

WECC Global PCB Production Report For 2019

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



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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:

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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.

2019 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 almost all of the world's PCBs, based on value. These are estimates of bare circuit value.

Estimates of 2019 PCB Production in the World's Major PCB-Producing Areas

In millions of local currencies

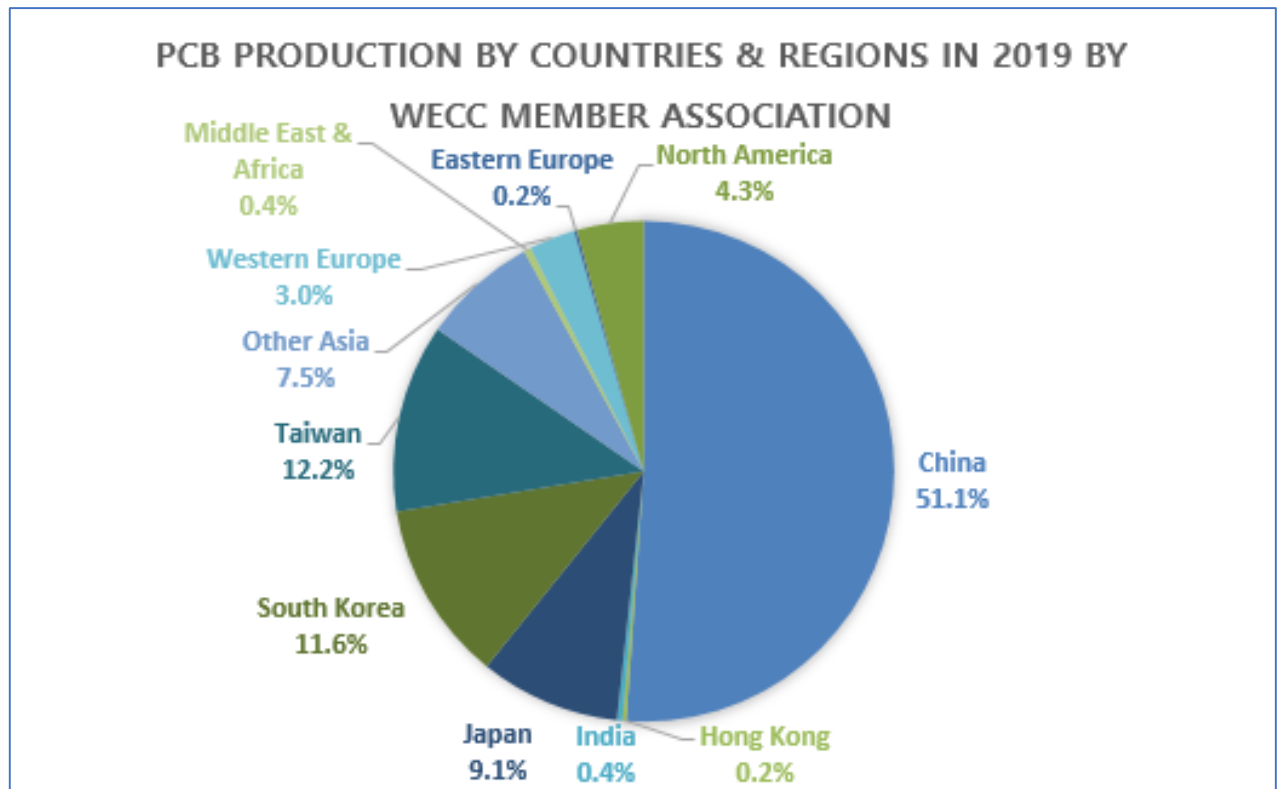
Country or Region Where PCBs Were Produced	Rigid 1-2 Sided	Standard Multilayer	HDI/ Microvia/ Build-Up	IC Substrate	Flexible Circuits	Rigid Flex	Others	Total Aggregate Data	Currency
China	39,709	104,480	37,709	7,487	36,094	1,822	0	227,301	CNY
Hong Kong	4	387	106	748	0	0	13	1,257	HKD
India	10,563	1,338	0	0	0	704	3,874	16,479	INR
Japan	105,880	154,650	54,780	235,210	45,950	6,060	32,770	635,300	JPY
South Korea	502,000	1,800,000	1,050,000	2,780,000	1,200,000	1,400,000	0	8,732,000	KRW
Taiwan	18,732	46,876	45,889	60,794	61,442	8,024	0	241,757	TWD
Other Asia	49,885	105,193	53,743	52,212	252,244	3,890	6,778	523,945	JPY
Middle East & Africa	10	53	61	0	17	117	0	258	EUR
Western Europe	435	740	220	0	183	134	0	1,712	EUR
Eastern Europe	65	45	0	0	0	0	0	110	EUR
North America	291	1,973	212	10	193	84	0	2,763	USD

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
China	5,742	15,108	5,453	1,083	5,219	263	0	32,868
Hong Kong	1	49	14	95	0	0	2	160
India	150	19	0	0	0	10	55	234
Japan	971	1,419	503	2,158	422	56	301	5,829
South Korea	430	1,543	900	2,383	1,029	1,200	0	7,484
Taiwan	607	1,519	1,487	1,970	1,991	260	0	7,833
Other Asia	458	965	493	479	2,314	36	62	4,807
Middle East & Africa	11	59	69	0	19	130	0	289
Western Europe	487	828	246	0	205	150	0	1,917
Eastern Europe	73	50	0	0	0	0	0	123
North America	291	1,973	212	10	193	84	0	2,763
Global Total	9,221	23,533	9,376	8,178	11,391	2,189	419	64,307

Notes:

1. Flexible circuit and rigid flex estimates may include some assembly revenue.
2. The "Others" product category includes LED lighting and metal core boards in India, antenna and radar applications in Israel, ceramic and metal core boards in Japan, and metal core boards in Korea. "Others" in other regions are unknown.
3. Other Asia includes Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. Other Asia data were provided by JPCA. Japanese companies account for more than 70 percent of PCB production in Other Asia.
4. The Middle East & Africa includes Egypt, Iran, Israel, South Africa and Tunisia. The data were contributed by EIPC.
5. The revenue estimates in this report are nominal and have not been adjusted for inflation.
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.



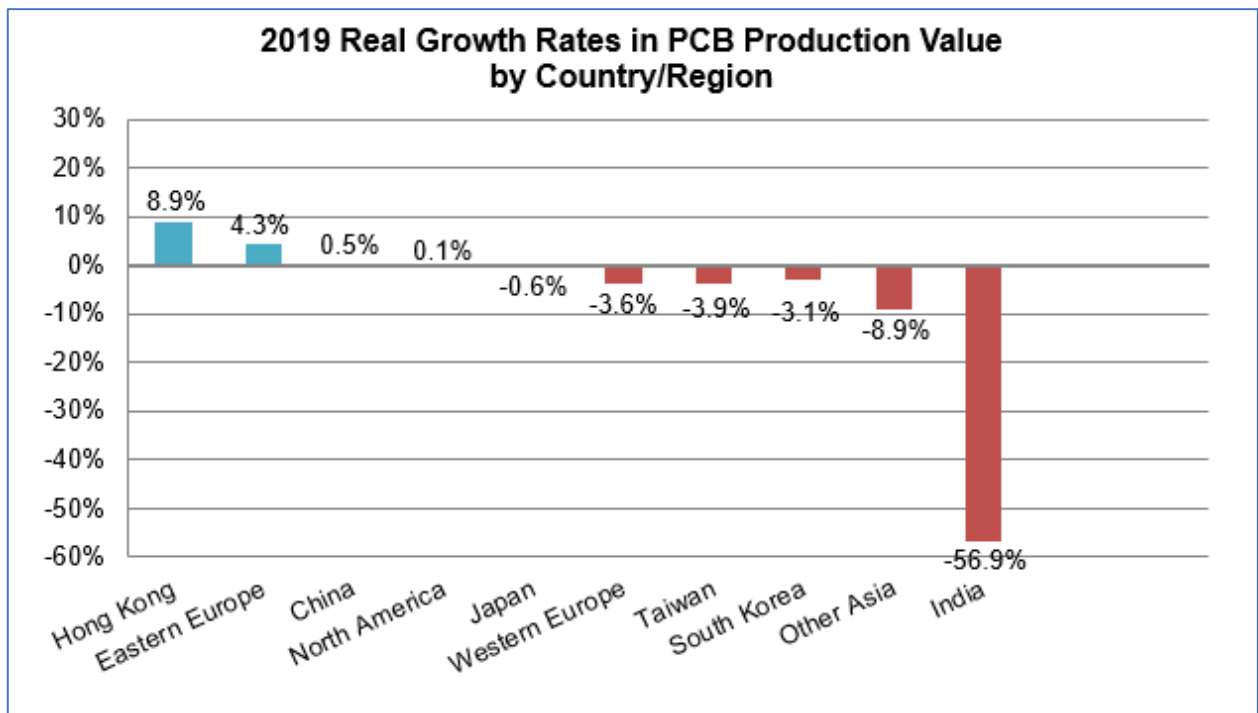
INDUSTRY GROWTH

Real Growth by Country/Region

Based on a comparison of the 2018 and 2019 estimates from the WECC PCB production surveys in local currencies, worldwide PCB production decrease 1.8 percent in 2019. Hong Kong and East Europe posted the highest growth rates in PCB production in real terms. Real growth rates in this report factor out the effects of exchange rate fluctuations but not inflation.

