



สถาบันไฟฟ้าและอิเล็กทรอนิกส์
ELECTRICAL AND ELECTRONICS INSTITUTE

Prospect of Thailand's Smart Electronics Industry and it's Ecosystem

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Electrical and Electronics Institute

26 August 2021

Agenda

01

Thailand 4.0 National Policy

02

Overview of Electrical and Electronics Industry

03

Smart Electronics Industry Ecosystem

04

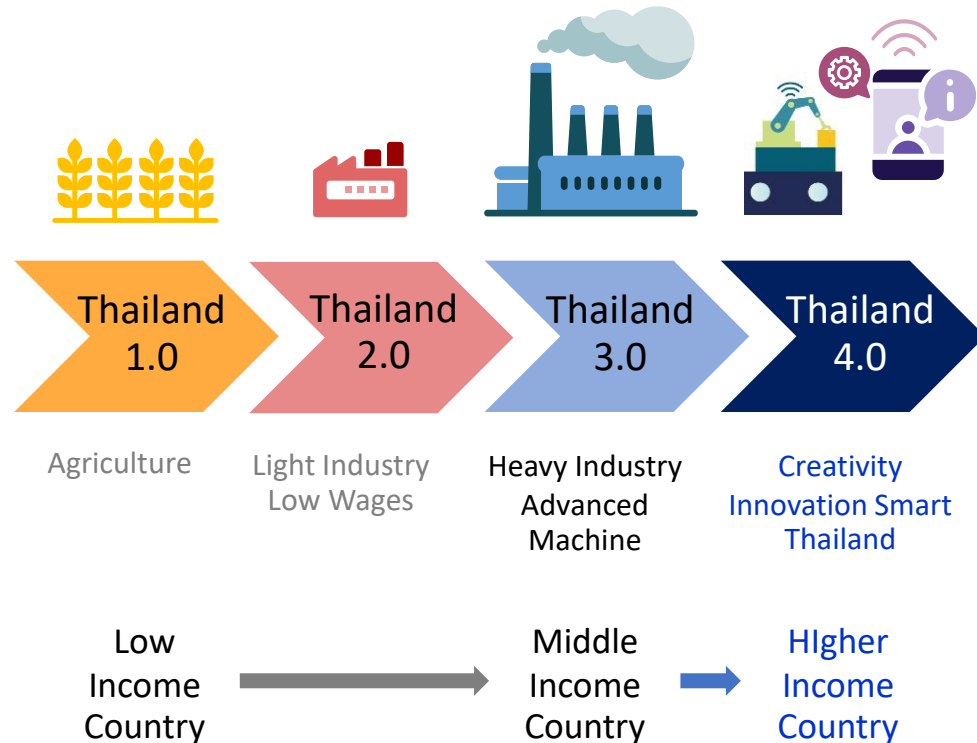
Support and Development Measures for the Industry

Thailand 4.0 National Policy

Move forward to Thailand 4.0

Thailand 4.0

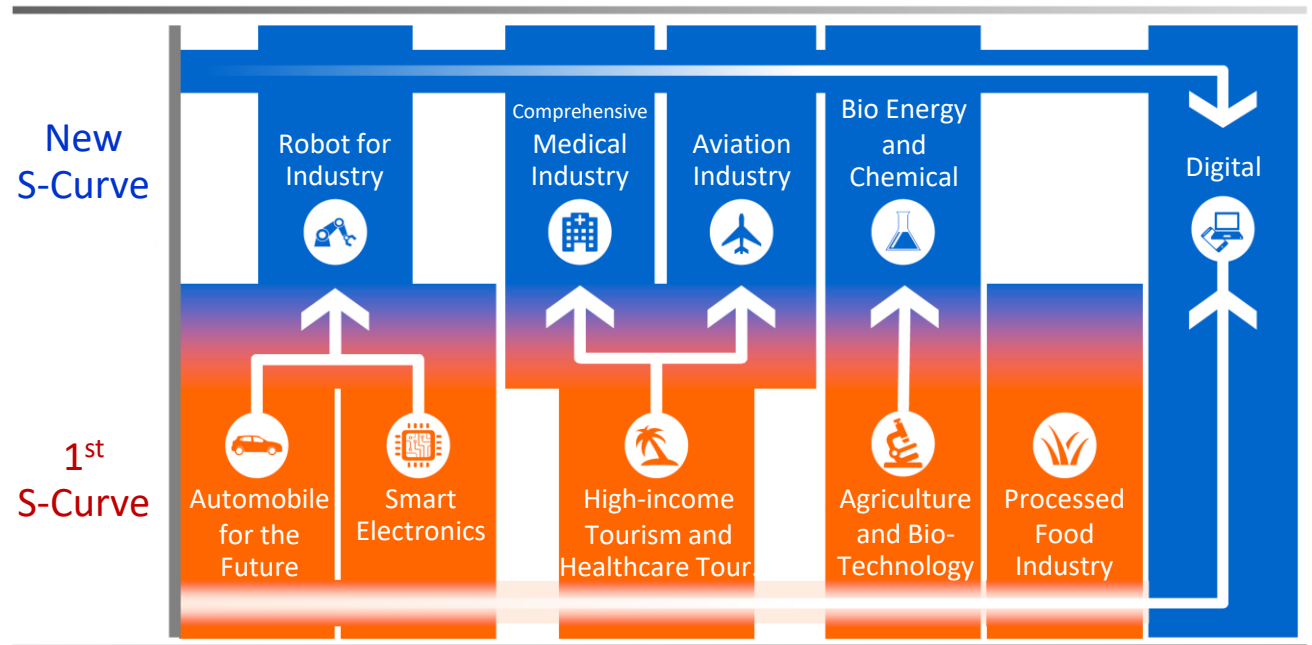
Smart Industry + Smart City + Smart People



