Technical Education and Skills Development Authority

LABOR MARKET INFORMATION

Manufacturing Sector

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Manufacturing Sector
As of December 2018

I. Opportunities

- The Manufacturing Sector is identified as one of the country's Key Employment Generators (KEGs) according to the JobsFit Regional Reports, the 'AmBisyon Natin 2040' Plans of the National Economic and Development Authority (NEDA), and the 'Trabaho, Negosyo, Kabuhayan' (TNK) Blueprint 2040 of the Department of Labor and Employment;

- The Sector has shown excellent growth in 2018, as it did in previous years. Electronics accounted for 50% of all Philippine exports in recent years, and food manufacturing made up about 40% of the Manufacturing Sector's total Gross Value Added. The top three occupations in terms of employment are those related to chemicals, tool and die production, and animal production, though the highest growth rate is reported for aerospace/aeronautics (i.e. 6.1%). The Manufacturing Sector thus plays an big role in the economy, which can be developed further through investments on research and development;

- The Sector's growth is verified by the Philippine Statistics Authority, which identified a 12.2% growth within the Sector in July 2018, which was a 6% percent increase from last year. Among the subsectors who contributed to this growth were Textiles, Beverage Production, and Basic Metals;

- Below is the projected employment generated by the Manufacturing Sector according to the JobsFit 2022 Labor Market Information Report. Take note that due to overlap between occupations, the Agriculture, Fisheries and Forestry / Agribusiness Sector has been included in this table, but only by virtue of its occupations that are related to food manufacturing/process:

Table 1. Projected Employment (2013-2022) in Key Employment Generators for Manufacturing
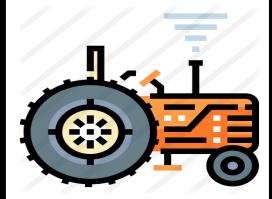
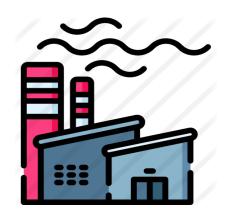| KEGs	Occupations	Net Employment (In Thousands)	Growth Rate
Manufacturing	Manufacture of air and spacecraft and related machinery (Aerospace)	1.0	6.1
	Manufacture of motorcycles, and other transport equipment n.e.c (Motorcycles)	2.0	4.4
	Manufacture of paper and paper products (Pulp & paper)	21.0	4.0
	Manufacture of other fabricated metal products; metal working service activities (Tool & die)	31.0	3.5
	Manufacture of parts and accessories for motor vehicles (Automotive parts)	7.0	3.4
	Manufacture of chemicals and chemical products, basic pharmaceutical products and pharmaceutical preparations (Chemicals & chemical products, including petrochemicals and natural health products)	31.0	3.2
	Manufacture of motor vehicles, bodies (coachwork) for motor vehicles, trailers and semi-trailers (Automotive)	4.0	1.9
	Manufacture of plastics products (Plastic)	10.0	1.7
	Casting of metals (Metal casting)	1.0	1.1
	Manufacture of rubber products (Rubber)	0.0	0.3
	Manufacture of electronics and electronic products and components (Semi-conductor & electronics)	8.0	0.2
	Manufacture of non-metallic mineral products, n.e.c. (Includes ceramic tiles)	-1.0	-0.2
	Manufacture of basic iron and steel (Iron & steel)	-5.0	-1.3
	Manufacture of structural metal products, tanks, reservoirs and steam generators; weapons and ammunition (Iron & steel, copper)	-7.0	-1.9
	Manufacture of furniture (Furniture)	-43.0	-4.8
Agriculture, Fisheries and Forestry / Agribusiness	Processing and preserving of fruits and vegetables & manufacture of vegetable and animal oils and fats	23.0	3.2
	Animal production	31.0	0.5
	Processing and preserving of fish, crustaceans and mollusks	0.0	0.0
	Processing and preserving of meat	-5.0	-0.7

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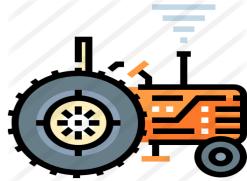❑ Regions with In-Demand and/or Hard-to-Fill Manufacturing Jobs

- The following regions have Manufacturing-related jobs that are deemed in-demand and/or hard-to-fill at least until 2022. Take note that due to industry overlap, many of these jobs are also found in other Sectors, such as Tourism and Services. That said, only those explicitly stated to be required in the Manufacturing Sector are included here, even if they are found in other Sectors (i.e. Machining/Machinists, which are also required in Construction). Jobs related to food production are included here for the same reason, despite their overlap with the Agriculture, Forestry and Fishery Sub-Sector.
- Certain jobs, like mechanical engineers in Region X, were classified as both 'in-demand' and 'hard-to-fill'.
- A few generic jobs were also identified, but their corresponding Sub-Sectors were not indicated. Therefore, their equivalent TR is stated as "depends on Sub-Sector".
- As seen Tables 2 and 3, the Manufacturing Sector is readily affected by technological trends, prompting the need for additional retraining and skills enhancement of the workforce over the next five years. Several regions, like CAR and IV-A, find it hard to fill in occupations that require technical specializations such as integrated circuit (IC) assembly and mechatronics.
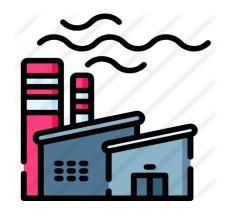
Table 2. Regions with In-Demand and Hard-to-Fill Jobs (w/ equivalent Training Regulations (TRs), if any) Related to Manufacturing until 2022

