



Technical Education and Skills Development Authority

LABOR MARKET INFORMATION

Semiconductors and Electronics

SERIES OF 2019

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As of December 2018

I. Background

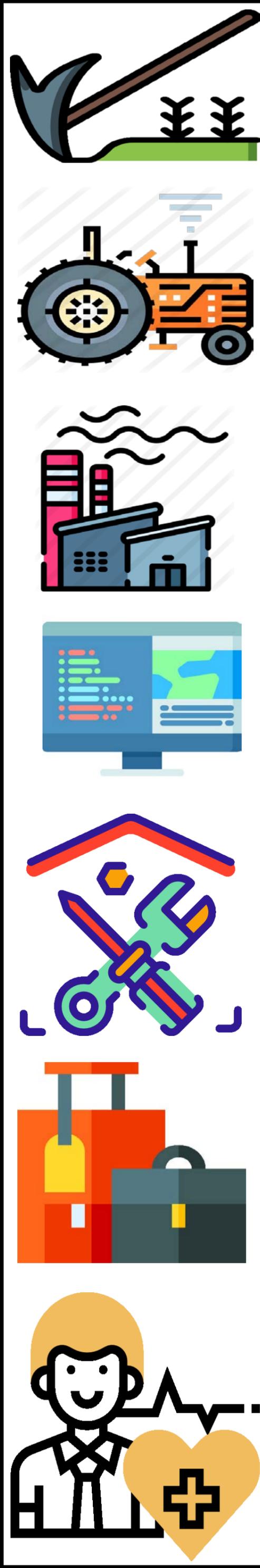
- Since the 1980s, the Philippines has been successful in attracting foreign technology firms to invest and do business in the country. A big reason for this is the country's favorable position in the Pacific as a crossroads for international trade, in addition to various incentives and a favorable political climate compared to its neighbors. These factors culminated in electronics superseding agriculture products as the country's top export from 1996 onwards.
- The Philippine Electronics Sector is also lauded as a hotbed for test manufacturing activities, such as backend semiconductor operations. Philippine manufacturing firms tend to be ISO-certified and have in-house training capabilities, making them highly attractive to foreign investors for expansion and relocation. According to the latest Philippine Employment Projection Model, the manufacturing of electronic products and components is expected to generate some 8,000 jobs (growing at a rate of 0.2%) annually from 2013 to 2022. That said, the Sector is still primarily export-based, with only a few small and medium enterprises (SMEs) engaged in research and development, as well as the manufacturing of original design products.
- In December 2018, electronic products netted an estimated \$2.70 billion in total earnings in, still making them the Philippines' top export. For comparison, the other two top export products did not reach similar figures: 'Other Manufactured Goods' accounted for only about \$285.28 million, and 'Bananas' only earned \$159.31 million. Semiconductor components and devices accounted 42.4% of all of the country's electronic exports.
- While these might seem like large numbers, production of electronic exports in 2018 was actually down by 15.8% compared to last year (\$3.19 billion). To be fair, however, this was a representation of an overall downward trend for Philippine exports and imports for 2018, as shown in the figure below.

Table 1. Highlights on Philippine Exports and Imports (December 2018), using Preliminary (p) and Revised (r) Data

	Exports		Imports	
	December 2018 ^P	December 2017 ^r	December 2018 ^P	December 2017 ^r
TOTAL				
FOB Value (in Million USD)	4,720.88	5,384.03	8,473.22	9,356.25
Year-on-Year Growth (%)	-12.3	8.4	-9.4	25.9
ELECTRONIC PRODUCTS				
FOB Value (in Million USD)	2,702.67	3,186.44	2,230.94	2,266.34
Year-on-Year Growth (%)	-15.2	25.4	-1.6	25.4

Source:

Philippine Statistics Authority. Retrieved from: <https://psa.gov.ph/statistics/foreign-trade/fts-release-id/137717>