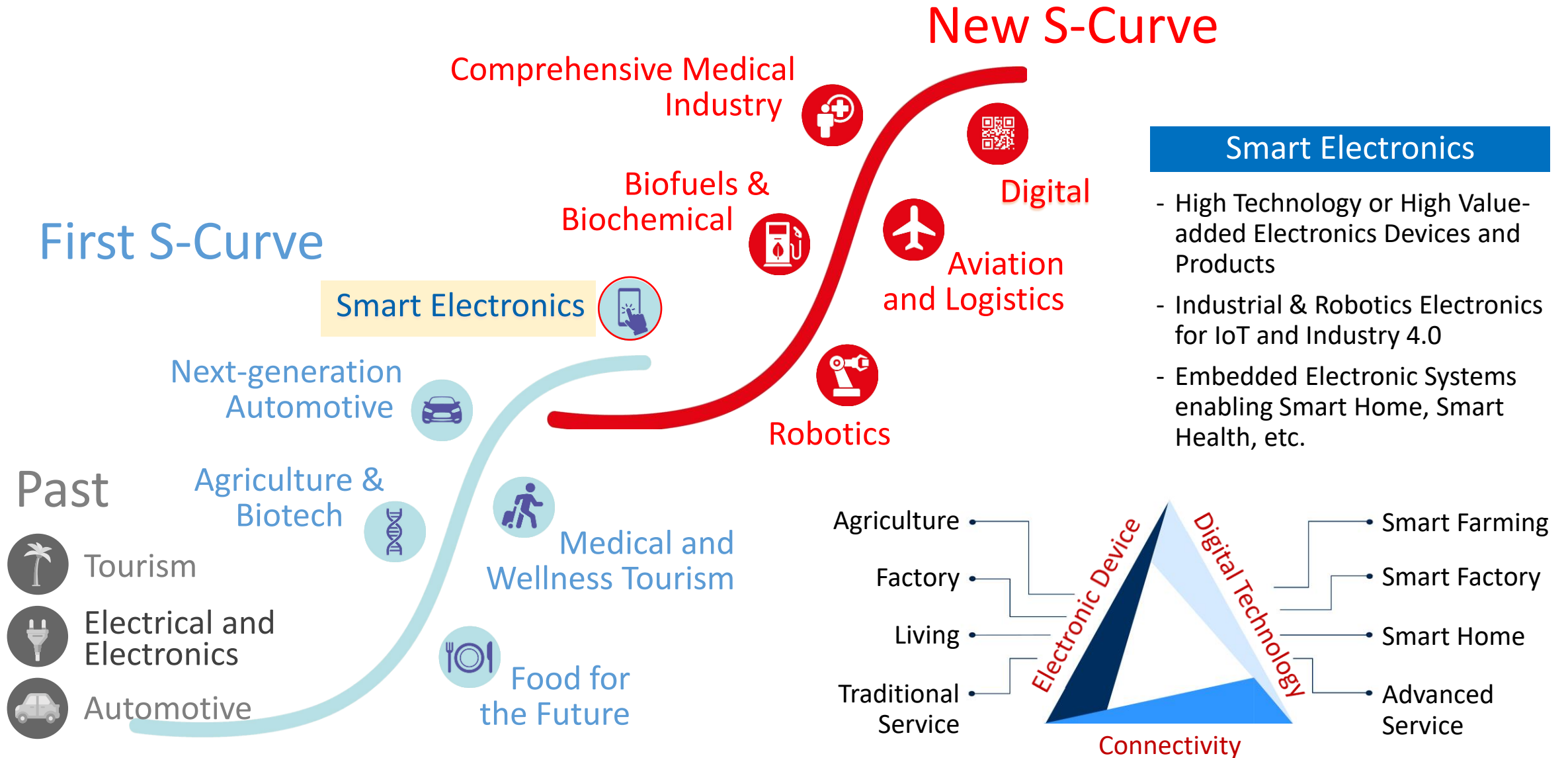
10 Targeted Industry

High Value-added Economy for High Income Level

Upgrade 5 Existing Industries (1st S-Curve) and Add 5 New Industries (2nd S-Curve)



First S-Curve and New S-Curve



Overview of Electrical and Electronics Industry

Summary of Economic Statistics

Key Economic Figures (year 2020)



GDP Growth **- 8.0%**



Unemployment Rate **1.5%**



Inflation Rate **- 0.27%**

Market Profile (2020)



Population
69.79
million



Workforce
37.8
million

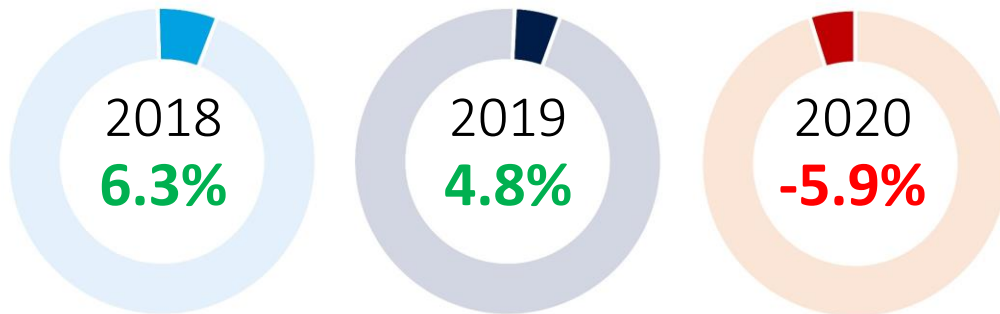


Minimum Wage/day
313 - 336 ₺



Household Salary (month)
20,018 ₺

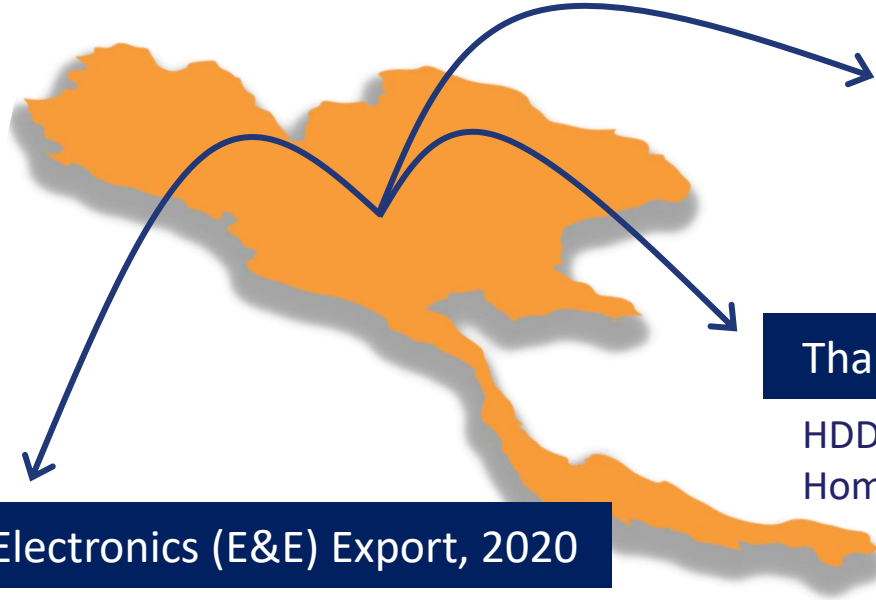
Export Growth



International Ranking



Thailand's Electrical and Electronics Industry

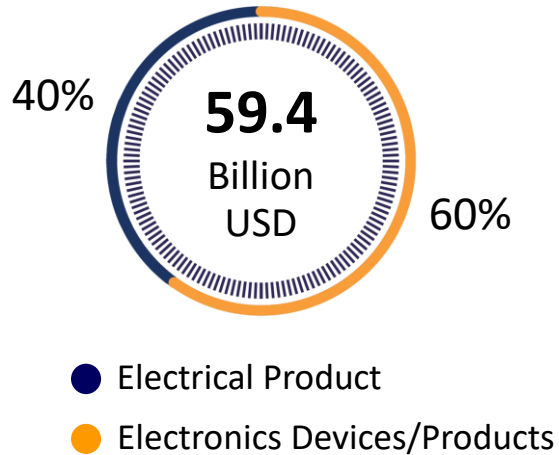



 Thailand was ranked **the 13th Largest E&E Exporter** in the world in 2020

Thailand's Major E&E Export Products

HDD, Computer Parts & Accessories, Integrated Circuits & Parts, Home Appliance (Air-Conditioner, Refrigerator, Microwave Oven)

