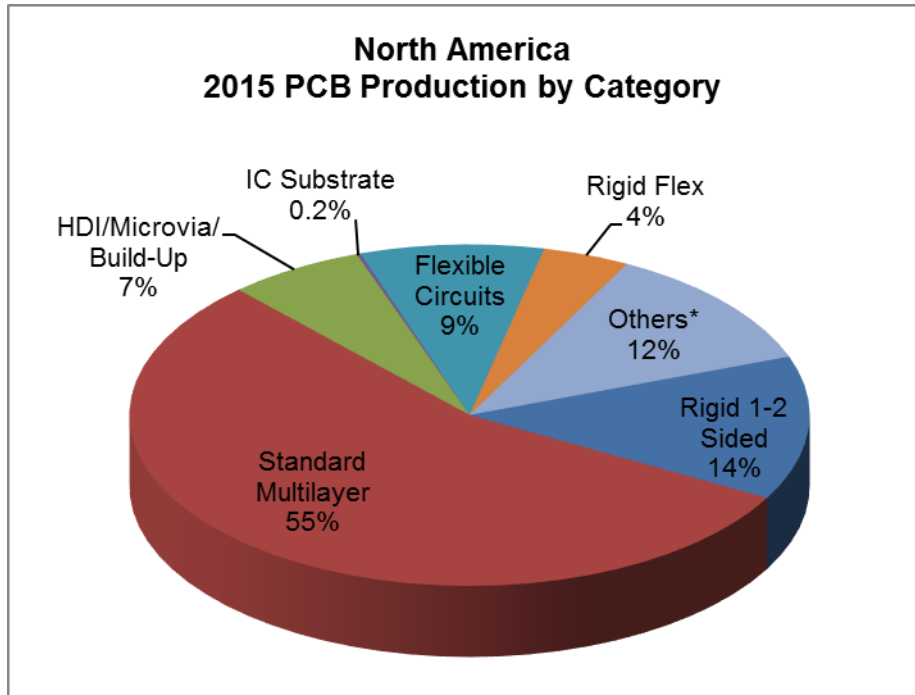


* Other Asia includes Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

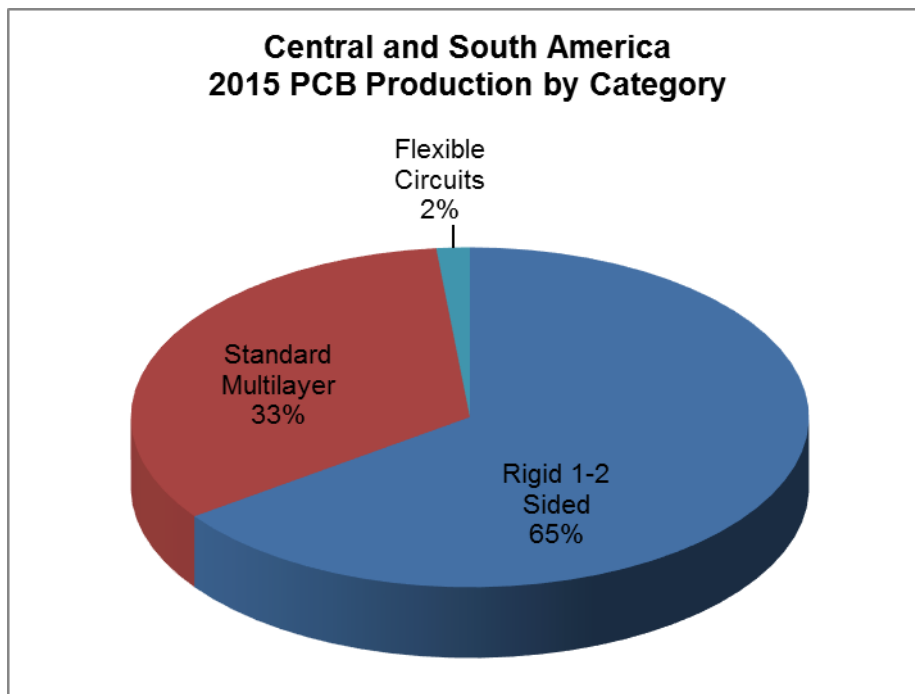
** Others: ceramic and metal core boards