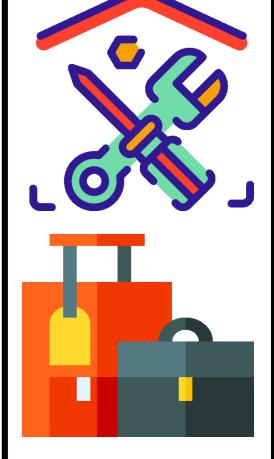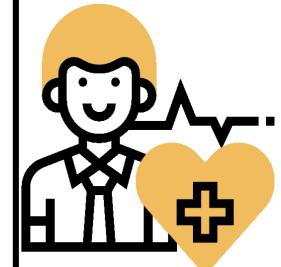| Region	In-Demand		Hard-to-Fill	
	Jobs	**Equivalent TRs, if any**	**Jobs**	**Equivalent TRs, if any**
NCR	- Product Designers (also for IT-BPM) - Senior Managers (also for Tourism (Hotel and Restaurant), Media Entertainment, and IT)	- Mechanical Drafting NC I (limited to Metals and Engineering) - Consumer Electronics Servicing NC IV, Automotive Servicing NC III and IV	-	-
CAR	-	-	IC Assembler	None
I	- Factory Worker - Machine Operator - Processing Crew - Production Operator	- *Depends on Sub-Sector* - *Depends on Sub-Sector* - Food Processing NC I to IV - *Depends on Sub-Sector*	- Glass Cutter - Tailor - Cake Decorator - Sewer	- None - Tailoring NC II - Bread and Pastry Production NC II (limited to Tourism (Hotel and Restaurant)) - Dressmaking NC II, Tailoring NC II
II	-	-	- Feeds Processing - Dairy Processing	- Food Processing NC I to IV - Food Processing NC I to IV
III	Engineers	None	-	-
IV-A	- Food processor - Packager/Packer - Automotive technician/ electrician/mechanic	- Food Processing NC II to NC IV - Food Processing NC II to NC IV - Automotive Servicing NC I to IV	Mechatronics	Mechatronics Servicing NC II to IV
V	-	-	- Electrical Engineer - Information Technologist - Chemical Analyst	- None - None - None

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Region	In-Demand		Hard-to-Fill	
	Jobs	**Equivalent TRs, if any**	**Jobs**	**Equivalent TRs, if any**
VI	-	-	- Engineer - Skilled Welder - Machinist - Accountant - Chemist	- None - SMAW, SAW, FCAW, GMAW, Gas Welding NCs - Machining NC I to III - None - None
VII	- Skilled Workers (i.e. Food Manufacturing) - Sales Agent (i.e. Food Manufacturing) - Driver/Messenger (i.e. Metal Manufacturing)	- Food Processing NC I to NC IV - Customer Services NC II (limited to Wholesale and Retail Trading) - Driving NC II, Driving (Articulated Truck, Passenger Bus, Straight Truck) NC III	- Skilled Workers (i.e. Food Manufacturing) - Manager (i.e. Food Manufacturing) - Executive (i.e. Food Manufacturing) - Electrical Engineer (i.e. Metal Manufacturing)	- Food Processing NC I to IV - Food Processing NC III and IV - Food Processing NC III and IV - None
VIII	- Welder - Electrician - Mechanic	- SMAW, SAW, GMAW, FCAW, Gas Welding NCs - Electric Installation and Maintenance NC III - Motorcycle/Small Engine Mechanic NC II	- Chemical Engineer - Civil Engineer - Certified Public Accountant	- None - None - None
X	Mechanical Engineer	None	Mechanical Engineer	None
XI	Encoders	None	Civil Engineer	None
XII	Engineering	None	- Chemist - Machinist	- None - Machining NC I to III

- Several emerging skills in the Manufacturing Sector were also identified in a few regions (see Table 3). As they currently stand, a few of these skills do not have an equivalent TR, thus creating the possibility for TESDA to create brand new training qualifications in order to meet such skill requirements.
- For NCR, these skills are also deemed "in-demand", as the previous table indicated. Only a few TRs related to Manufacturing provide the appropriate competencies, which means that not all Manufacturing Sub-Sectors may be able to meet them in the short-term.
- It should also be noted that a few other regions identified the Manufacturing Sector as a whole to be an 'emerging industry', but did not provide specific emerging skills needs for further elaboration.
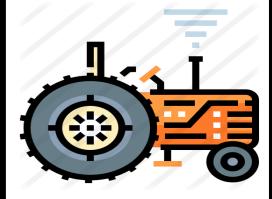
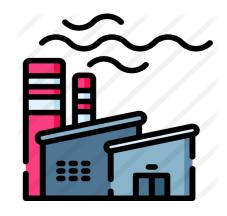**Table 3.** Emerging Manufacturing-Related Skills, as Identified in the JobsFit 2022 Regional Reports