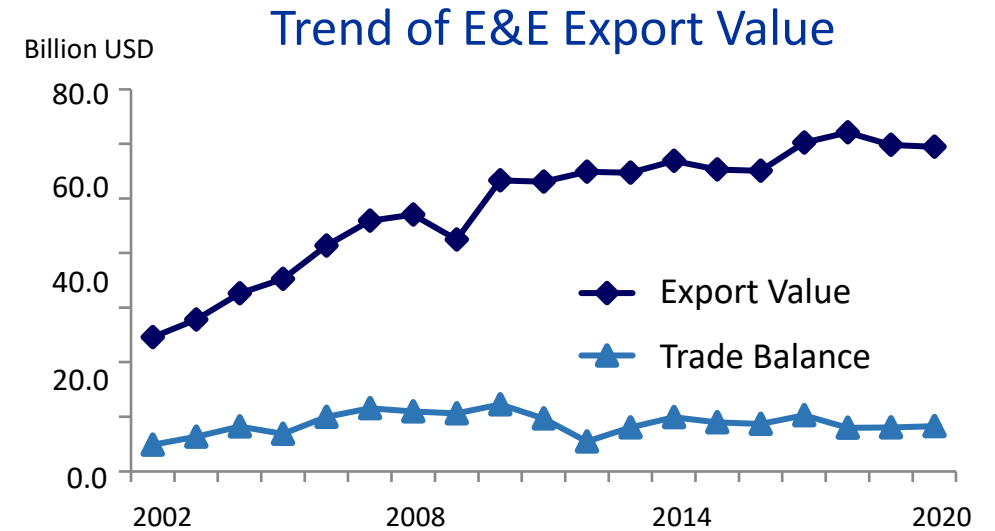
Electrical and Electronics (E&E) Export, 2020



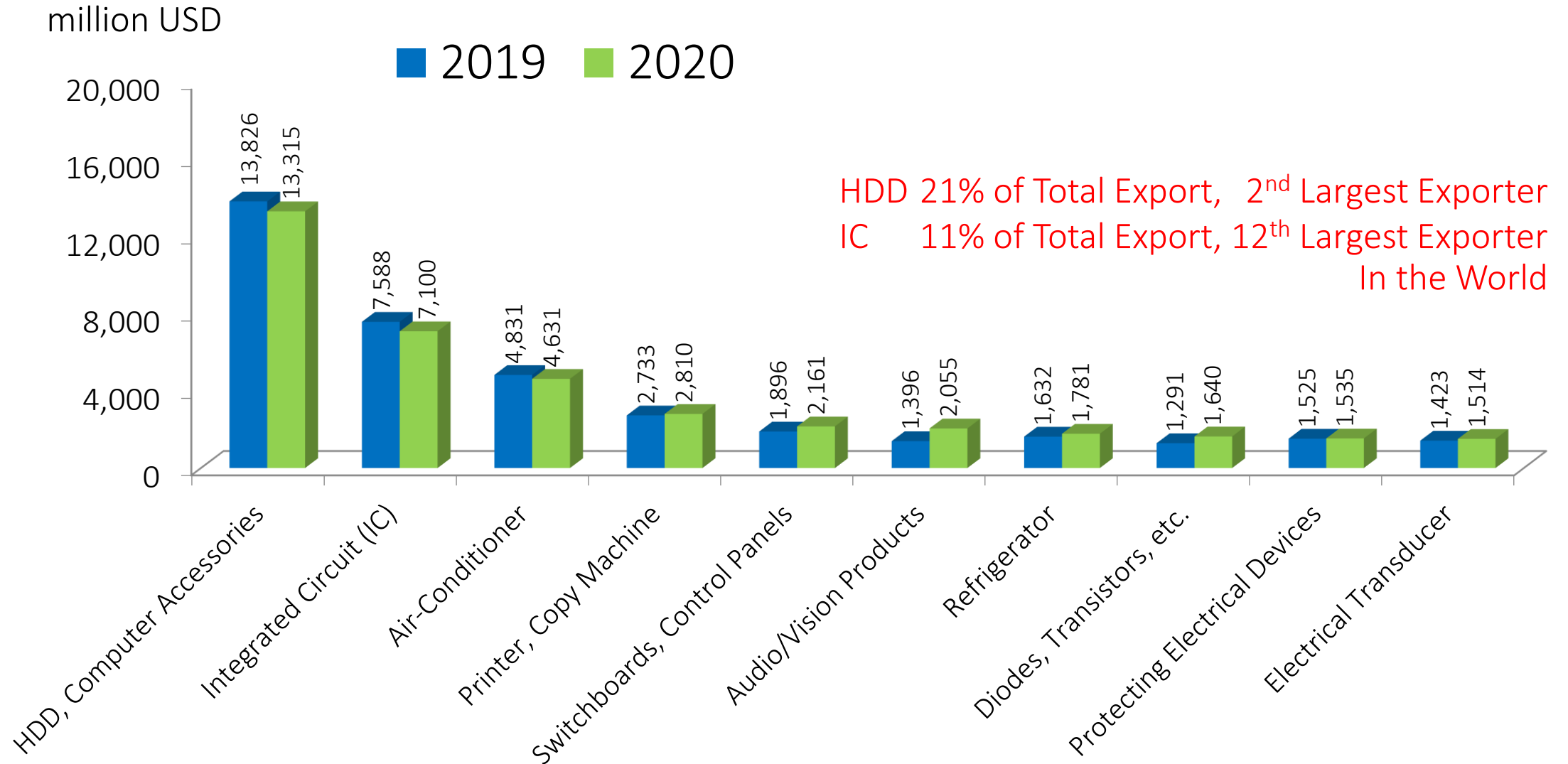
60%
 Electronics Devices 35.5 Billion USD