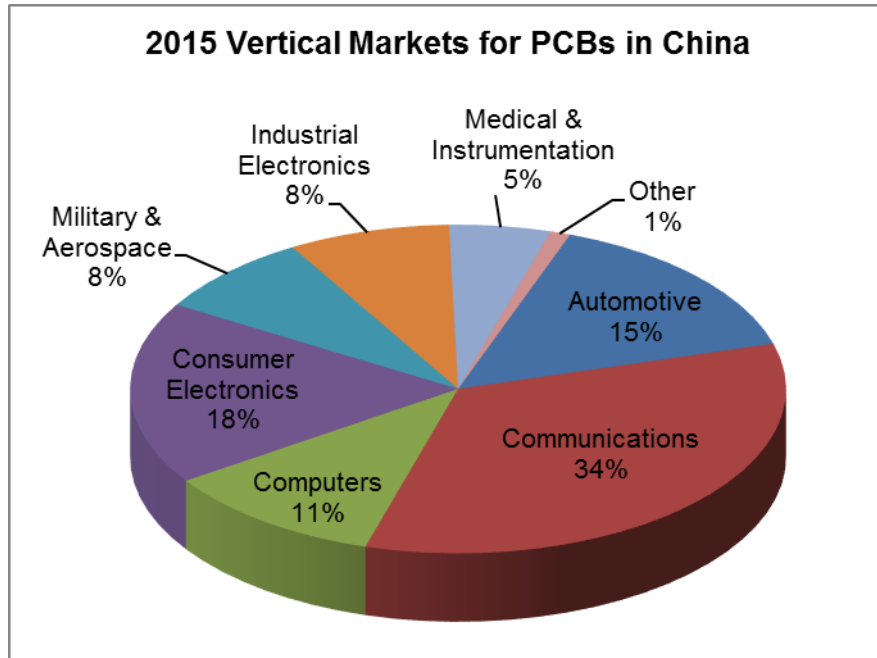


* Others: high-performance rigid boards

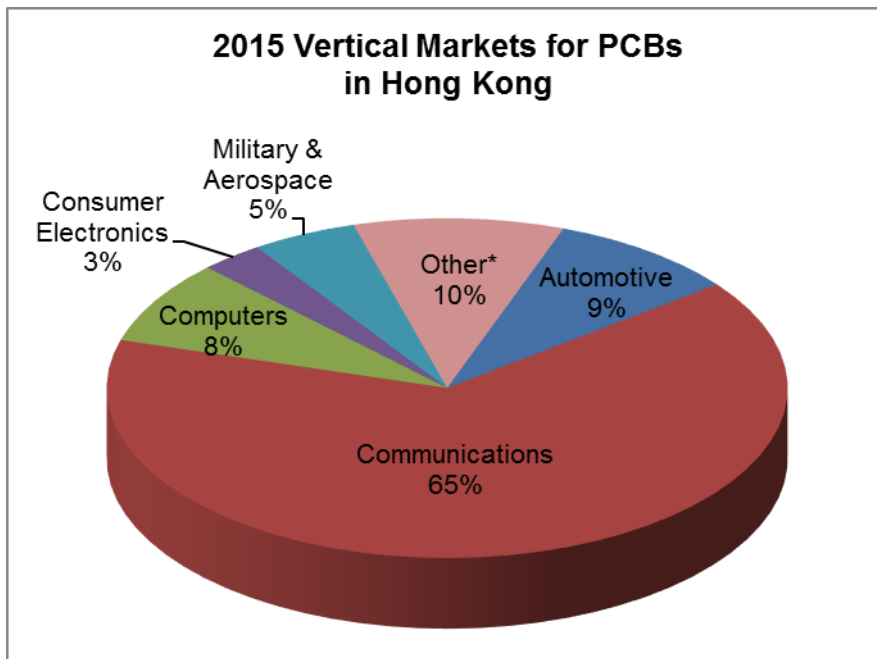


PCB Vertical Markets

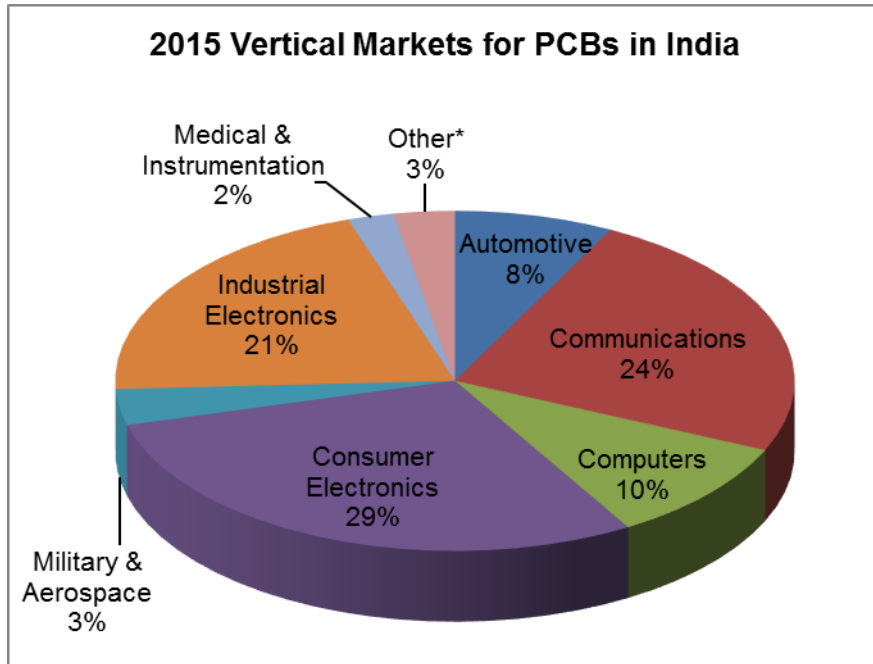
Please note that it is not advisable to compare the vertical market percentages to those in reports from prior years. This metric is heavily affected by the sample of companies reporting data to the WECC member associations, which may change somewhat from year to year. These percentages are not statistically significant and should be considered only in relation to one another within the same report.