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- This kind of downward trend has been noted by other organizations as a sign of the overall stagnant growth of the Sector, at least in terms of exports. According to the United States Agency for International Development (USAID), the Philippines has had a compound annual growth rate of -2% since 2007. In the case of the Electronics Sector, this meant that the country's primary export product offerings have largely remained the same (i.e. manufacturing of storage devices and assembly/testing of integrated circuits) whereas other countries in the ASEAN region have since expanded their portfolio. Competition has also remained a primary obstacle for the growth of the Philippine Electronics Sector, in addition to "brain drain" (i.e. top-level, high-skill professionals leaving the country for better-paying work overseas).
- In the context of the global value chain, the Philippines mostly performs at the Component and Finishing Stages (see Figure 1), with the majority of its firms engaged in the assembly and testing of integrated circuitry (IC) and in computer storage. But as corroborated by other sources, the country also has a sizable presence in consumer electronics and communication, which bodes well for the Philippines' chances of successfully integrating into the emerging digital market.

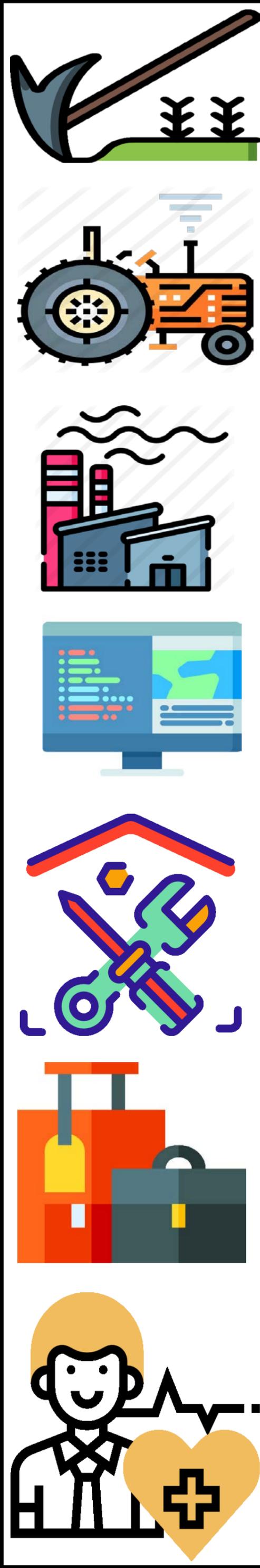
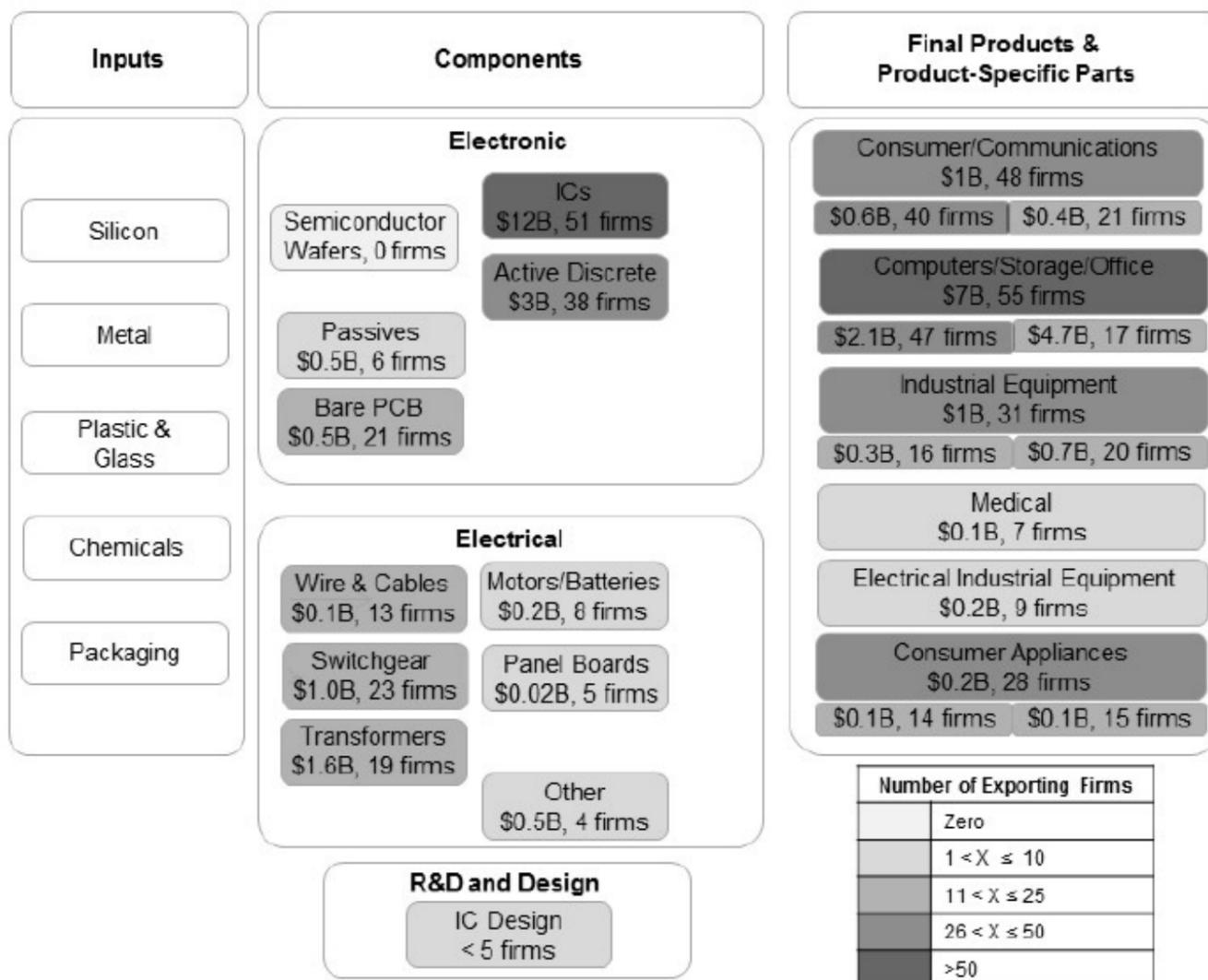