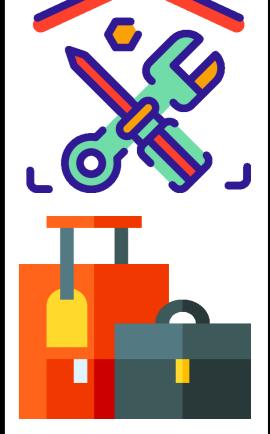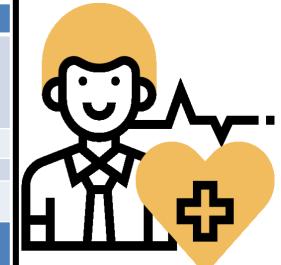| Region	Emerging Skills	Relevant TRs (if any)
NCR	- Product Designing - Senior Management	- Mechanical Drafting NC I, for jobs related to Metals and Engineering - Consumer Electronics Servicing NC IV, for jobs related to Electrical and Electronics; Automotive Servicing NC III and IV, for jobs related to Automotive and Land Transportation
CAR	Aerospace construction	None
V	Renewable energy generation	None
IX	Agriculture vegetable production	- Agriculture Crops Production NC I; Organic Agriculture Production NC II (both are not related to Manufacturing)

II.   TVET Capacity

❑   Training Regulations

- As of January 2019, TESDA has a total of 105 training qualifications or promulgated training regulations (TRs) related to Manufacturing (i.e. 13 NC Is, 54 NC IIs, 30 NC IIIs, 8 NC IVs), spread throughout nine (9) other Sectors.

Table 4. List of Manufacturing-Related Promulgated TRs (as of January 2019)
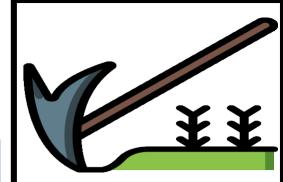
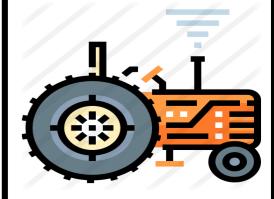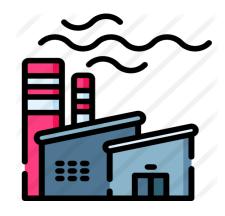| SUB-SECTOR	Qualification	Potential Jobs
Agriculture Forestry and Fishery (2 Qualifications)	Rubber Processing NC II	Latex receiver, Machine operator
	Rubber Production NC II	Budder, Tapper, Nursery caretaker, Rubber plantation worker, Rubber farmer
Automotive and Land Transportation (37 Qualifications)	Automotive Body Painting/Finishing NC II	Automotive painter/paint finisher
	Auto Engine Rebuilding NC II	Automotive engine rebuilder, machinist
	Automotive Body Repairing NC II	Automotive body repair mechanic/repairer/panel beater and welder
	Automotive Body Painting/Finishing NC I	Automotive painter/paint finisher (single stage painting)
	Automotive Body Painting/Finishing NC III	Automotive painter (3-stage pearl/mica colors painting), Automotive paint contractor/body paint finisher
	Automotive Electrical Assembly NC II	Automotive electrical assembly technician
	Automotive Mechanical Assembly NC II	Automotive mechanical assembly technician
	Automotive Electrical Assembly NC III	Automotive electrical assembly rectifier
	Automotive Mechanical Assembly NC III	Automotive mechanical assembly rectifier
	Automotive Servicing NC I	Pre-delivery inspector/check lister, periodic maintenance personnel/staff/associate, junior technician, maintenance technician, auto service personnel
	Automotive Servicing NC II	Automotive mechanic/service technician
	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
	Driving NC II	Professional driver, light vehicle driver
	Driving (Passenger Bus/Straight Truck) NC III	Passenger bus driver, straight truck driver
	Driving (Articulated Vehicle) NC III	Articulated vehicle driver, truck trailer driver
	Forging NC II	Blacksmith, hammersmith
	Forging NC III	Forging machine operator
	Foundry Pattern Making NC II	Foundry pattern maker
	Foundry Pattern Making NC III	Foundry pattern maker (shell core/die cast mold/other patterns)
	Foundry Melting/Casting NC II	Foundry melter
	Foundry Melting/Casting NC III	Foundry alloy melter
	Foundry Molding NC II	Foundry molder
	Foundry Molding NC III	Jobbing foundry molder
	Heat Treatment NC II	Heat treater
	Laboratory and Metrology/Calibration Services NC II	Laboratory and metrology/calibration technician
	Laboratory and Metrology/Calibration Services NC III	Laboratory and metrology/calibration senior technician
	Moldmaking NC II	Mold maker
	Motorcycle/Small Engine Servicing NC II	Motorcycle/small engine mechanic
	Metal Stamping NC II	Press worker, metal stamping press operator
	Painting Machine Operation NC II	Automotive painting machine operator
	Plastic Machine Operation NC II	Plastic machine operator
	Plastic Machine Operation NC III	Plastic machine operator
	Process Inspection NC II	Process inspector, Quality assurance/control inspector
	Process Inspection NC III	Process inspection leader
	Tinsmithing (Automotive Manufacturing) NC II	Tinsmith (Automotive Manufacturing)
Chemicals / Plastics / Petrochemicals (1 Qualification)	Chemical Process Operations NC III	Chemical process operator
Electrical & Electronics (19 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
	Electrical Installation and Maintenance NC II	Building/Residential/Commercial-wiring electrician, maintenance technician
	Electrical Installation and Maintenance NC III	Industrial electrician, electrical leadman/foreman
	Electrical Installation and Maintenance NC IV	Electrical foreman, electrical supervisor, supervising technician