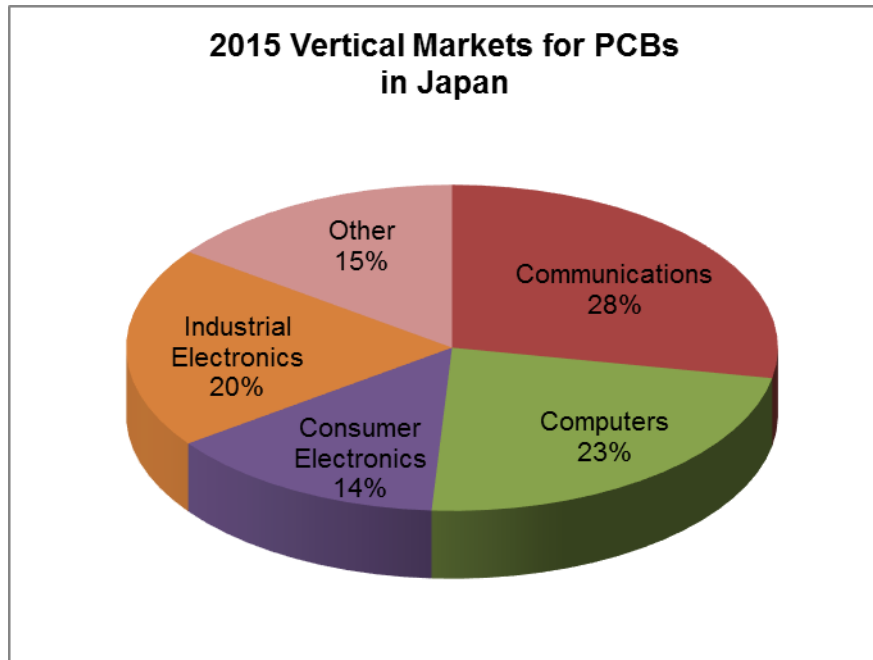
* Other: test equipment



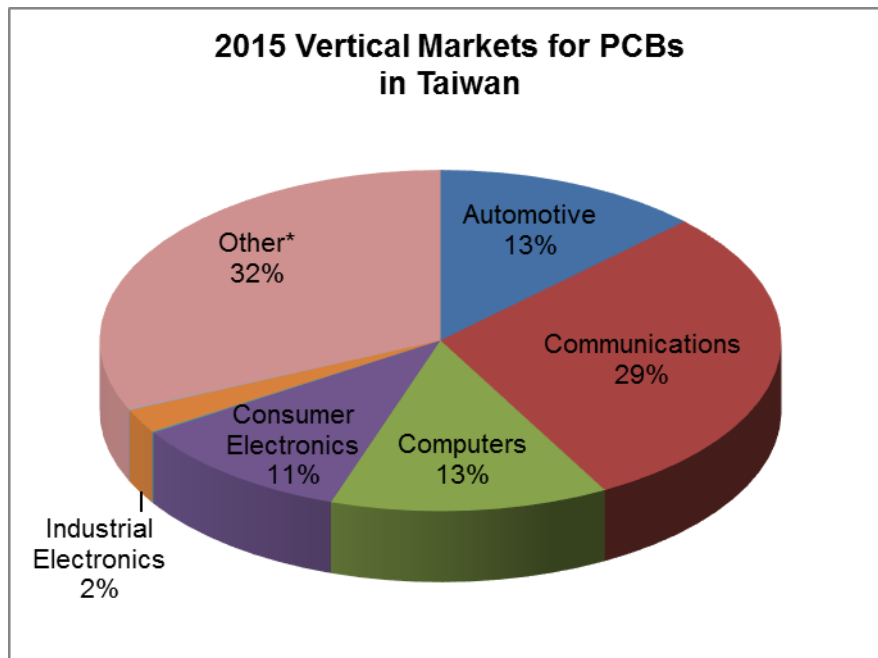
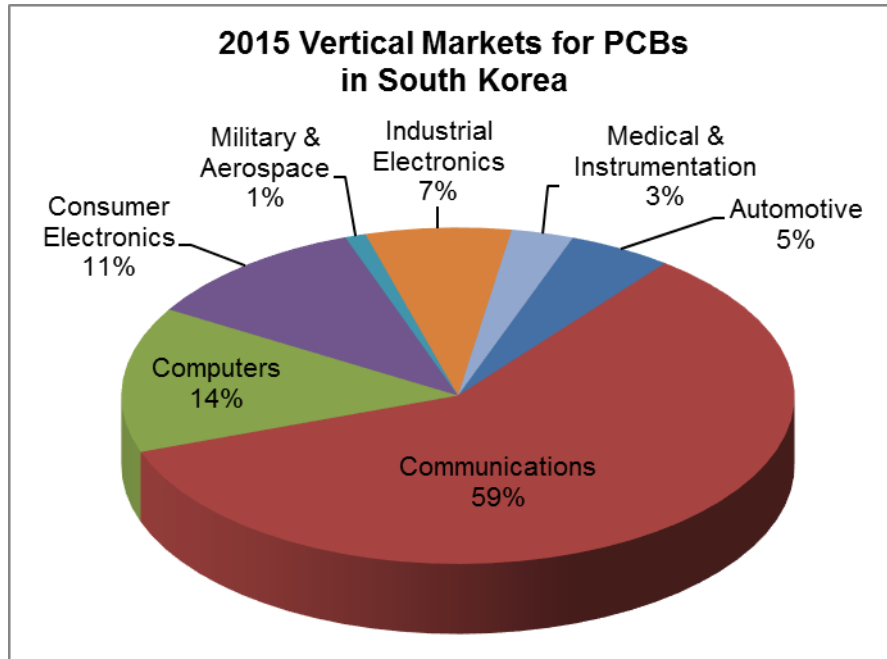
* Other: security and lighting