40%
 Electrical Product

- Electrical Appliance 16.8 Billion USD
- Electric Power 7.1 Billion USD

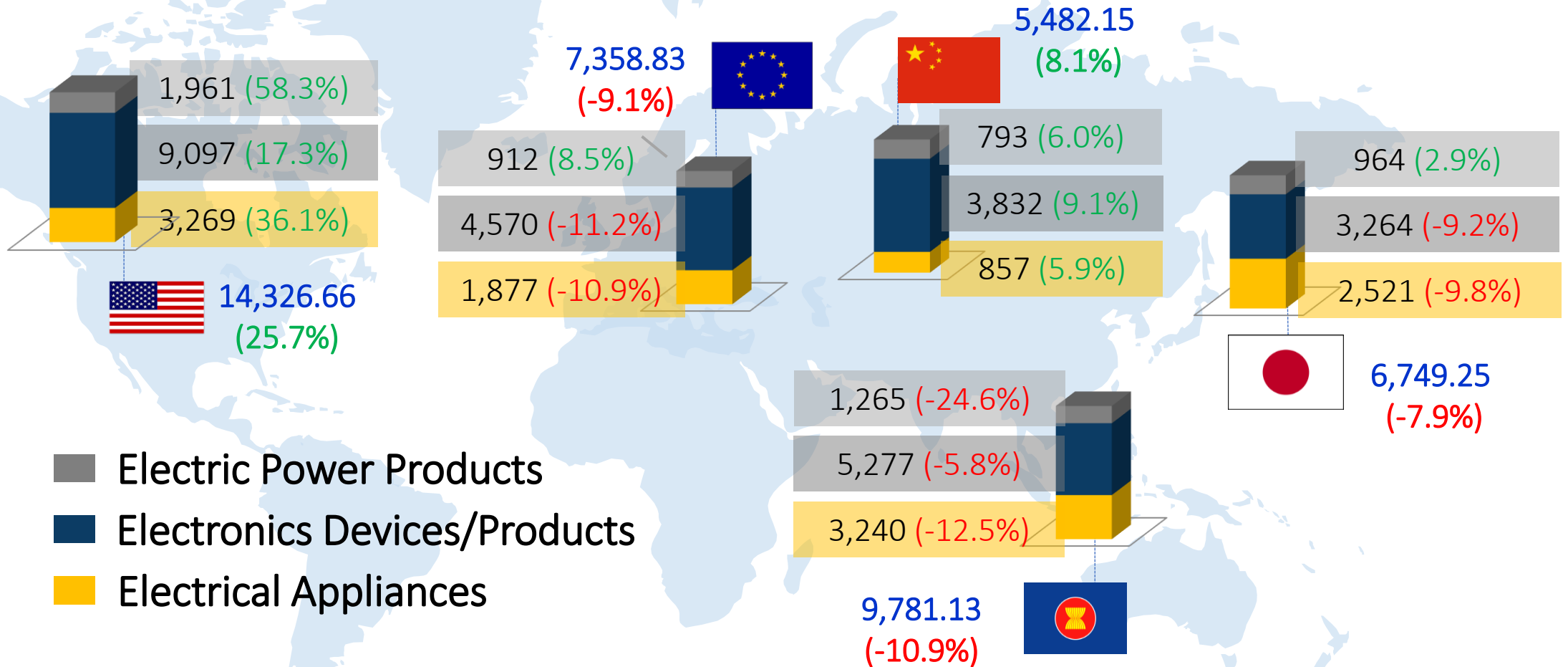


Top 10 Electrical and Electronics Export Products

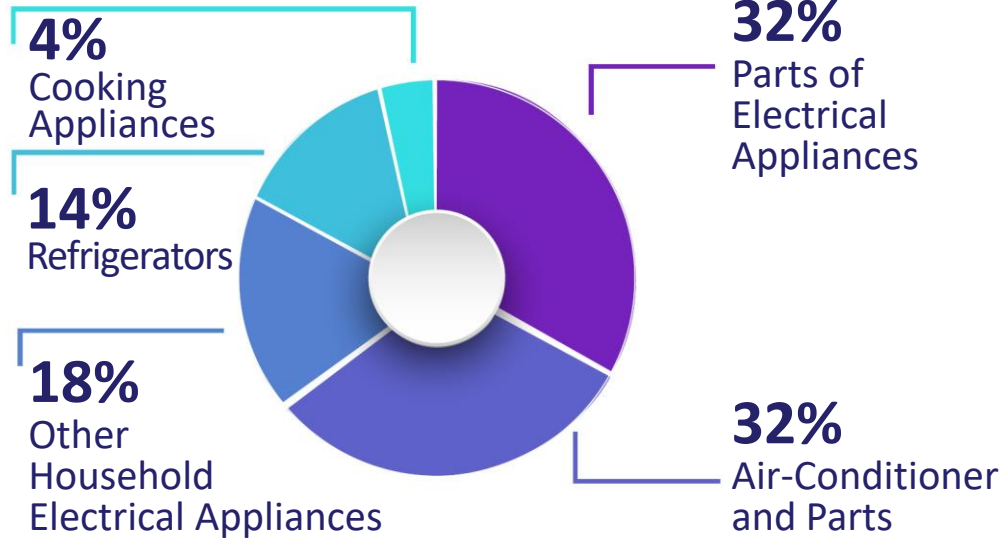


Export Destinations for Thai E&E Products in 2020

Total 59,490.20 million USD (-0.5 %YoY)



Electrical Appliance Manufacturers and Market



	Number of	Factory	Workforce
Electrical Appliance and Parts		1,185	285,555
Electronics		618	371,340
Supporting Industry, Trader and Others		784	97,907
Total		2,587	754,802