Figure 1. The Philippines in the Electrical and Electronic Global Value Chain (2014)



Source: USAID (Note: the original source indicated that the 'Inputs' segment was purposefully left empty due to incomplete data)

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- The Philippines possesses a number of advantages that help it stand apart in the worldwide Electronics Sector from its peers:
 - The Philippine’s niche in the global Electronics Manufacturing is firmly established: the country has been responsible for about 2.8% of all integrated circuits (particularly in automotive electronic components) produced in the world at least for the last ten years.
 - The Philippine workforce possesses a number of traits that greatly benefit foreign firms, such as relatively-high English proficiency, low turnover rates, and high loyalty. In addition, workers are generally described as highly-skilled to meet the industry’s needs, and are often eager to train/retrain should additional skills are deemed necessary.
 - The Philippine Export Zone Authority (PEZA) provides electronics firms with a number of incentives to help keep overall manufacturing costs low compared to the rest of the region. Among the foreign electronics firms that currently have facilities/offices in the country are Texas Instruments, STMicroelectronics, and NXP.
- Demand for skills related to Semiconductors and Electronics has also remained high though, some jobs are expected to be in-demand/hard-to-fill in the coming years, as evidenced by the JobsFit 2018-2022 Report by the Department of Labor and Employment (DOLE).

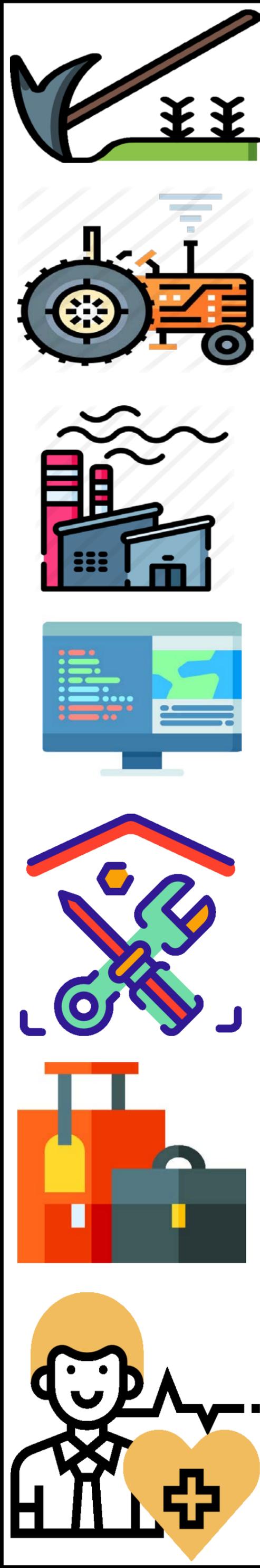


Table 2. In-Demand and Hard-to-Fill Occupations Related to Semiconductors and Electronics Until 2022