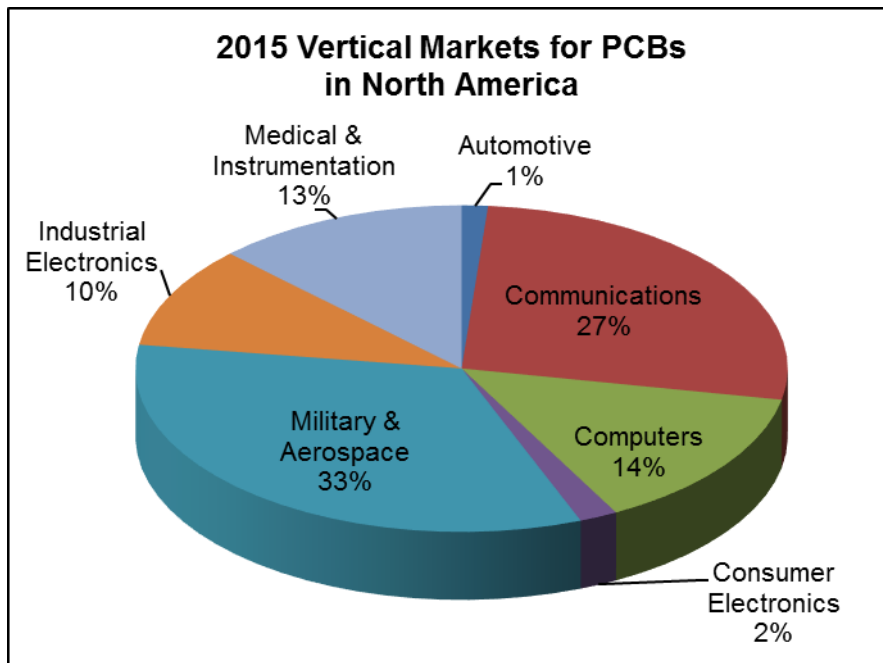
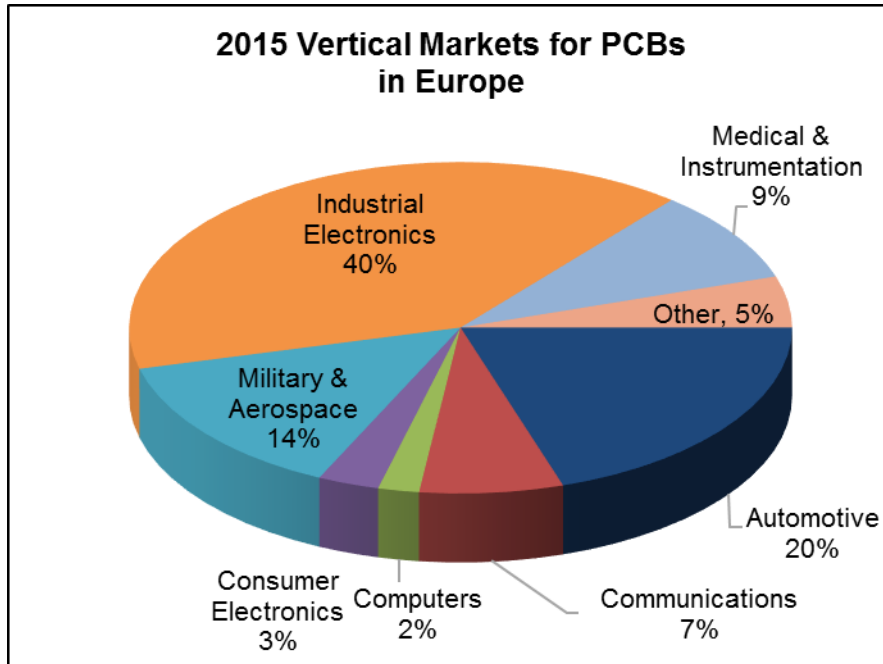
* LED lighting