As for the India data, earlier estimate based on the study done in the year 2017-18 was very high and had error. It had been estimated local production at about USD 490 million, which was Rs. 37,745/- million in local currency. India's 2019 estimate is USD 237 million local production which is equal to INR 16,479/- million. This estimate is more accurate in ELCINA source.

If the data were not accurate, the following year's data could be highly variable. However, if it is corrected and reflected later on, it could be more accurate data in the future.

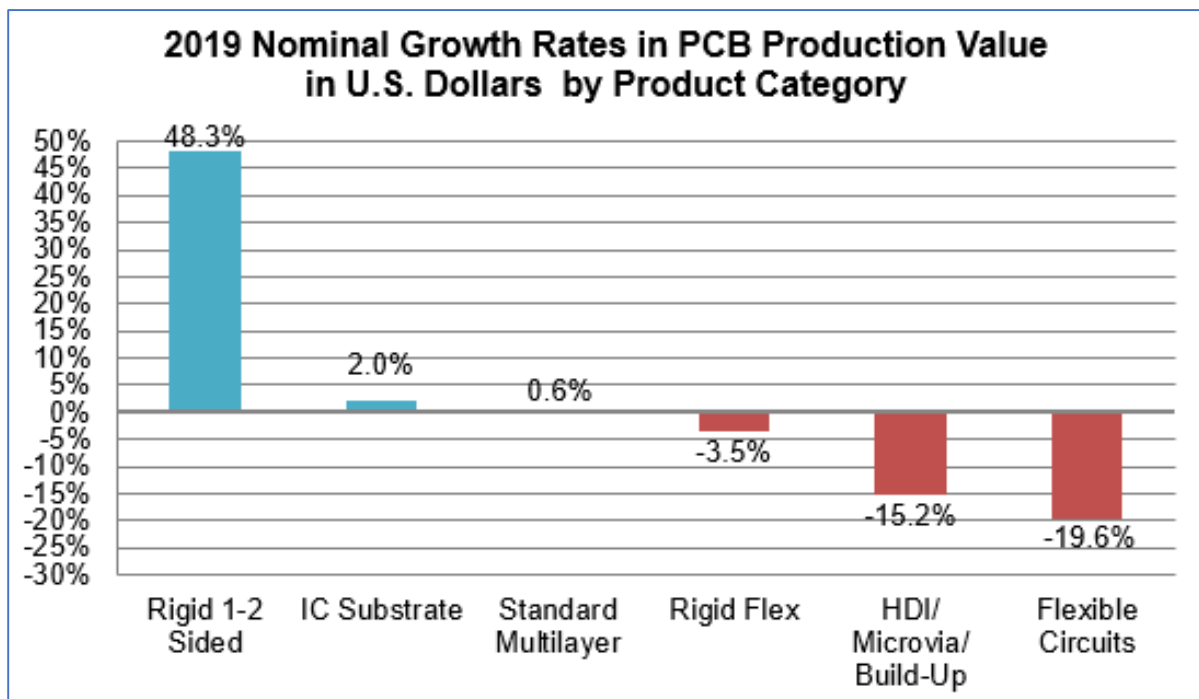


Nominal Growth by Product Category

The growth rate of Rigid 1-2 sided was overwhelming at 48.3%. IC Substrate and Standard multilayer have grown slightly.

Flexible circuits and HDI/Microvia/Build-up, on the other hand, were negative growth.

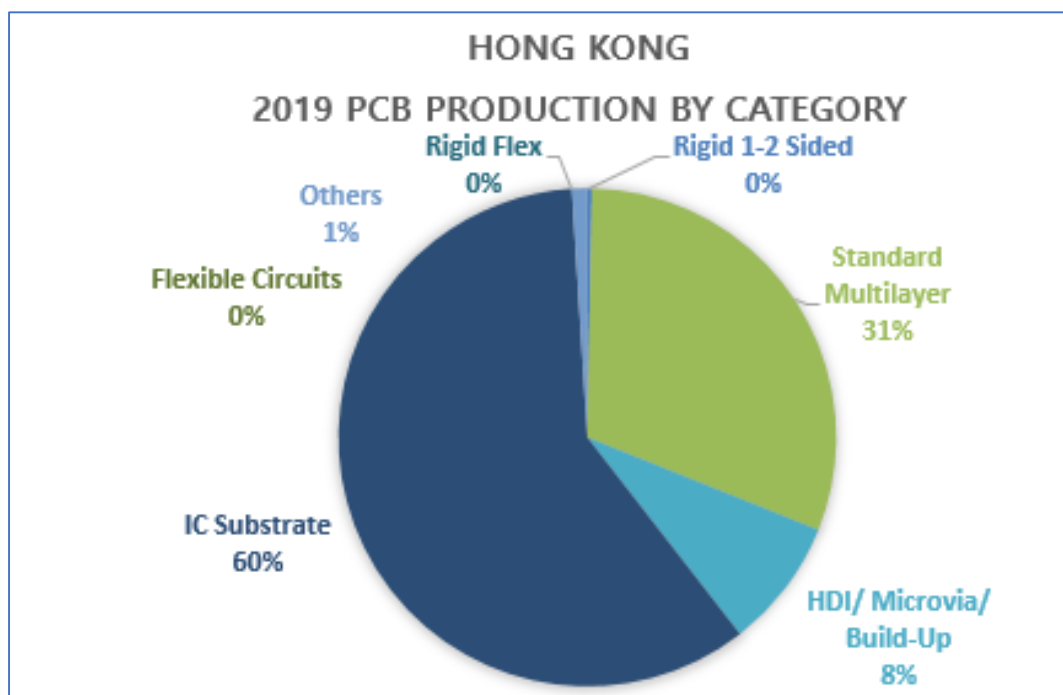
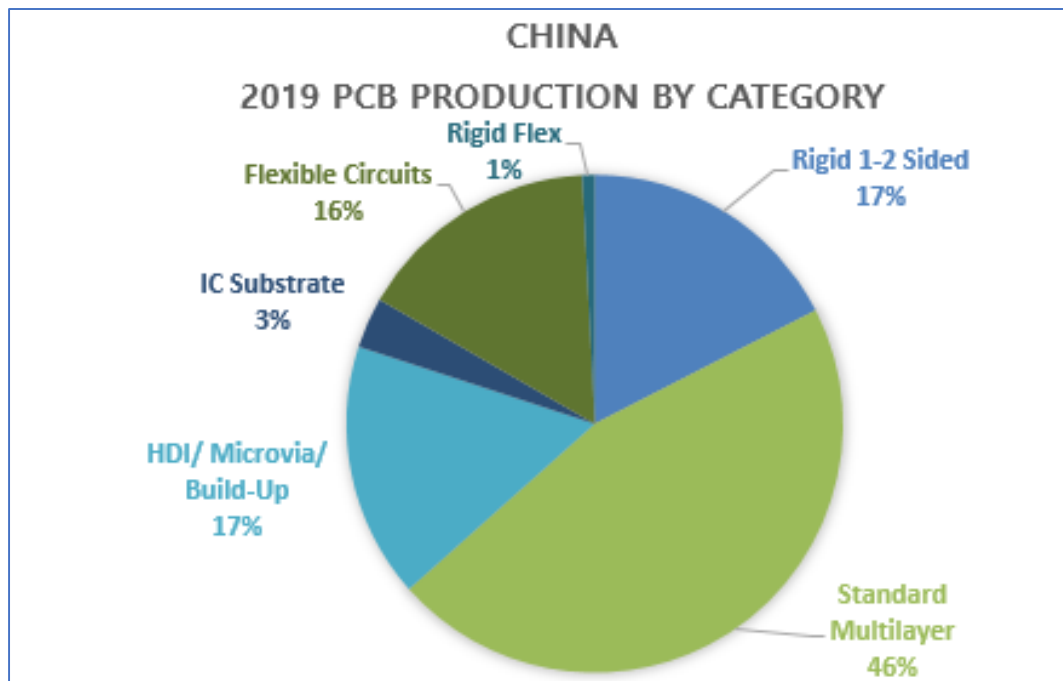
These growth rates are based on nominal data in U.S. dollars, which are not adjusted to eliminate the effects of exchange rate fluctuations. It should also be noted that the adoption of new sources or methods of data collection by the contributing associations may affect these growth rates. Comparisons with data in prior years' reports should be made with caution..