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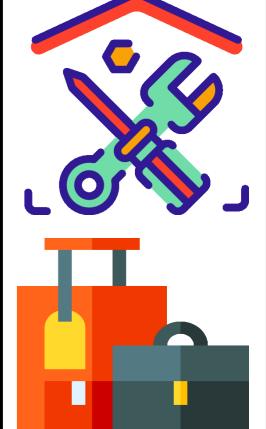| SUB-SECTOR	Qualification	Potential Jobs
Electrical & Electronics (cont.)	Electronics Products Assembly and Servicing NC II	Electronic products assembler, domestic appliance service technician, audio-video service technician, industrial electronic technician, electronic production line assembler, factory 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
Footwear & Leathergoods (1 Qualification)	Footwear Making NC II	Footwear maker, shoemaker
Garments (3 Qualifications)	Dressmaking NC II	Dressmaker, garment sewer
	Fashion Design (Apparel) NC III	Fashion illustrator/stylist/designer (apparel), production manager (apparel)
	Tailoring NC II	Tailor, garment sewer
Heating, Ventilation, Airconditioning and Refrigeration (6 Qualifications)	Air Duct Servicing NC II	Tinsmith (HVAC/R)
	Ice Plant Refrigeration Servicing NC III	Ice plant refrigeration technician
	Land-based Transport Refrigeration Servicing NC II	Land-based transport refrigeration mechanic/serviceman
	RAC Servicing (DomRAC) NC II	Domestic refrigeration and air-conditioning technician
	RAC Servicing (PACU-CRE) NC III	PACU/CRE installer, PACU/CRE maintenance technician, commercial refrigeration and air-conditioning technician
	Transport RAC Servicing NC II	Transport air-conditioning and refrigeration technician
Metals and Engineering (28 Qualifications)	CAD/CAM Operation NC III	CAD/CAM operator, CAD operator
	CNC Lathe Machine Operation NC II	CNC lathe machine operator (basic)
	CNC Lathe Machine Operation NC III	CNC lathe machine operator (advanced)
	CNC Milling Machine Operation NC II	CNC milling machine operator (basic)
	CNC Milling Machine Operation NC III	CNC milling machine operator (advanced)
	Flux Cored Arc Welding (FCAW) NC I	Plate welder (FCAW)
	Flux Cored Arc Welding (FCAW) NC II	Plate welder (FCAW), pipe welder (FCAW)
	Flux Cored Arc Welding (FCAW) NC III	Plate welder (FCAW), pipe welder (FCAW), FCAW welder (alloy plate/alloy pipe)
	Gas Metal Arc Welding (GMAW) NC I	Plate welder (GMAW)
	Gas Metal Arc Welding (GMAW) NC II	Plate welder (GMAW), pipe welder (GMAW)
	Gas Metal Arc Welding (GMAW) NC III	Plate welder (GMAW), pipe welder (GMAW), GMAW welder (alloy plate/alloy pipe)
	Gas Tungsten Arc Welding (GTAW) NC II	GTAW/TIG welder
	Gas Tungsten Arc Welding (GTAW) NC IV	GTAW/TIG pipe welder (carbon steel), GTAW/TIG plate welder (carbon steel), GTAW/TIG pipe welder (alloy steel), GTAW/TIG plate welder (alloy steel)
	Gas Welding NC I	Gas (oxy-acetylyene) welder
	Gas Welding NC II	Gas (oxy-acetylyene) welder
	Machining NC I	Machinist, lathe operator, milling machine operator, precision grinding machine operator, bench worker/fitter
	Machining NC II	Machinist, lathe operator, milling machine operator, precision grinding machine operator, bench worker/fitter
	Machining NC III	Machinist, lathe operator, milling machine operator, precision grinding machine operator, bench worker/fitter
	Mechanical Drafting NC I	Mechanical draftsman
	Plant Maintenance NC I	Plant maintenance mechanic
	Press Machine Operation NC I	Press worker
	Shielded Metal Arc Welding (SMAW) NC I	Plate welder (SMAW)
	Shielded Metal Arc Welding (SMAW) NC II	SMAW welder
	Shielded Metal Arc Welding (SMAW) NC III	Plate welder (SMAW/SMAW-alloy steel), pipe welder (SMAW)
	Shielded Metal Arc Welding (SMAW) NC IV	Plate welder (SMAW/SMAW-alloy steel), pipe welder (SMAW/SMAW-alloy steel)
	Submerged Arc Welding (SAW) NC I	Plate welder (SAW)
	Submerged Arc Welding (SAW) NC II	Pipe welder (SAW)
	Tool and Die Making NC II	Tool/die maker, machinist
Processed Food & Beverages (7 Qualifications)	Fish Products Packaging NC II	Fish packaging worker
	Food Processing NC I	Food processing worker, food factory worker, food production/warehouse helper
	Food Processing NC II	Food processing worker, food production worker/staff, packing staff/packer, quality control staff, tocino maker, tinapa maker, dried fish processor, cured meat processor, fruit candy maker
	Food Processing NC III	Food leading hand, food front line supervisor, food packaging line operator, food processing line operator
	Food Processing NC IV	Food production/packaging supervisor
	Slaughtering Operations (Large Animal) NC II	Slaughterhouse butcher
	Slaughtering Operations (Swine) NC II	Slaughterhouse butcher (swine)

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❑ Enrollees/Graduates

- As seen in the table below, the Automotive and Land Transportation Sub-Sector had the most number of students between 2014 and 2017, only superseded by the Electrical and Electronics Sub-Sector in 2017 by about 18,000 students. As of December 31, 2018, however, it is the Metals and Engineering Sub-Sector that had the most number of enrollees and graduates; this could change as 2018 data continues to be updated. The Footwear and Leathergoods Sub-Sector consistently had one of the lowest number of enrollees and graduates, though a sudden uptick was recorded in 2017 from Regions III and IX (graduates also outnumbered enrollees due to spillover from previous years).