Note: Japan makes PCBs for automotive, medical and military applications, but they are included in other categories.



* Other: semiconductors (IC substrates), lighting and others



APPENDIX

Average U.S. Dollar Exchange Rates for 2014 and 2015

		2014 Average Exchange Rate (=1.00 USD)	2015 Average Exchange Rate (=1.00 USD)	Currency (ISO Code)	% Change
ASIA/PACIFIC	Australia	1.11	1.33	AUD	20.0%
	China	6.14	6.22	CNY	1.2%
	Hong Kong	7.75	7.75	HKD	0.0%
	India	60.89	64.04	INR	5.2%
	Indonesia	11835.90	13337.60	IDR	12.7%
	Japan	105.84	121.03	JPY	14.4%
	Malaysia	3.27	3.90	MYR	19.2%
	New Zealand	1.21	1.43	NZD	18.9%
	North Korea	135.00	135.00	KPW	0.0%
	Pakistan	100.19	101.90	PKR	1.7%
	Philippines	44.31	45.44	PHP	2.5%
	Singapore	1.27	1.37	SGD	8.5%
	South Korea	1050.63	1130.22	KRW	7.6%
	Taiwan	30.31	31.73	TWD	4.7%
Thailand	32.42	34.19	THB	5.4%	
Vietnam	20994.90	21684.70	VND	3.3%	
EUROPE	Austria	0.75	0.90	EUR	19.6%
	Belgium	0.75	0.90	EUR	19.6%
	Czech Republic	20.74	24.57	CZK	18.5%
	Denmark	5.62	6.72	DKK	19.7%
	Finland	0.75	0.90	EUR	19.6%
	France	0.75	0.90	EUR	19.6%
	Germany	0.75	0.90	EUR	19.6%
	Hungary	232.43	279.06	HUF	20.1%
	Ireland	0.75	0.90	EUR	19.6%
	Italy	0.75	0.90	EUR	19.6%
	Netherlands	0.75	0.90	EUR	19.6%
	Norway	6.30	8.06	NOK	27.9%
	Poland	3.15	3.77	PLN	19.6%
	Portugal	0.75	0.90	EUR	19.6%
	Russia	38.49	61.13	RUB	58.8%
	Slovakia	0.75	0.90	EUR	19.6%
	Spain	0.75	0.90	EUR	19.6%
	Sweden	6.86	8.43	SEK	22.9%
Switzerland	0.92	0.96	CHF	5.1%	
Turkey	2.19	2.72	TRY	24.6%	
United Kingdom	0.61	0.65	GBP	7.7%	
MIDDLE EAST & AFRICA	Egypt	7.05	7.68	EGP	8.9%
	Iran	25898.20	28955.90	IRR	11.8%
	Israel	3.5715	3.8782	ILS	8.6%
	South Africa	10.84	12.76	ZAR	17.8%
	Tunisia	1.69	1.96	TND	15.6%
THE AMERICAS	Canada	1.10	1.28	CAD	15.8%
	Mexico	13.30	15.87	MXN	19.3%
	USA	1.00	1.00	USD	0.0%
	Argentina	8.10	9.24	ARS	14.2%
	Brazil	2.35	3.33	BRL	41.9%
	Chile	569.99	653.77	CLP	14.7%
	Venezuela	6288.83	6289.89	VEB	0.0%

Source: www.oanda.com/convert/fxhistory



World Electronic Circuits Council