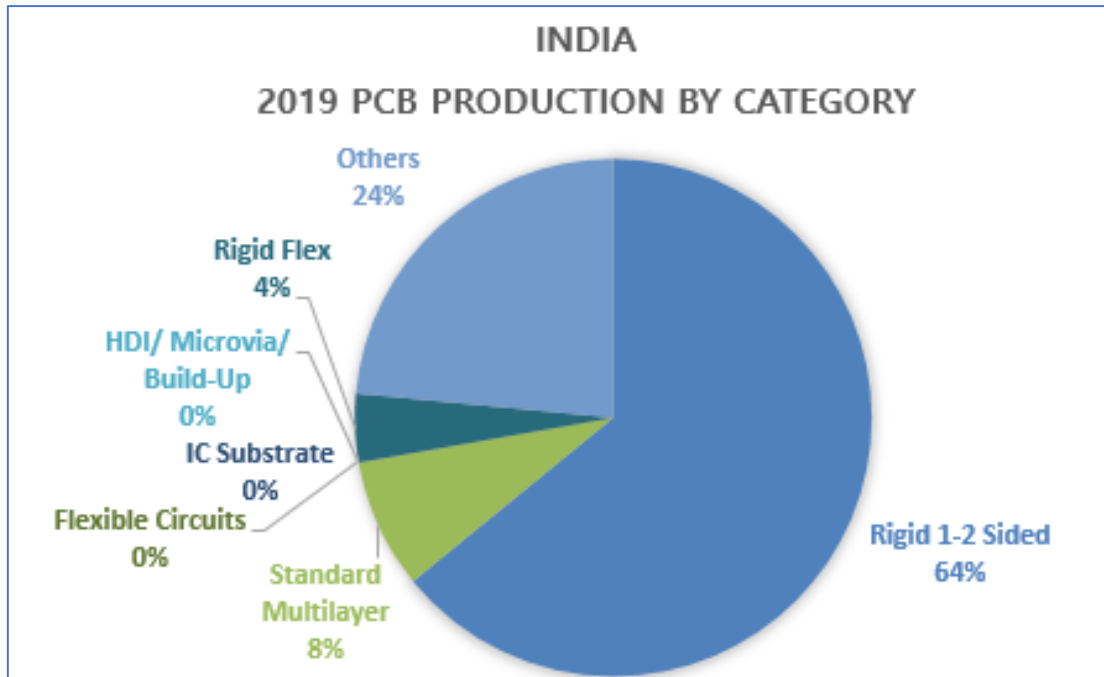
COUNTRY AND REGIONAL PROFILES

PCB Product Categories

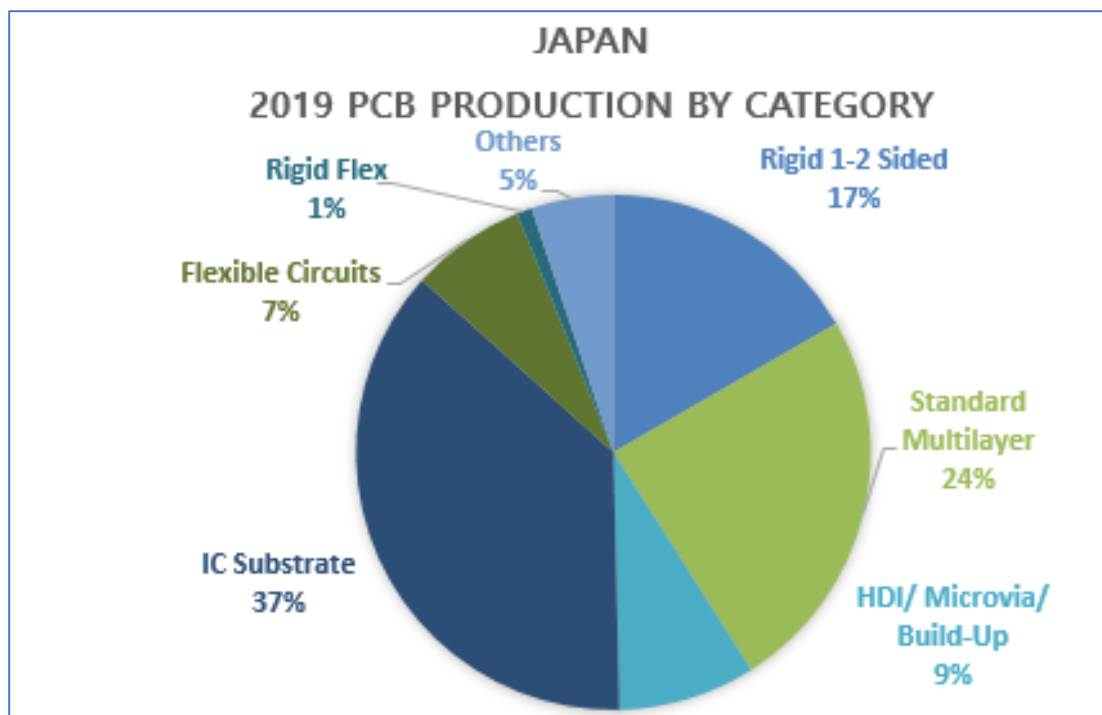
Note: Where percentages add up to more than 100 percent, this is due to rounding.