- The Chemicals/Plastics/Petrochemicals Sub-Sector performed the worst, only showing student activity in 2016 and 2017, while being absent for the rest of the year range. Even then, the low numbers might be attributed to the fact that there's currently only one TR associated with this Sub-Sector: Chemical Process Operations NC III.

Table 5. TESDA Enrolled (E) and Graduated (G) Students from Manufacturing-Related Sectors (2014-2018)

SUB-SECTOR	2014		2015		2016		2017		2018*	
	E	G	E	G	E	G	E	G	E	G
Agriculture, Forestry and Fishery	51,279	41,885	104,857	121,479	83,922	78,957	111,148	101,471	59,230 (275)	53,420 (298)
Automotive and Land Transportation	121,322	103,157	168,334	156,214	156,926	145,395	173,017	149,761	72,861	66,919
Chemicals / Plastics / Petrochemicals	-	-	-	-	44	59	969	950	-	-
Electrical and Electronics	85,039	70,318	161,032	152,658	199,779	179,179	155,467	136,164	73,938	68,454
Footwear and Leathergoods	63	36	797	752	87	84	1,828	2,100	-	-
Garments	28,725	25,262	61,795	59,121	41,299	38,079	46,141	40,538	16,393	16,100
Heating, Ventilation, Airconditioning and Refrigeration	10,039	8,211	16,061	15,422	10,364	9,740	9,137	7,308	82	81
Metals and Engineering	100,353	85,364	105,771	93,829	118,726	110,509	140,345	119,091	75,841	79,604
Processed Food & Beverages	90,560	85,038	133,789	128,836	144,067	140,603	101,629	96,957	8,532	7,169

* - Data may change in the future; numbers in parentheses pertain to data strictly from Manufacturing-related courses within the Sub-Sector

Source:
Nationwide Data on TVET Enrollees and Graduates (latest as of December 31, 2018)

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❑ Assessed/Certified

- As of December 31, 2018, the Electrical and Electronics Sub-Sector had the most number of assessed and certified graduates; the Automotive and Land Transportation Sub-Sector had that spot between 2014 and 2017. The latter Sub-Sector still performed well in 2018, followed by Metals and Engineering.
- The Chemicals/Plastics/Petrochemicals Sub-Sector did not report any assessed and certified students from 2014 to 2018. Footwear and Leathergoods did not have data for 2018, but this could change as reports continue to come in from the regions.

Table 6. TESDA Assessed (A) and Certified (C) Graduates from Manufacturing-Related Sectors (2014-2018)
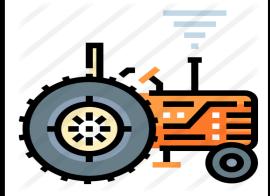
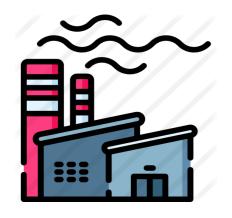| SUB-SECTOR	2014		2015		2016		2017		2018*	
	A	C	A	C	A	C	A	C	A	C
Agriculture, Forestry and Fishery	51,279	41,885	104,857	121,479	83,922	78,957	111,148	101,471	59,230 (949)	53,420 (828)
Automotive and Land Transportation	121,322	103,157	168,334	156,214	156,926	145,395	173,017	149,761	156,877	143,968
Chemicals / Plastics / Petrochemicals	-	-	-	-	-	-	-	-	-	-
Electrical and Electronics	85,039	70,318	161,032	152,658	199,779	179,179	155,467	136,164	222,704	190,173
Footwear and Leathergoods	63	36	797	752	87	84	1,828	2,100	-	-
Garments	28,725	25,262	61,795	59,121	41,299	38,079	46,141	40,538	29,684	26,189
Heating, Ventilation, Airconditioning and Refrigeration	10,039	8,211	16,061	15,422	10,364	9,740	9,137	7,308	433	433
Metals and Engineering	100,353	85,364	105,771	93,829	118,726	110,509	140,345	119,091	139,556	129,648
Processed Food & Beverages	90,560	85,038	133,789	128,836	144,067	140,603	101,629	96,957	27,271	26,473

* - Data may change in the future; numbers in parentheses pertain to data strictly from Manufacturing-related courses within the Sub-Sector
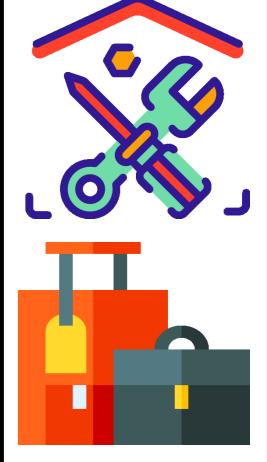
Source:
Nationwide Data on TVET Enrollees and Graduates (latest as of December 31, 2018)
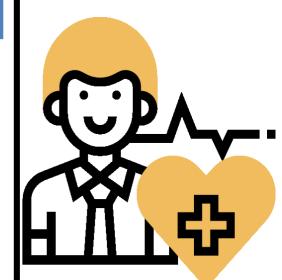
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- Despite these numbers, it was reported that a number of TRs in the Manufacturing-Sector did not have any data on enrollees and graduates. It could be assumed that these TRs were no longer offered by TVIs, or the TVIs that do offer them were no longer operating as of December 2018. Even then, some TRs did show data on assessed and certified graduates, as denoted by an asterisk (*):