2nd




Largest Air-Conditioner Producer in the World

2nd



Largest Washing Machine Producer in the World

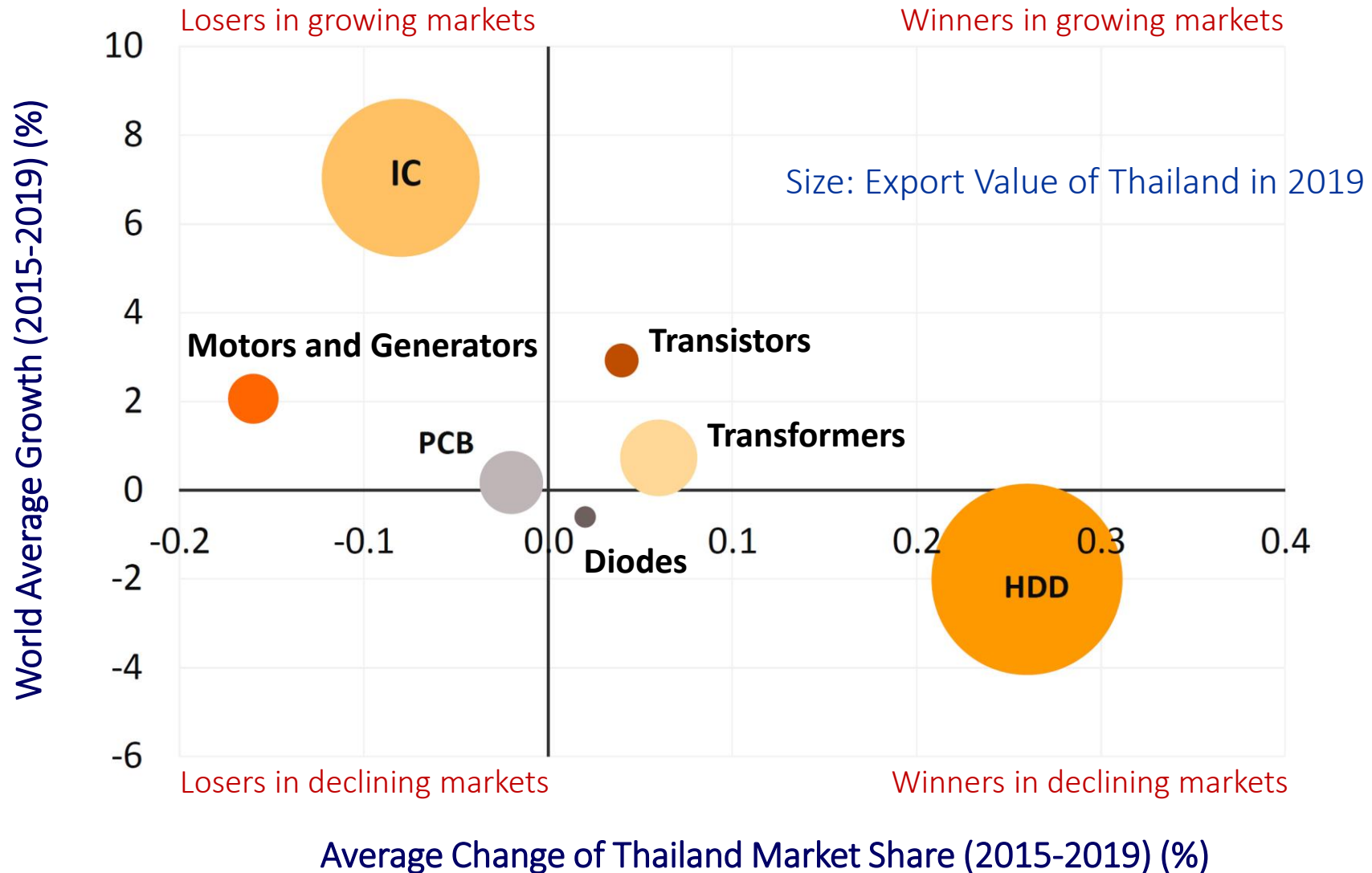
Smart Home Appliances



Smart System with High Growth

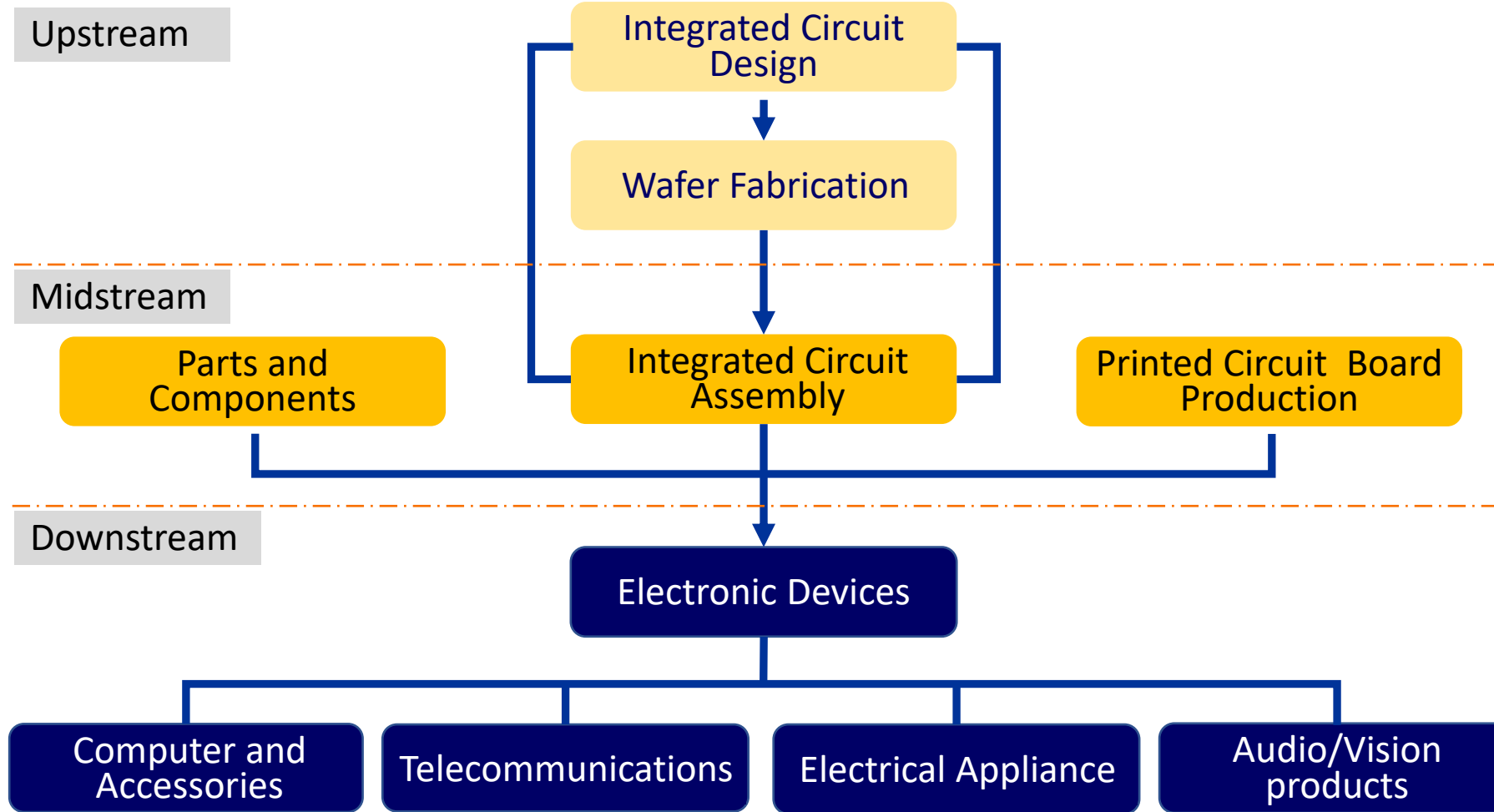
- Elderly Care Smart Device
- Smart Security
- Smart Energy Management