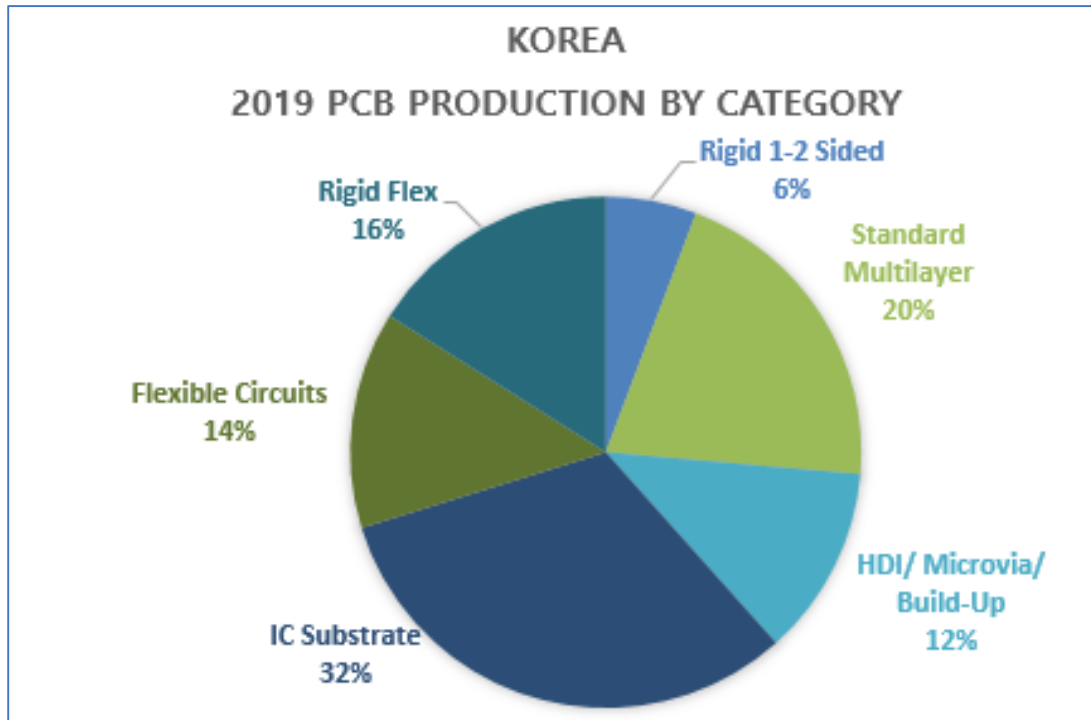
*Others: unknown



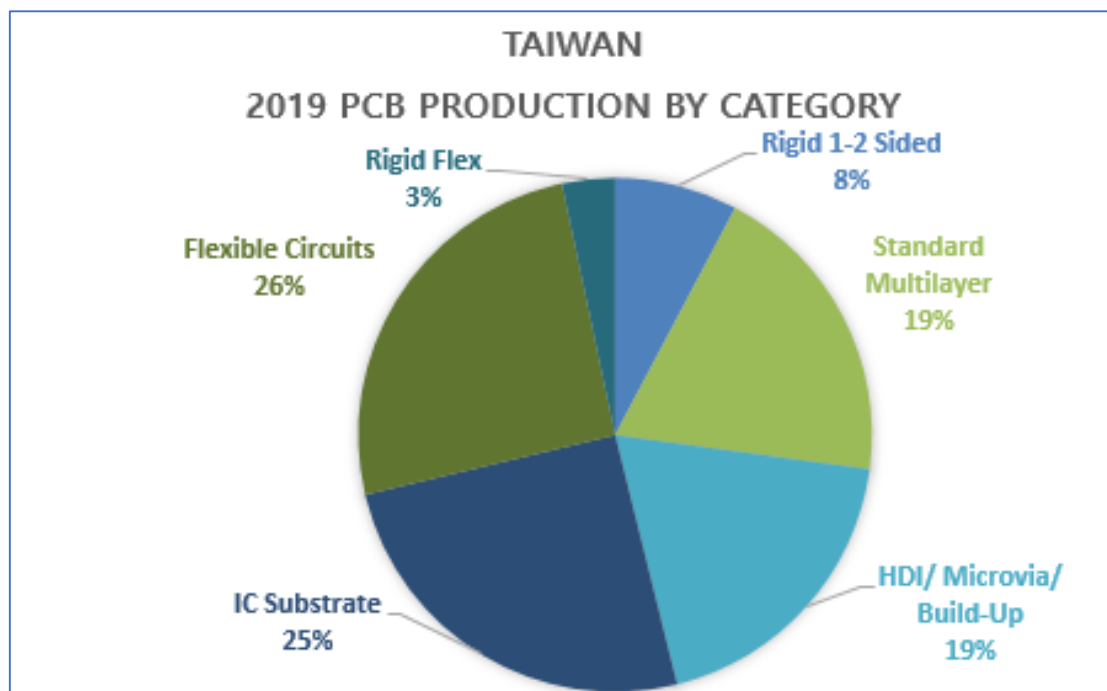
*Others: metal core and LED boards

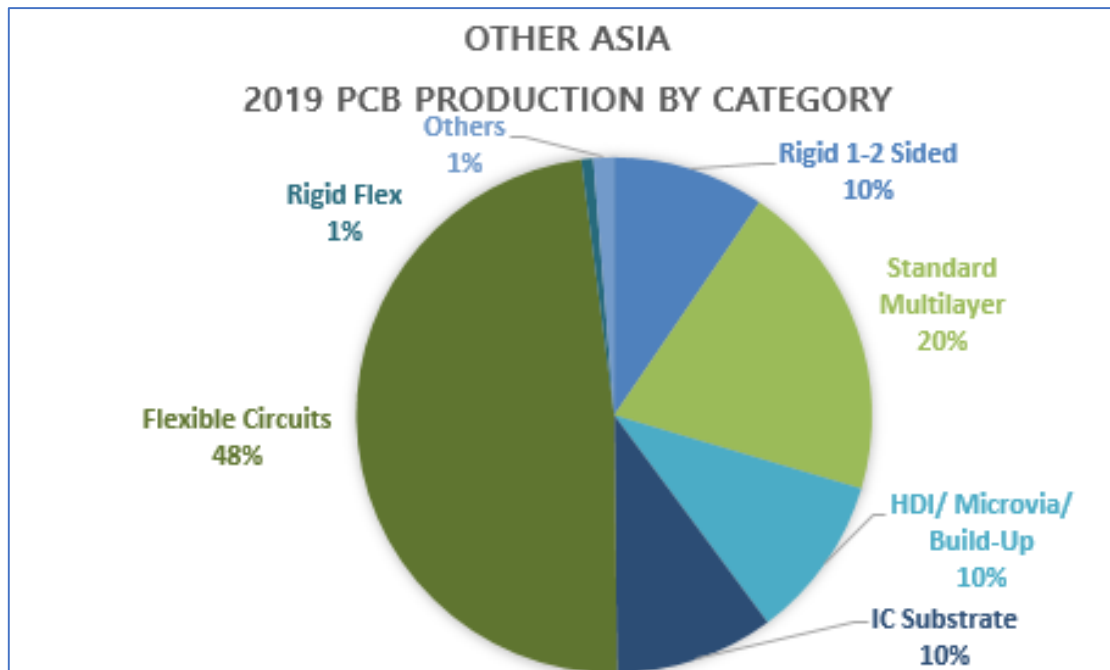


*Others: ceramic and metal core boards

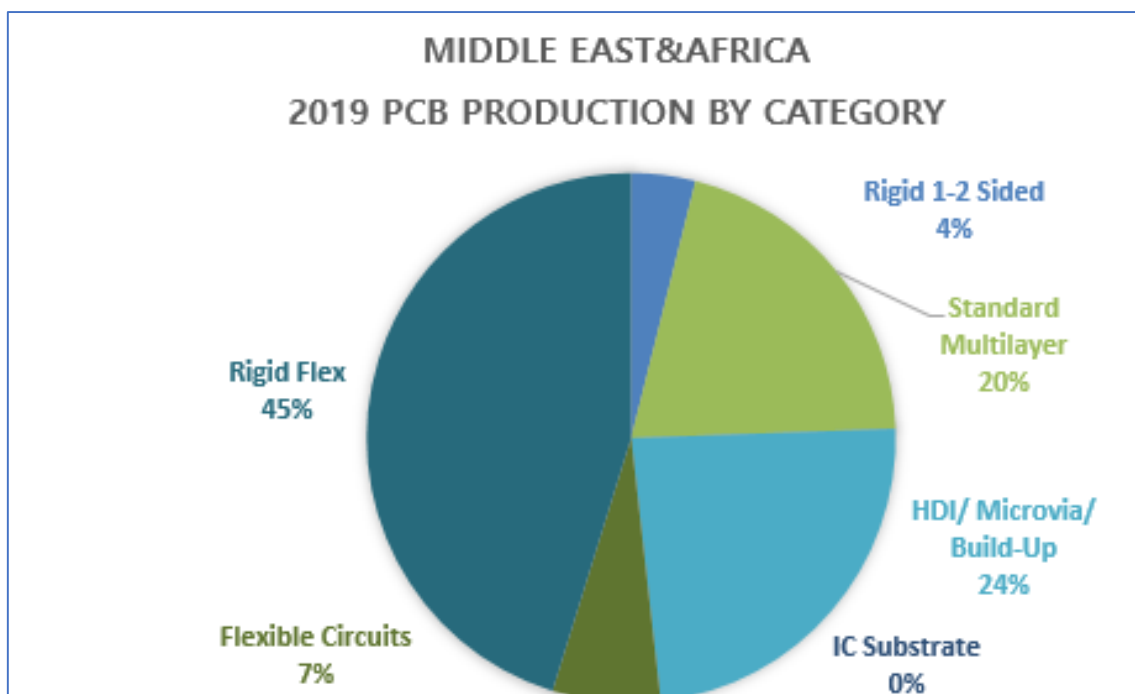


*Others: metal core