Agriculture, Forestry and Fishery
- Rubber Processing NC II

Automotive and Land Transportation
- Automotive Body Painting/Finishing NC III
- Automotive Body Repairing NC II

Chemicals / Plastics / Petrochemicals
- Chemical Process Operations NC III

Electrical and Electronics
- Consumer Electronics Servicing NC II
- Consumer Electronics Servicing NC IV
- Electronics Back-End Operation NC II
- Electronics Front-of-Line Operation NC II
- Hard Disk Drive (HDD) Front-of-Line Operation NC II
- Instrumentation and Control Servicing NC IV
- Semiconductor Back - End Operation NC II
- Semiconductor Front-of-Line Operations NC II

Footwear and Leathergoods
- Footwear Making NC II

Garments
- Fashion Design (Apparel) NC III

Heating, Ventilation, Airconditioning and Refrigeration
- Air Duct Servicing NC II
- Ice Plant Refrigeration Servicing NC III
- Land-based Transport Refrigeration Servicing NC II*
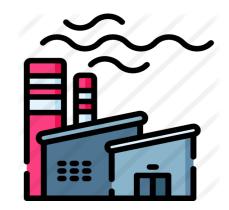- RAC Servicing (PACU-CRE) NC II

Metals and Engineering
- CAD/CAM Operation NC III
- CNC Milling Machine Operation NC III
- Flux Cored Arc Welding (FCAW) NC I
- Flux Cored Arc Welding (FCAW) NC III
- Gas Metal Arc Welding (GMAW) NC III*
- Gas Tungsten Arc Welding (GTAW) NC IV
- Gas Welding NC I*
- Machining NC III
- Plant Maintenance NC I
- Press Machine Operation NC I
- Submerged Arc Welding (SAW) NC I
- Submerged Arc Welding (SAW) NC II
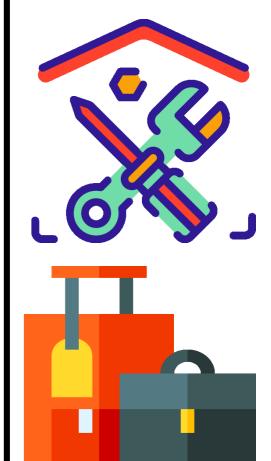- Tool and Die Making NC II

Processed Food & Beverages
- Fish Products Packaging NC II
- Food Processing NC I
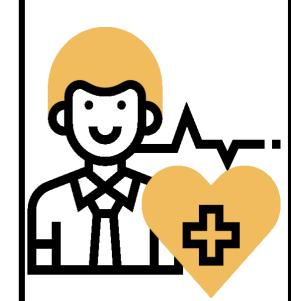- Food Processing NC III
- Food Processing NC IV

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❑ Trainers/Assessors

- As of December 2018, the National Capital Region has the most number of trainers with National TVET Trainer Certificates (NTTCs) related to Manufacturing, sitting at 1,792 (or 13.2% of the total number of NTTC holders). On the other hand, Region IV-A has the most number of Certified Assessors (CAs) for Manufacturing, numbering at 653 (or about 12% of the total CAs).
- Of the country's NTTC holders for Manufacturing, 24% are focused on Electrical and Electronics, 23.4% are in Metals and Engineering, and about 20% are engaged in Automotive and Land Transportation.
- The distribution of CAs follow a similar trend. Once again, the Electrical and Electronics Sub-Sector lead the pack by having 32% of all CAs engaged in Manufacturing-related courses, followed by the Metals and Engineering Sub-Sector (28%), and the Automotive and Land Transportation Sub-Sector (27.2%).
- The Chemicals/Plastics/Petrochemicals Sub-Sector has no reported data about CAs and NTTC holders.

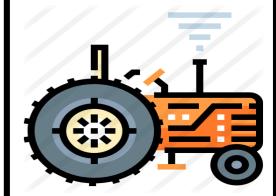**Table7.** Certified Assessors (CAs) and NTTC Holders for the Manufacturing Sector (as of December 2018)