Position of Thai Electronic Products in the World Market



Smart Electronics Industry Ecosystem

Thailand's Electronics Industry Supply Chain



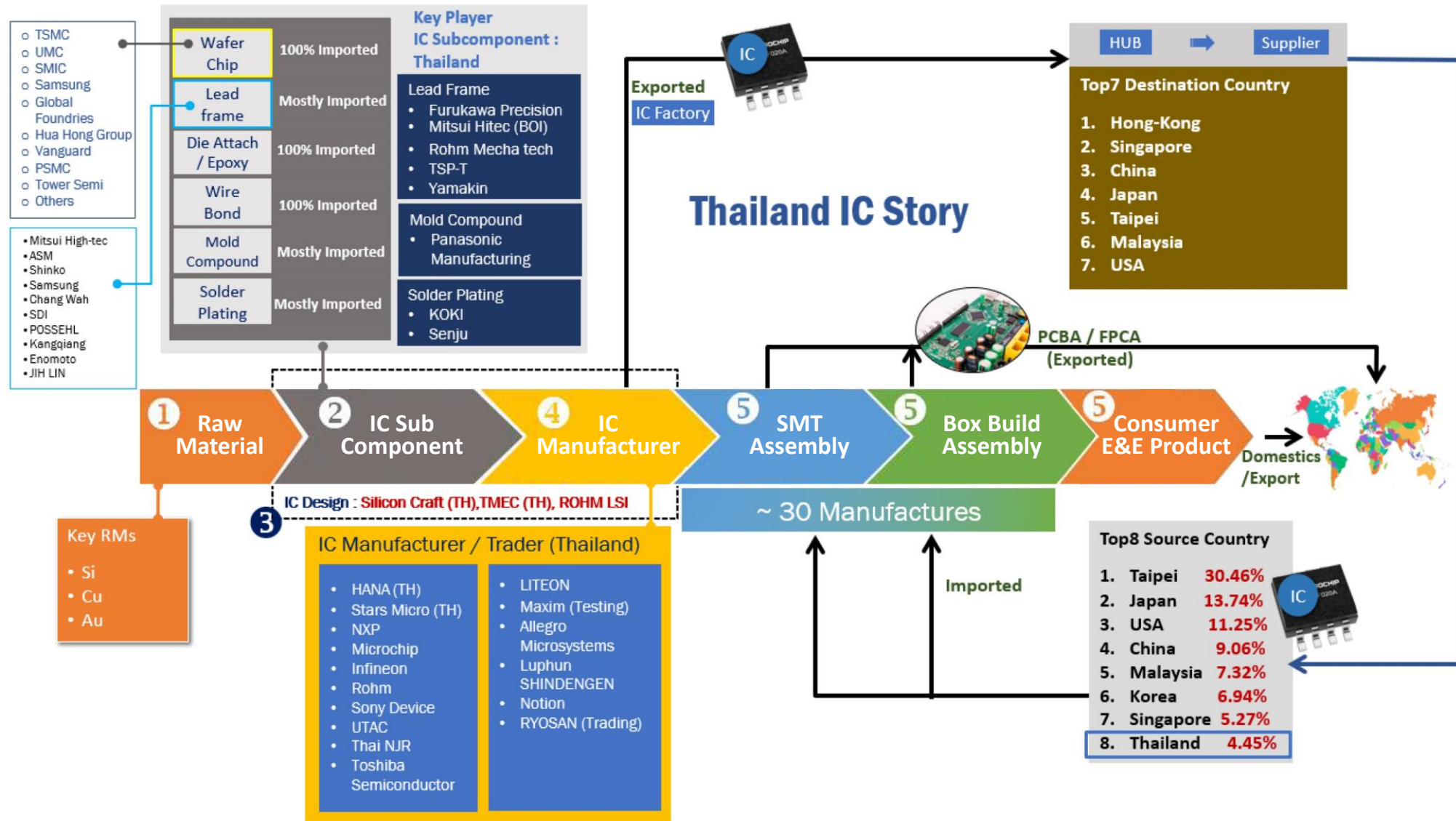
	No. of Factory	Workforce
L size	173	251,990
M size	318	84,636
S size	718	55,814
Total	1,209	392,440

Production Value (2020)	
	50,101 Million USD
Local Use	21.0%
Export	79.0%
Total Market Value	
	49,761 Million USD

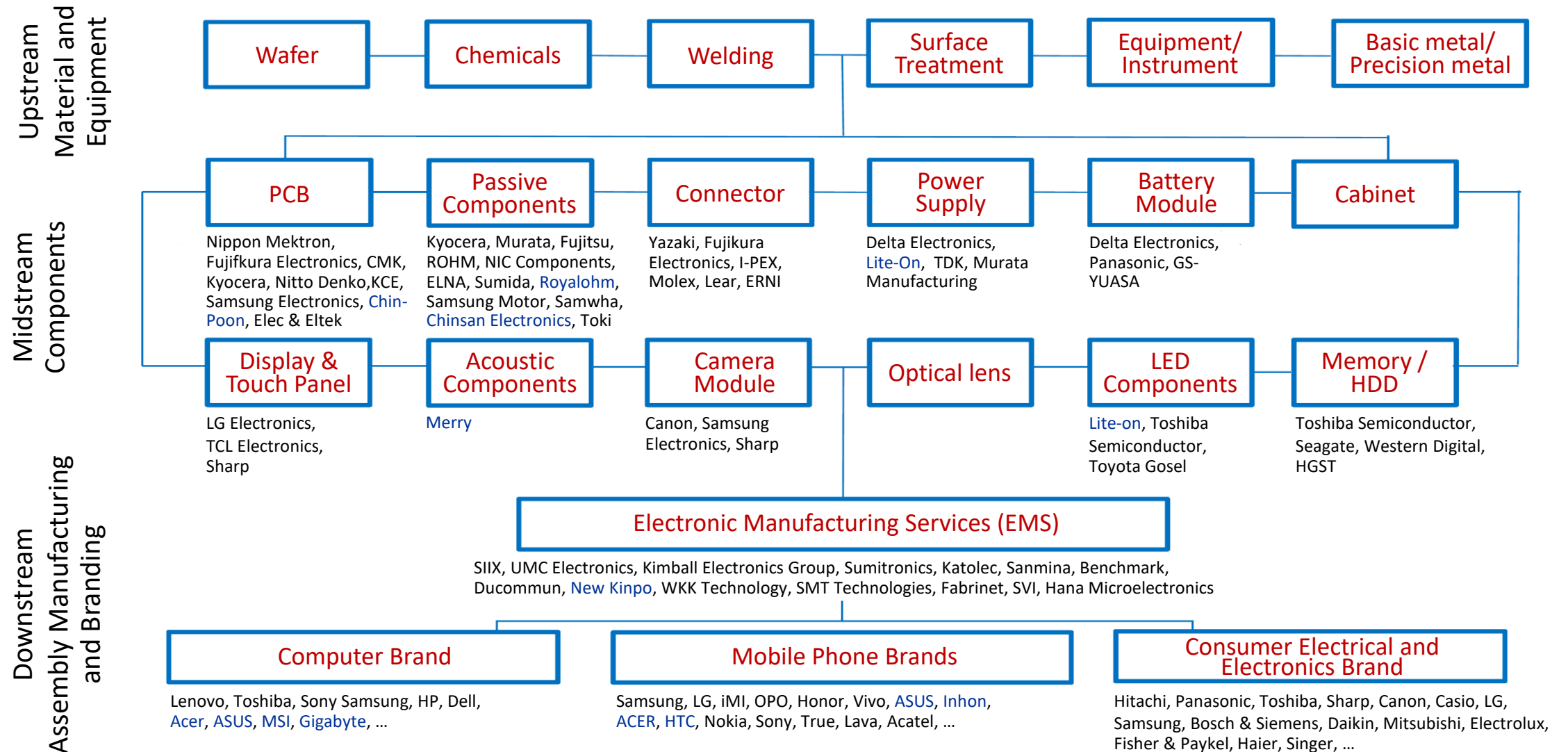
	No. of Factory	Workforce
L size	226	220,935
M size	93	17,032
S size	303	16,129
Total	622	254,096

Production Value (2020)	
	26,010 Million USD
Local Use	23.5%
Export	76.5%
Total Market Value	
	18,058 Million USD