Region	In-Demand		Hard-to-Fill	
	Jobs	Equivalent TRs, if any	Jobs	Equivalent TRs, if any
CAR	- Aerospace Manufacturing (i.e. flight instruments)	- None		
I	-	-	- Auto-electrician	- Automotive Electrical Assembly NC II & III, Automotive Servicing NC III & IV
II	-	-	- Solar Assembly	- None
NCR	- Solar Assembly - Electronic Products Assembly	- None - Consumer Electronics Servicing NC IV, Automotive Servicing NC III and IV	-	-
IV-B	- Solar Assembly - Auto-electrician	- None - Automotive Electrical Assembly NC II & III, Automotive Servicing NC III & IV	- Mechatronics	- Mechatronics Servicing NC II to IV
V	-	-	- Electrical Engineer	- None
VII	-	-	- Electrical Engineer (for Metal Manufacturing)	- None
VIII	- Electronic Communication	- None	-	-

Source:
JobsFit 2022 Regional Reports (Retrieved from:
www.ble.dole.gov.ph/downloads/Jobsfits%20publications/Jobsfits%202022%20Regional%20Reports.pdf)

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- Of particular note is the growing need for electricians skilled in **Solar Assembly**, reported in the National Capital Region (NCR), Region II, and Region IV-B, which highlights the emerging industry for green energy that the Sector can also take advantage of.
- Another note is the emerging **Aerospace** industry in the Cordillera Administrative Region (CAR), expected to lead to a greater demand for electricians skilled in producing flight instruments and related components. A key industry player in CAR is Moog Inc., which produces (among other things) aircraft parts for civilian and military clients, and whose skills demands are supplied by a number of technical-vocational institutions in the region, namely Easter College.

II. TVET Capacity

□ Training Regulations

- As of December 2018, TESDA has 21 training regulations related to Semiconductors and Electronics, split between two Sub-Sectors: Automotive & Land Transportation and Electrical & Electronics.

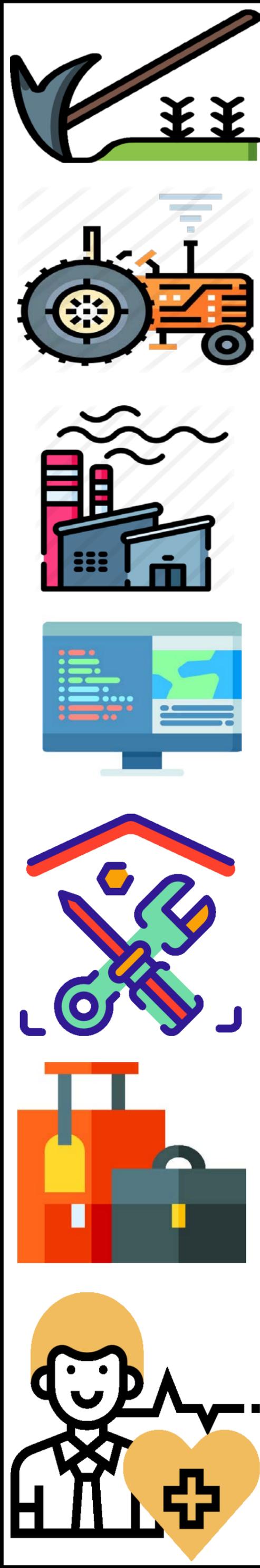
Table 2. List of Semiconductors and Electronics-Related Promulgated TRs (as of December 2018)