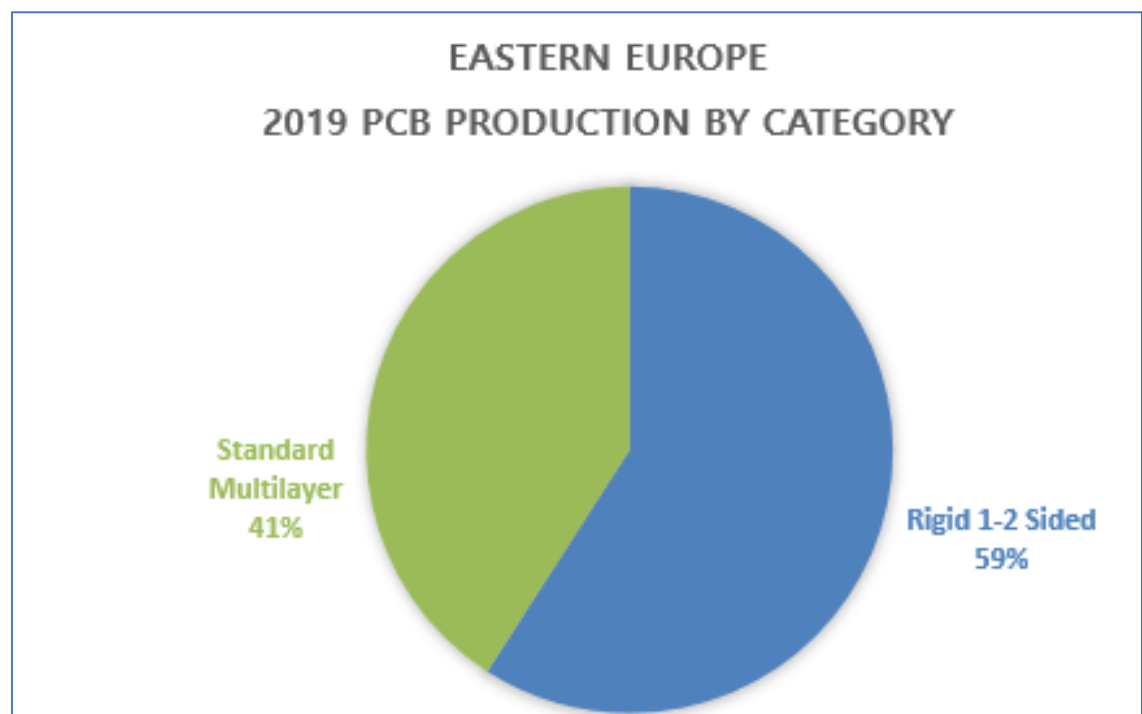
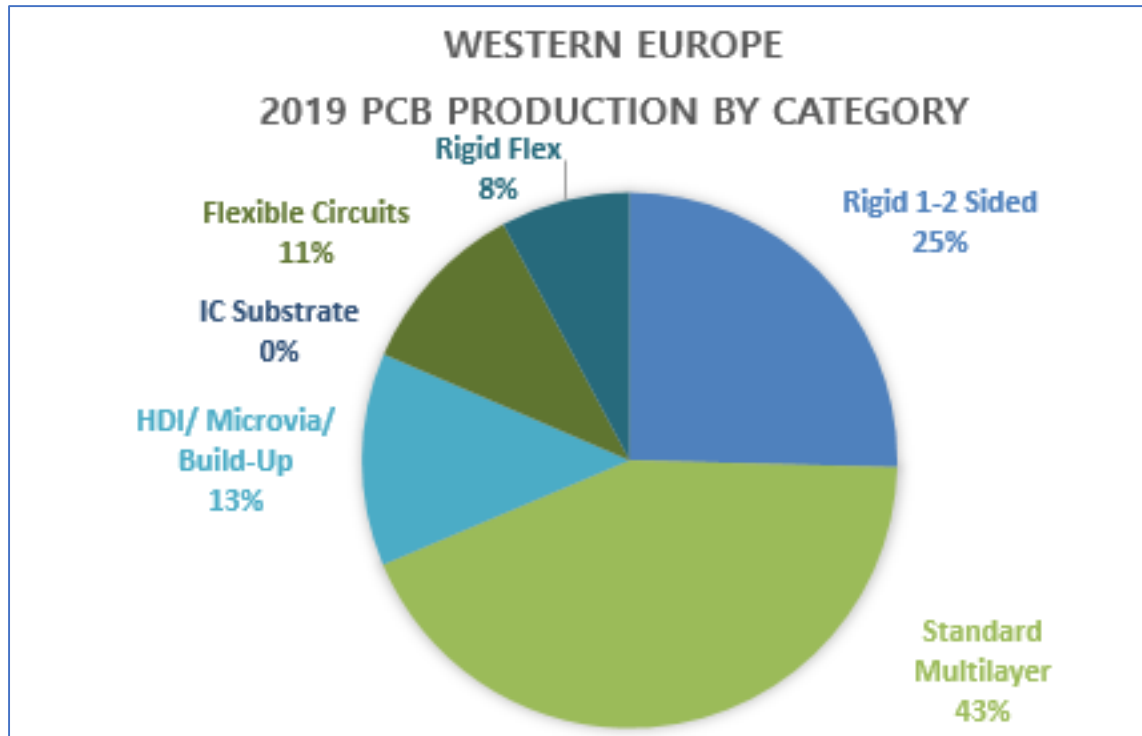


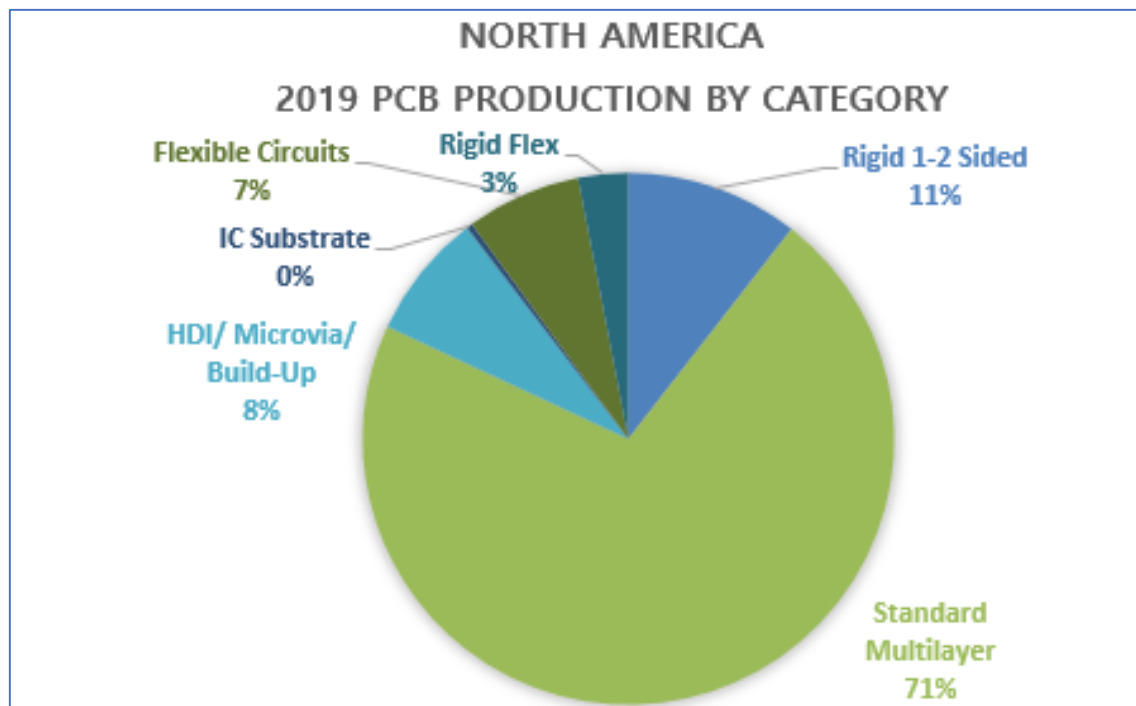
*Other Asia includes Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.



*Middle East & Africa includes Egypt, Iran, Israel, South Africa and Tunisia.