Thailand's IC Industry Supply Chain



Thailand's Electronics Industry Structure



Thailand's Electronics Manufacturing Cluster

Central Region	
Brand factory (own production line)	Samsung(KR)
Electronics manufacturing Service (EMS)	New Kinpo(TW) 、 SIIX(JP) 、 Katolec(JP) 、 Sanmina(US) 、 Benchmark(US) 、 Ducommun(US) 、 WKK Technology(HK) 、 Fabrinet(TH) 、 SVI(TH) 、 Hana Microelectronics(TH)
PCB	Chin-Poon(TW) 、 Nippon Mektron(JP) 、 Nitto Denko(JP) 、 Fujikura(JP) 、 Elec & Eltek(HK)
Passive Component	Chinsan Electronics(TW) 、 TDK(JP) 、 ROHM(JP) 、 Sumida(JP) 、 NIC Components(JP)
Connector	Fujikura(JP) 、 Yazaki(JP)
Power Supplies	Delta Electronics(TW) 、 Lite-On(TW) 、 TDK(JP)
Battery Module	Delta Electronics(TW) 、 Panasonic(JP) 、 GS-YUASA(JP)
Displays and Touch Panels	Sharp(TW) 、 TCL Electronics(CN) 、 LG Electronic(KR)
Camera Module	Sharp(TW) 、 Canon(JP)
LED Components	Lite-On(TW) 、 TOYODA GOSEI (JP)



✈ : International Airport

1. Ayutthaya(12)

- EMS : SIIX(JP) 、 Katolec(JP) 、 Benchmark(US) 、 Hana Microelectronics(TH)
- Components : Nippon Mektron(JP) 、 Nitto Denko(JP) 、 Fujikura(JP) 、 Canon(JP) 、 TDK(JP) 、 Seagate(US) 、 Western Digital(US) 、 Elec & Eltek(HK)

2. Bangkok(8)

- Brand Factory : Samsung(KR)
- EMS : WKK Technology(HK)
- Components : Lite-On(TW) 、 Chin-Poon(TW) 、 Chinsan Electronics(TW) 、 TCL Electronics(CN) 、 Yazaki(JP) 、 LG Electronic(KR)

3. Pathumtani (8)

- EMS : Sanmina(US) 、 SVI(TH) 、 Fabrinet(TH)
- Components : Lite-On(TW) 、 Fujikura(JP) 、 ROHM(JP) 、 NIC Components(JP) 、 Sumida(JP)

4. Samutprakarn (5)

- EMS : SIIX(JP)
- Components : Delta Electronics(TW) 、 GS-YUASA(日) 、 Panasonic(JP) 、 Yazaki(JP)

5. Samutsakorn(2)

- EMS : New Kinpo(TW)
- Components : TOYODA GOSEI (JP)

6. Saraburi(2)

- EMS : Ducommun(US)
- Components : Fujikura(JP)

7. Nakornpathom(1)

- Components : Sharp(TW)

Thailand's Electronics Manufacturing Cluster

Eastern Region	
Brand factory (own production line)	Samsung(KR)
Electronics manufacturing Service (EMS)	UMC Electronics(JP) 、 Kimball Electronics Group(JP) 、 Sumitronics(JP) 、 Celestica(CA) 、 SMT Technologies(MY)
PCB	CMK(JP) 、 Nitto Denko (JP) 、 Samsung Electronics(KR)
Passive component	Uniohm(TW) 、 Fujitsu (JP) 、 Samsung Electronics(KR) 、 Samwha(KR)
Connector	I-PEX(JP) 、 Yazaki (JP) 、 Molex(US) 、 Lear(US)
Power Supplies	Delta Electronics (TW)
Battery module	Delta Electronics (TW) 、 GS-YUASA(JP)
Displays and Touch panels	Sharp(TW)
Acoustic component	Merry(TW)
Camera module	Sharp(TW) 、 Samsung Electronics(KR)
LED Components	Toshiba Semiconductor(JP) 、 TOYODA GOSEI(JP)
Memory	Toshiba Semiconductor(JP) 、 Western Digital(US) 、 HGST(US)
	Microchip Technology(US)



1. Chachoengsao (10)

- EMS : UMC Electronics(JP)
- Components : Sharp(TW) 、 Delta Electronics (TW) 、 Uniohm(TW) 、 GS-YUASA(JP) 、 Yazaki (JP) 、 Samsung Electronics(KR) 、 Samwha(KR) 、 Molex(US)
- Wafer : Microchip Technology(US)

2. Chonburi (8)

- Brand factory : Samsung(KR)
- EMS : Kimball Electronics Group(JP) 、 Celestica(CA)
- Components : TOYODA GOSEI(JP) 、 Nitto Denko (JP) 、 Fujitsu (JP) 、 I-PEX(JP) 、 HGST(US)

3. Prachinburi (7)

- EMS : Sumitronics(JP) 、 SMT Technologies(MY)
- Components : Toshiba Semiconductor(JP) 、 CMK(JP) 、 HGST(US) 、 Lear(US) 、 Western Digital(US)

4. Rayong (1)

- Components : Merry(TW)



Thailand's Electronics Manufacturing Cluster

Northern Region

Electronics manufacturing Service (EMS)	Hana Microelectronics(TH)
PCB	Kyocera(JP)
Passive component	Murata(JP) \ Kyocera(JP) \ ELNA(JP)
Connector	Fujikura(JP) \ ERNI(DE)
Power Supplier	Murata(JP)

North Eastern Region

Camera module	Canon(JP)
Memory	Seagate(US)

Southern Region

Brand factory (own production line)	HP(US)
Electronics manufacturing Service (EMS)	New Kinpo(TW)



✈ : International Airport

1. Lamphun (4)

- EMS : Hana Microelectronics(TH)
- Components : Kyocera(JP) \ Murata(JP) \ ERNI(DE)

2. Lampang (1)

- Components : Fujikura(JP)

3. Chiang Mai (1)

- Components : ELNA (JP)

4. Nakorn Ratchasima (2)

- Components : Canon(JP) \ Seagate(US)

5. Phetchaburi (2)

- Brand Factory : HP(US)
- EMS : New Kinpo(TW)



Support and Development Measures for the Industry

Smart Electronics Industry Development Plan

Target: become ASEAN's Digital and Smart Electronics Industry Hub

#1 Promote Investment and move toward High Technology E&E Industry

- Attract new investment from foreign and start-up companies
- Promote investment in Research and Development (R&D)
- Promote the use of automation and level-up production technology
- Financial support

#2 Stimulate the Market (Create Demand) and Develop a Suitable Ecosystem

- Promote the use of smart system in other industry
- Develop infrastructure and level-up existing center of excellence
- Develop IoT platform for local smart system/solution developer
- Improve regulation and standard

#3 Technology and Human Resource Development

- Re-skill, up-skill and new-skill for workforce
- Promote the development of e-commerce software and creative digital contents
- Develop Thai education system to be in line with technology trends