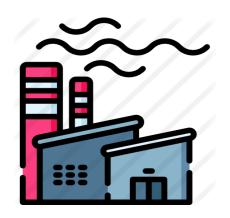| REGION	SUB-SECTOR																	
	Agriculture, Forestry and Fishery*		Automotive and Land Transportation		Chemicals / Plastics / Petrochemicals		Electrical and Electronics		Footwear and Leathergoods		Garments		Heating, Ventilation, Airconditioning and Refrigeration		Metals and Engineering		Processed Food & Beverages	
	NTTC	CAs	NTTC	CAs	NTTC	CAs	NTTC	CAs	NTTC	CAs	NTTC	CAs	NTTC	CAs	NTTC	CAs	NTTC	CAs
I	-	-	157	93	-	-	213	67	-	-	43	9	23	9	129	74	34	16
II	-	-	140	79	-	-	255	54	-	-	64	19	25	9	69	29	39	16
III	-	-	159	77	-	-	560	223	-	-	68	32	36	16	339	170	63	25
IV-A	-	-	270	139	-	-	786	230	-	-	90	27	51	17	486	229	24	11
IV-B	-	-	119	76	-	-	256	83	-	-	17	9	14	8	147	65	32	18
V	-	-	170	58	-	-	427	67	-	-	83	16	26	4	89	40	44	15
VI	-	-	200	87	-	-	289	81	1	1	40	14	24	6	225	128	36	6
VII	-	-	93	51	-	-	319	120	-	-	85	33	23	11	285	150	14	5
VIII	-	-	129	78	-	-	219	94	-	-	47	19	13	4	108	69	34	16
IX	27	17	156	79	-	-	248	72	-	-	55	15	20	11	102	49	65	17
X	7	3	184	95	-	-	331	134	-	-	55	18	18	10	135	80	74	23
XI	-	-	198	119	-	-	294	93	-	-	20	6	27	12	129	83	56	18
XII	15	2	229	150	-	-	322	122	-	-	68	21	23	11	152	83	118	39
ARMM	-	-	22	22	-	-	134	40	-	-	54	20	1	-	51	27	19	3
CAR	-	-	125	119	-	-	85	59	-	-	20	14	-	-	77	49	14	11
CARAGA	-	-	62	41	-	-	125	57	-	-	15	4	16	11	86	58	11	4
NCR	-	-	287	140	-	-	767	166	-	-	61	16	76	13	558	175	43	15
Grand Total	59	22	2,700	1,503	-	-	5,630	1,762	1	1	885	292	416	152	3,167	1,558	720	258

* - Only Manufacturing-related courses were taken into consideration

Source:
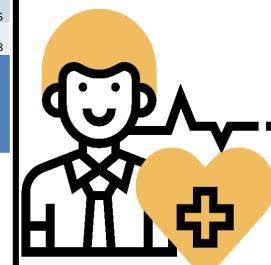Data from the TESDA Certification Office, as of December 31, 2018

LABOR MARKET INFORMATION
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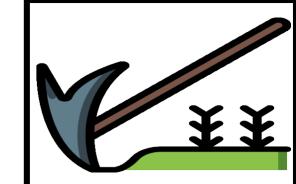
❑ Registered Programs

- As of October 2018, Region III has the most number of registered programs related to Manufacturing, numbering at 772 or about 13% of all programs, followed by the National Capital Region (9.6%) and Region IV-A (9.4%).
- Throughout the country, the Electrical and Electronics Sub-Sector has the most number of Manufacturing-related registered programs, sitting at 1,942 or 31.5% of all programs, followed by the Automotive and Land Transportation Sub-Sector (28.8%), and by the Metals and Engineering Sub-Sector (27.2%). Footwear and Leathergoods only had one TVI associated with the Sub-Sector
- The Agriculture, Fishery, and Forestry Sector is included here due to having Rubber Production NC II and Rubber Processing NC II, qualifications that are related to Manufacturing. All other qualifications have been excluded.
- There are currently no TVIs being offered for the Chemicals / Plastics / Petrochemicals Sub-Sector, despite reporting enrollees and graduates in 2016 and 2017. It can be assumed that the TVIs who offered courses for this Sub-Sector have since closed or have removed them from the list of available courses for 2018.
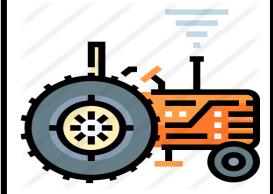
Table 8. Number of Registered Training Programs Related to the Manufacturing Sector (as of December 2018)
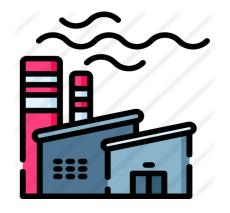
Sector	ARMM	CAR	NCR	I	II	III	IV-A	IV-B	V	VI	VII	VIII	IX	X	XI	XII	XIII	Total
Agriculture, Fishery, and Forestry Sector	-	-	-	-	-	-	-	-	-	-	-	-	6	1	-	3	-	10
Automotive and Land Transportation	31	59	125	135	97	131	120	96	123	104	61	74	150	146	125	155	46	1,778
Chemicals / Plastics / Petrochemicals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrical and Electronics	45	26	205	93	58	303	237	91	219	56	91	63	84	152	67	88	64	1,942
Footwear and Leathergoods		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Garments	16	7	39	11	19	53	17	7	29	15	29	13	28	15	4	16	1	319
Heating, Ventilation, Airconditioning and Refrigeration	-	-	16	12	9	12	8	6	12	6	5	3	10	8	10	6	10	133
Metals and Engineering	28	31	191	76	24	257	189	65	82	112	183	62	73	127	75	51	51	1,677
Processed Food & Beverages	3	7	18	25	8	16	10	14	24	14	19	23	38	19	46	26	7	317
Total	123	130	595	352	215	772	581	279	489	307	388	238	383	467	327	342	179	6,177