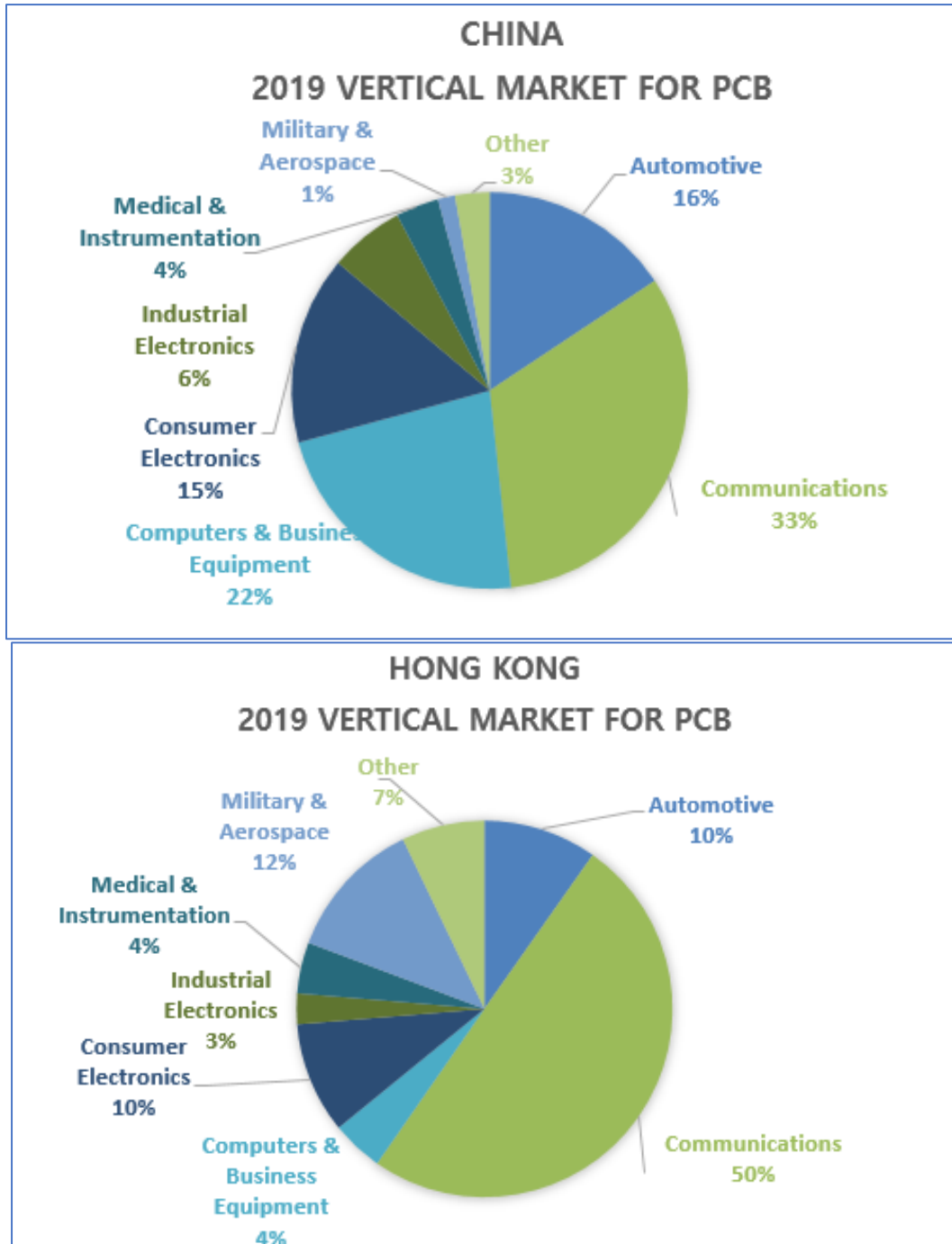
**Others: antenna and radar applications.



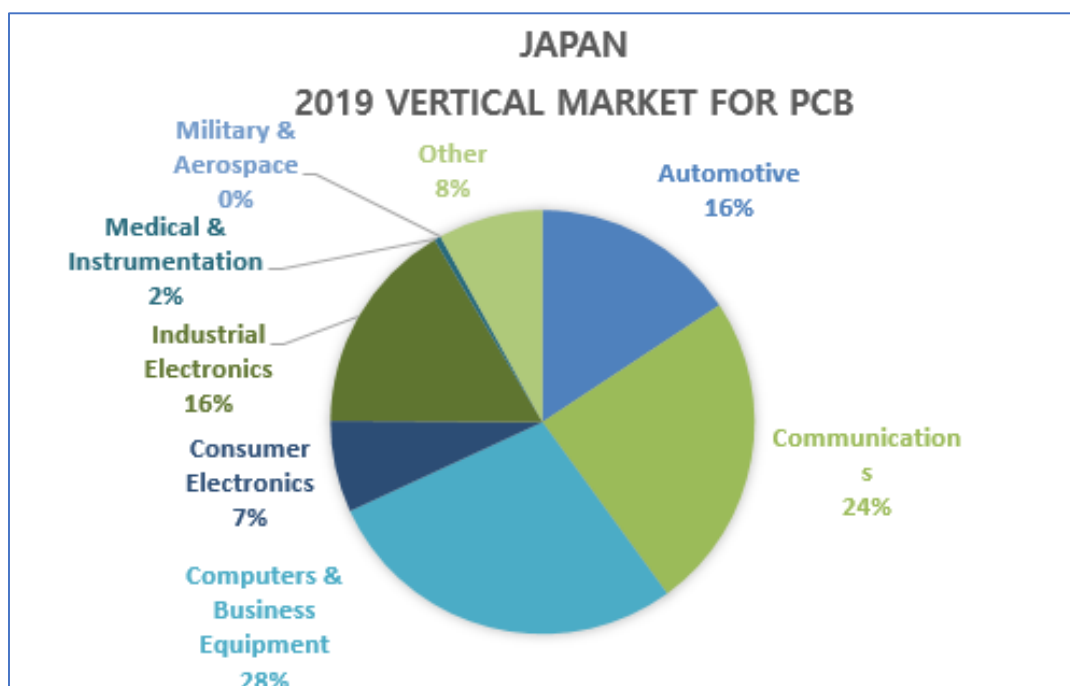
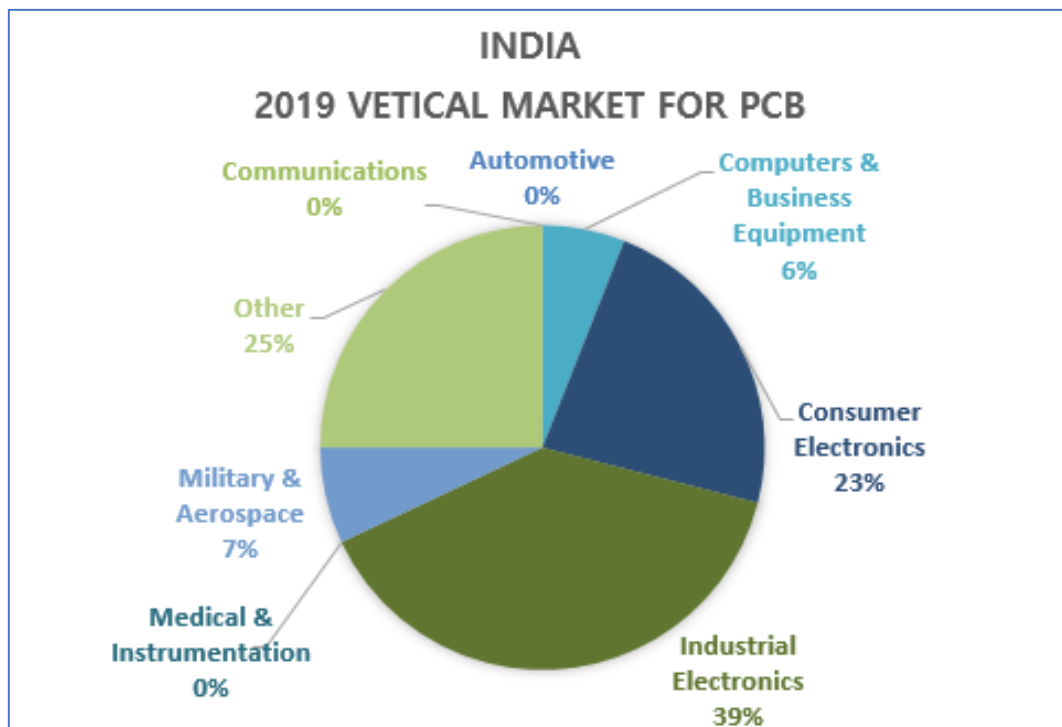