Eastern Economic Corridor of Innovation

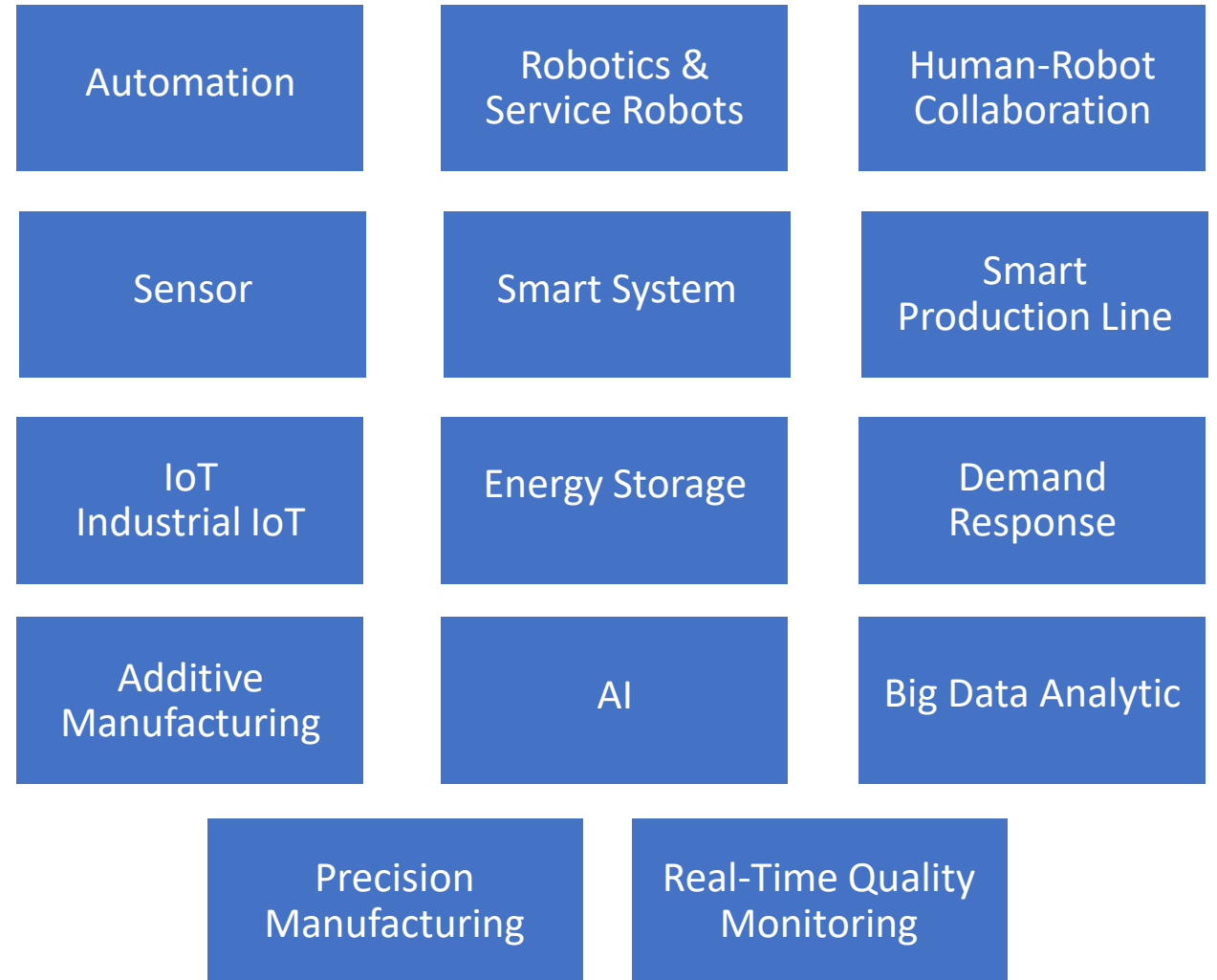
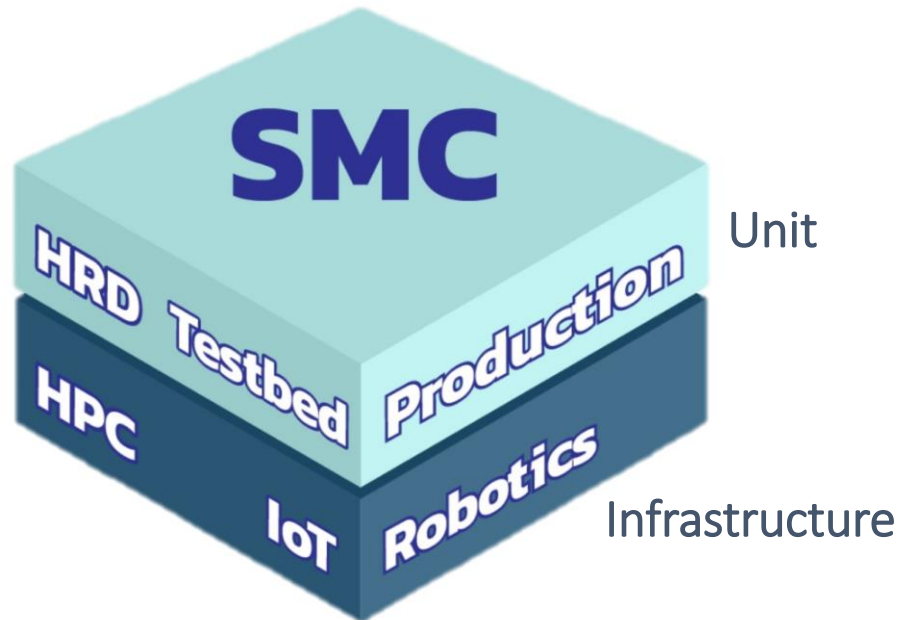
Sustainable Manufacturing Center (SMC)



3 Areas of Technology Research & Support in SMC



Automation Robotics Intelligence



Promotion of Vocational Training and Lifelong Training



สถาบันคุณวุฒิวิชาชีพ
(องค์การมหาชน)

Thailand Professional Qualification Institute (Public Organization)

Mission:

- Create and promote Professional Qualification system and occupational standard
- Develop workforce according to skills demands and economy trends

Example of Professional Qualification

- Mechatronics Technician
- Programming for Production Control and Monitoring
- Printed Circuit Board (PCB) Design
- ICT Product Development and Design



The Human Capacity Building Institute (HBCI)

Mission:

- Develop labor productivity
- Develop an education policy with the education sector to prepare human resources for the industry



Manufacturing Automation and Robotics Academy (MARA) Department of Skill Development

Mission:

- Develop upskill and reskill course for workforce transformation
- Train the trainer in robotics and automation field

Industrial Supporting Organization



Digital Economy Promotion Agency
promote and support private investment, business operation and the development of workforce related to digital industry and innovation



Thailand Science Park
establish the ecosystem to promote and support R&D linkage between government and private sector and stimulate the creation of new technology businesses



The National Electronics and Computer Technology Center
Undertake, support, and promote the development of electronics and computer technologies through research and development activities



Thai Organic & Printed Electronics Innovation Center
locate major organic and printed electronics infrastructure of the country, create a consortium for collaborations between relevant parties



Innovation Institute for Industry
promote and support industry transformation through research, technology adaptation and innovation



Thai Embedded Systems Association
support the development of electronic design industry by connecting a network of developers and technology users in embedded computing technology from all sectors



Thai Electrical, Electronics and Telecommunication Industry Association
support and strengthen the relationship between industrial club members to establish a network and enhance efficiency and competitiveness



Electrical and Electronics Institute
Collaborate with government and industry to develop productivity and business networking, also provide service on conformity assessment and in-depth industry information