Source:
Data from the TESDA Certification Office, as of December 31, 2018

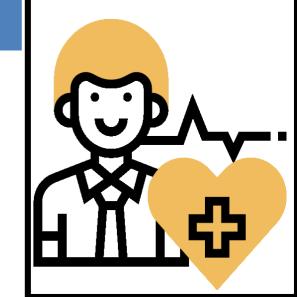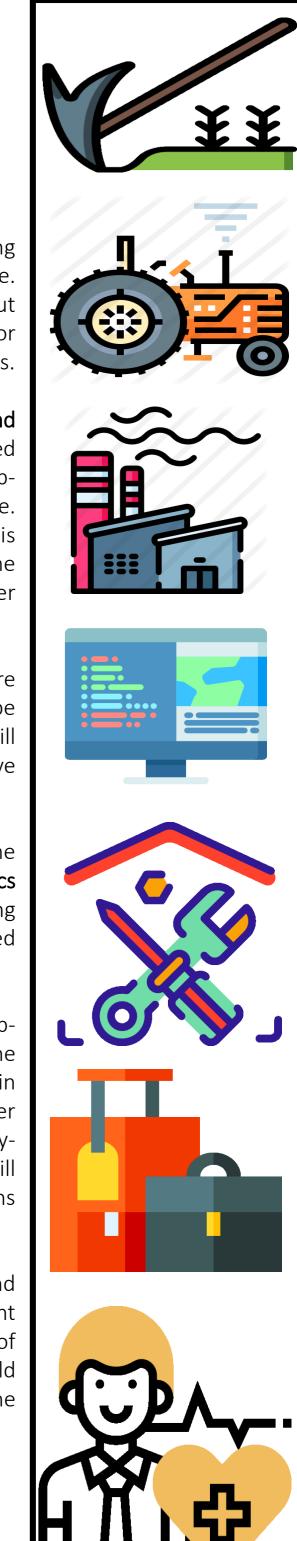# LABOR MARKET INFORMATION
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III.   Conclusion and Recommendations

- Automotive and Land Transportation remains to be one of the best performing Manufacturing-related Sub-Sector, having high numbers in students (i.e. enrolled to certified graduates), trainers, and registered programs throughout the country in 2018. It is followed by the Metals and Engineering Sub-Sector and the Electrical and Electronics Sub-Sector, which excelled in various aspects.

  That being said, the JobsFit reports posit that the **production of electrical and electronic products** is expected to grow only by 0.2%, which is lower compared to the 3.5% for tool and die production (i.e. Metals and Engineering Sub-Sector), 3.4% for automotive parts and 4.4% for motorcycle production (i.e. Automotive and Land Transportation Sub-Sector). TESDA should consider this fact when prioritizing/re-prioritizing resources for skills training in the Manufacturing Sector. It is also necessary to determine if there are other competencies or new set of skills that related TRs should include.

- TESDA has to review the identified Manufacturing-related TRs that are underutilized or unutilized. Consultations with relevant industry groups may be necessary to determine if these TRs need to be revised/replaced, or if they still meet current industry standards or needs, considering that they did not have any enrollees in 2018.

- TESDA must also explore the possibility of adapting some aspects of the Manufacturing Sector to focus on aeronautics, especially on **aeronautics production**, as it is slated to have the highest growth in the Manufacturing Sector for the foreseeable future (i.e. 6.6%). CAR, in particular, has listed aeronautic production as an **emerging industry requiring skilled workers**.

- TESDA lacks significant activity in the Chemicals/Plastics/Petrochemicals Sub-Sector, considering that chemical manufacturing is billed as one of the country's biggest employers in the future. As there is currently only one TR in this Sub-Sector (i.e. Chemical Process Operations NC II), TESDA should consider creating new TRs to help meet the skills demand for subsequent chemistry-related occupations. It is also worth noting that among the hard-to-fill Manufacturing-related jobs in the regions, chemists and similar specializations in the Sector were reported in Regions V, VI, VIII, and XII.

- Both the Chemicals/Plastics/Petrochemicals Sub-Sector and the Footwear and Leathergoods Sub-Sector are the worst performing, thought the latter might not be detrimental to the Manufacturing Sector as a whole given the lack of projected employment and production growth. Regardless, TESDA should further explore the market demand for these Sub-Sectors, especially the former as it has a projected employment of growth of 3.2%.
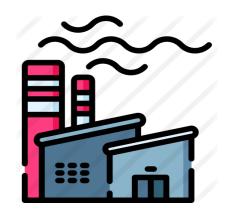
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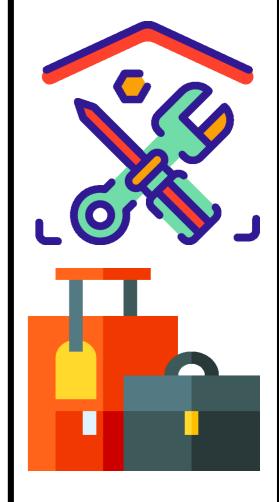## *Manufacturing Sector*
As of December 2018

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Technical Education and Skills Development Authority. (2014). *Labor Market Intelligence Report: Manufacturing Industry*. Retrieved from: https://www.tesda.gov.ph/uploads/File/Plan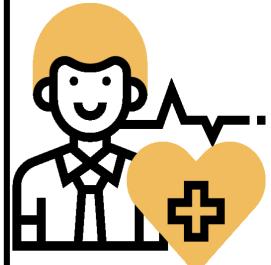ning2014/LMIR/LMIR%20(6)%20Manufacturing%20Industry.pdf