PCB Vertical Markets

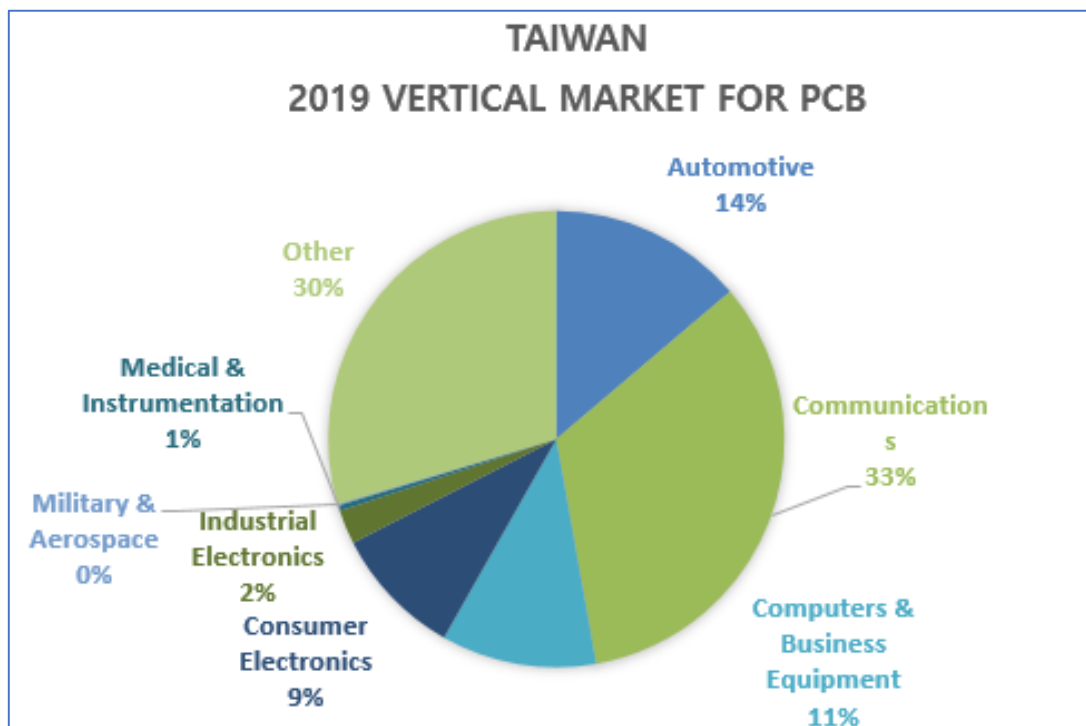
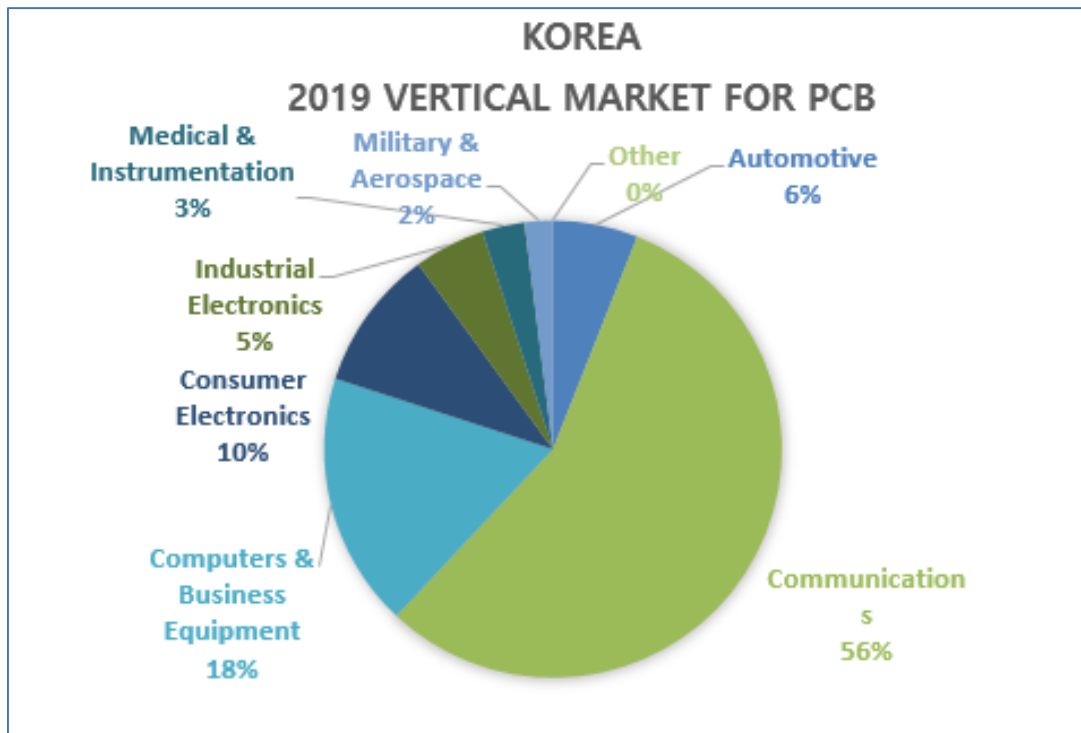
Please note that it is not advisable to compare the vertical market percentages to those in reports from prior years. This measurement is heavily affected by the sample of companies reporting data to the WECC member associations, which may change somewhat from year to year. These percentages are not statistically significant and should be considered only in relation to one another within the same report. Where percentages add up to more than 100 percent, this is due to rounding.