SUB-SECTOR	Qualification	Potential Jobs
Automotive and Land Transportation (5 Qualifications)	Automotive Electrical Assembly NC II	Automotive electrical assembly technician
	Automotive Electrical Assembly NC III	Automotive electrical assembly rectifier
	Automotive Servicing NC III	Automotive senior/air-conditioning technician, automotive electrician. Automotive LPG-fuel (retrofitting/conversion/re-powering) technician, under chassis technician
	Automotive Servicing NC IV	Automotive shop supervisor, master automotive technician, service analyst
	Automotive Wiring Harness Assembly NC II	Automotive wiring harness assembler
Electrical & Electronics (16 Qualifications)	Computer Systems Servicing NC II	Computer assembler, computer service technician, network technician, computer maintenance technician
	Consumer Electronics Servicing NC III	Consumer electronics products assembly supervisor, domestic appliance senior technician, cellular phone senior technician, audio-video senior technician
	Consumer Electronics Servicing NC IV	Consumer electronics products assembly supervisor, domestic appliance senior technician supervisor, cellular phone senior technician supervisor, audio-video senior technician supervisor
	Electronics Products Assembly and Servicing NC II	Electronic products assembler, domestic appliance service technician, audio-video service technician, industrial electronic technician, electronic production line assembler, factory production worker
	Electronics Back-End Operation NC II	Electronics back-end operator
	Electronics Front-of-Line Operation NC II	Electronics front-of-line operator
	Electronics/Semiconductor Production Line Machine Servicing NC III	Electronics/semiconductor machine technician, machine maintenance technician
	Hard Disk Drive (HDD) Front-of-line Operation NC II	HDD front-of-line operator
	Instrumentation and Control Servicing NC II	Instrumentation and control technician 2
	Instrumentation and Control Servicing NC III	Instrumentation and control technician 3, process automation technician
	Instrumentation and Control Servicing NC IV	Instrumentation and control technician 4, process automation technician
	Mechatronics Servicing NC II	Mechantronics and automation technician/installer
	Mechatronics Servicing NC III	Mechantronics and automation programmer-technician
	Mechatronics Servicing NC IV	Mechantronics technician, industrial automation technician
	Semiconductor Back-End Operation NC II	Semiconductor back-end operator
	Semiconductor Front-of-Line Operation NC II	Semiconductor front-of-line operator

Sources:

- TESDA List of Promulgated Training Regulations (latest as of June 2018)

- List of Training Regulations, Retrieved from: https://www.tesda.gov.ph/Download/Training_Regulations?Searchcat=Training%20Regulations



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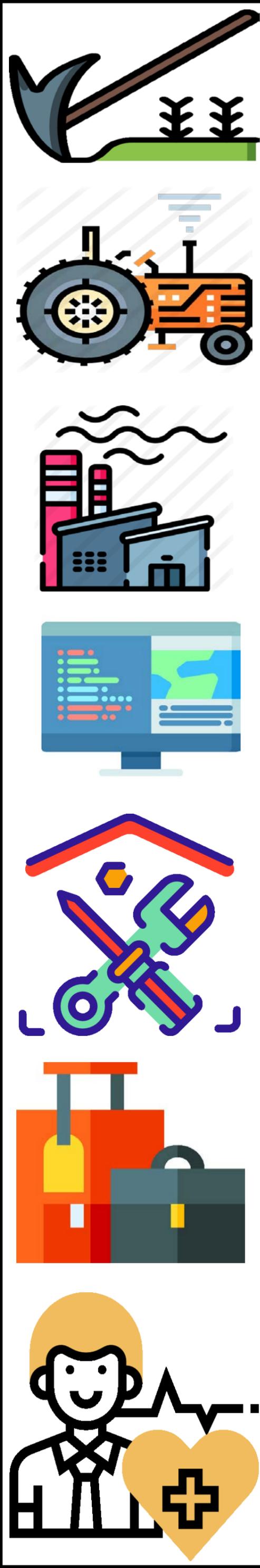
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Board of Investments. (April 2017). *Electronics Industry*. Retrieved from: <http://boi.gov.ph/wp-content/uploads/2018/02/Electronics-2017.pdf>

USAID. (May 2016). *The Philippines in the Electronics and Electrical Global Value Chain*. Retrieved from: https://gvcc.duke.edu/wp-content/uploads/2016_Philippines_Electronics_Electrical_Global_Value_Chain.pdf





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