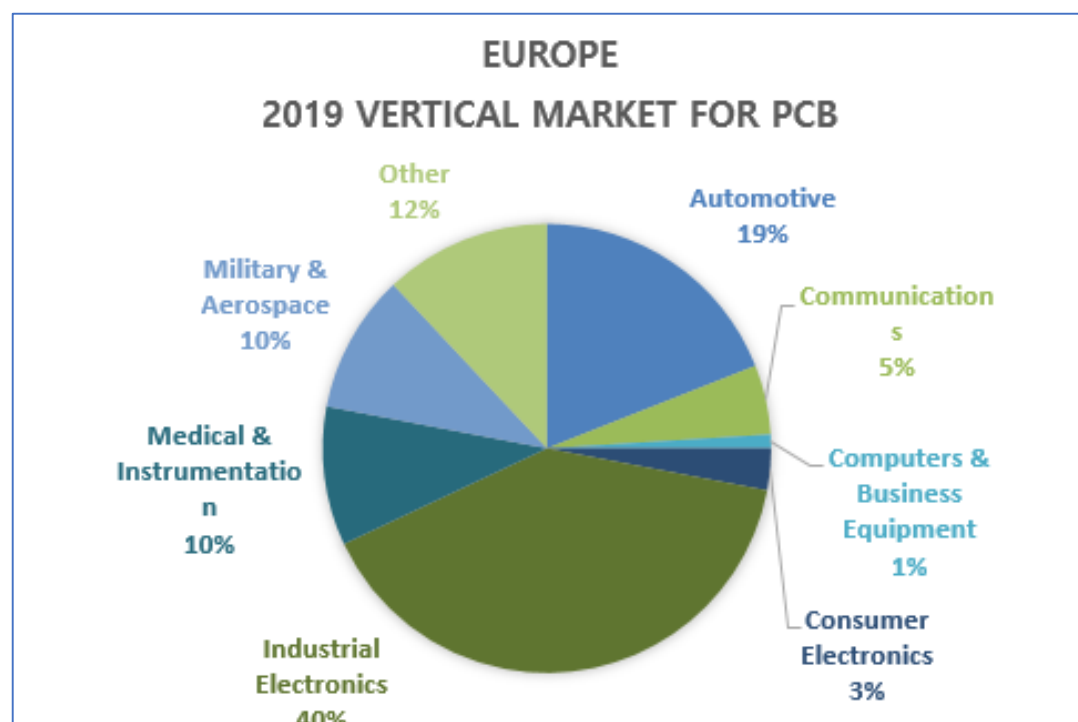
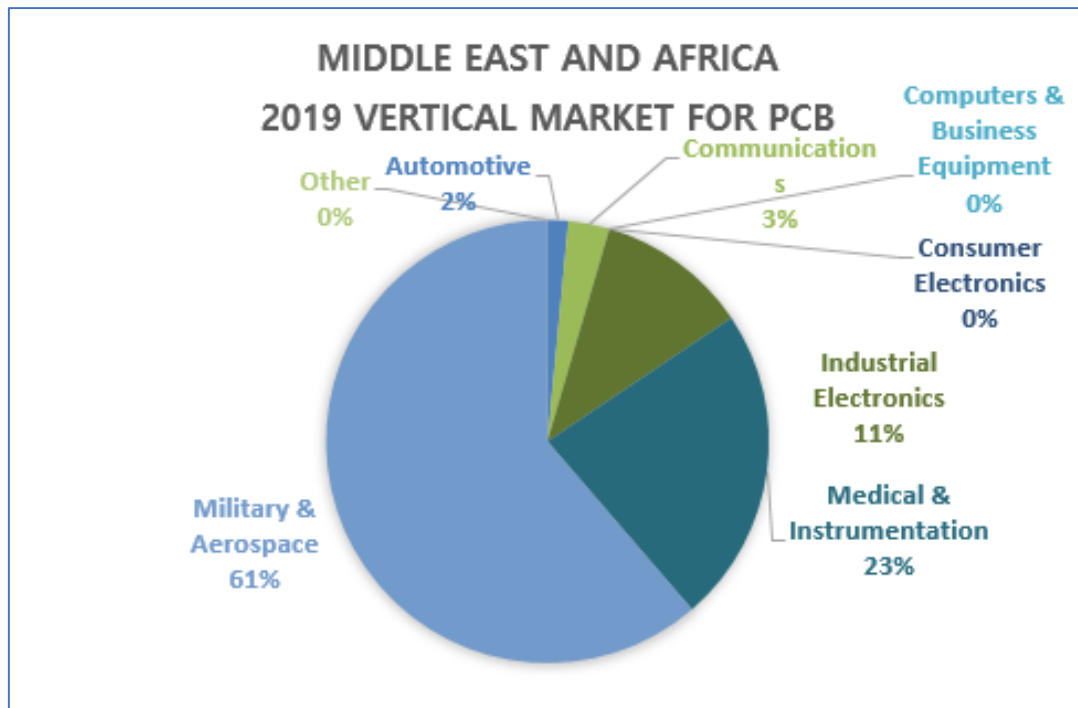
*Other: unknown



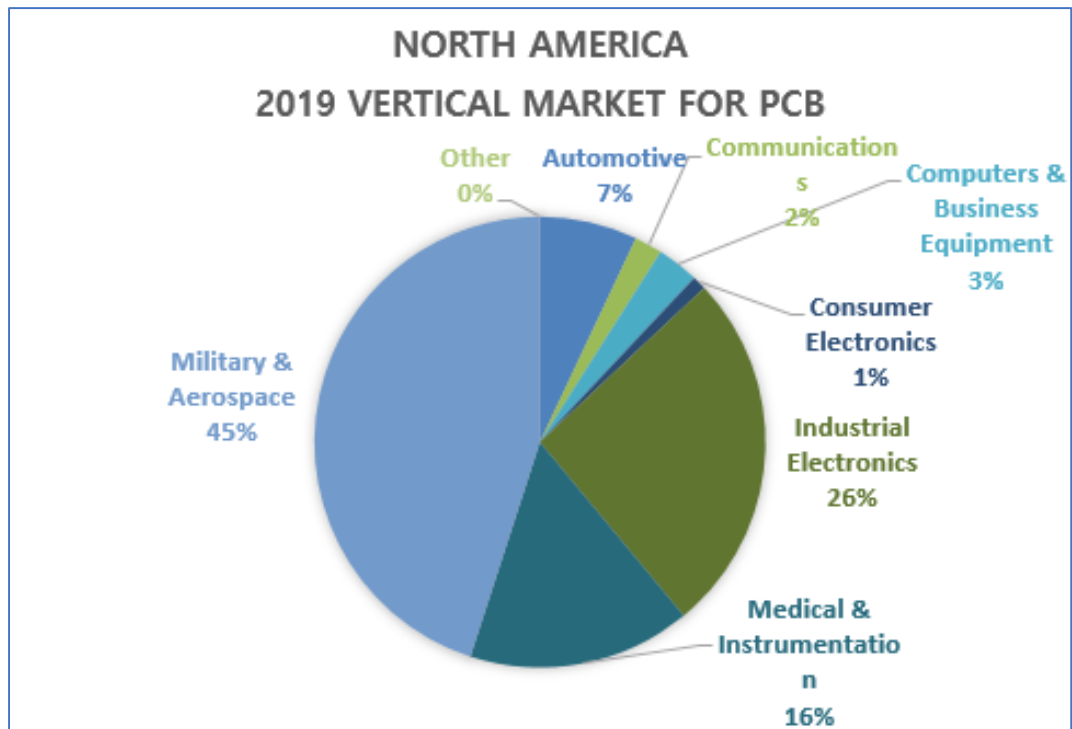
Note: Japan makes PCBs for medical, military and lighting/LED applications, but they are included in other categories. Others are unknown.



*Other: semiconductor and others



*Other: antenna and radar applications



*Other: EMS (unknown), semiconductor, hobby, education, audio and buffer

APPENDIX

Average U.S. Dollar Exchange Rates for 2018 and 2019

Exchange Rates From US Dollar		2018 Average Exchange Rate (=1.00 USD)	2019 Average Exchange Rate (=1.00 USD)	Currency (ISO Code)	% Change
ASIA/PACIFIC	Australia	1.34	1.44	AUD	7.6%
	China	6.61	6.92	CNY	4.6%
	Hong Kong	7.84	7.84	HKD	0.0%
	India	68.03	70.42	INR	3.5%
	Indonesia	14084.51	14084.51	IDR	0.0%
	Japan	110.39	108.99	JPY	-1.3%
	Malaysia	4.03	4.14	MYR	2.7%
	New Zealand	1.44	1.52	NZD	5.1%
	Pakistan	121.95	149.25	PKR	22.4%
	Philippines	52.63	51.81	PHP	-1.6%
	Singapore	1.35	1.36	SGD	1.2%
	South Korea	1101.47	1166.72	KRW	5.9%
	Taiwan	30.12	30.86	TWD	2.5%
	Thailand	32.36	31.06	THB	-4.0%
	Vietnam	23255.81	23255.81	VND	0.0%
		2018 Average Exchange Rate (=1.00 USD)	2019 Average Exchange Rate (=1.00 USD)	Currency (ISO Code)	% Change
EUROPE	EU	0.85	0.89	EUR	5.5%
	Czech Republic	22.69	22.94	CZK	1.1%
	Denmark	6.31	6.67	DKK	5.7%
	Norway	8.13	8.80	NOK	8.2%
	Poland	3.61	3.84	PLN	6.4%
	Russia	62.50	64.52	RUB	3.2%
	Sweden	8.68	9.45	SEK	8.9%
	Switzerland	0.98	0.99	CHF	1.6%
	United Kingdom	0.75	0.78	GBP	4.6%
MIDDLE EAST & AFRICA	Israel	3.5932447	3.5625	ILS	-0.9%
	South Africa	13.16	14.45	ZAR	9.8%
		2018 Average Exchange Rate (=1.00 USD)	2019 Average Exchange Rate (=1.00 USD)	Currency (ISO Code)	% Change
THE AMERICAS	USA	1.00	1.00	CAD	0.0%
	Canada	1.30	1.33	CAD	2.4%
	Mexico	19.19	19.23	MXN	0.2%
	USA	1.00	1.00	USD	0.0%
	Brazil	3.63	3.94	BRL	8.7%
	Chile	625.00	714.29	CLP	14.3%

Source: <https://www.kebhana.com/cont/mall/mall15/mall1502/index.jsp>



World Electronic Circuits Council