



# Machinery Industry

An Overview of  
Taiwan Excellence Products  
(2019)



## Global Machine Tooling Grows by Leaps and Bounds

According to an April 2018 report by Taiwan's Department of Statistics, machine tools are the principal export of the global machinery industry. And according to research by Gardner Publications, global purchases of industrial machines have remained steady at US\$80–90 billion in recent years. In 2018, global spending on machine tools was about US\$91.9 billion, an increase of 4.8% compared to 2017 and the largest increase since 2011. With the steady growth of the global economy, the manufacturing industry is receiving an influx of orders, and with the rise of smart manufacturing and Industry 4.0, the global machine tool industry is flourishing once again.

### Trends in Global Machine Tool Purchases

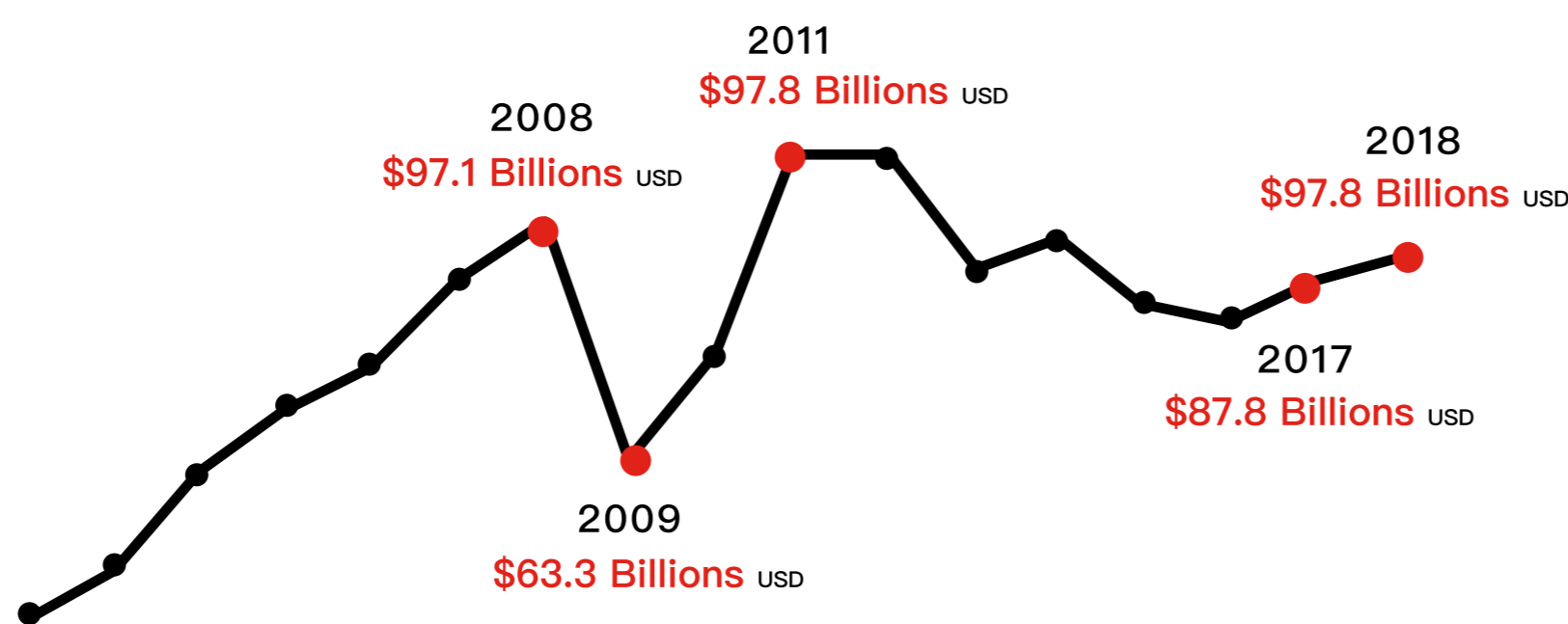


Figure (1.1) – Global Trends in Machine Tool Spend

Worldwide, the main consuming countries of machine tools are China, the United States, Germany, Japan, Italy, South Korea, India, Mexico, Taiwan, and Russia. The total amount of the top 15 machine tool markets account for 85% of overall machine tool consumption worldwide, while the top five machine tool markets alone account for 64%. China and the United States rank first and second, and changes in the economic cycle and the trade policies of these two countries have a profound impact on the increase or decrease of overall machine tool purchases.

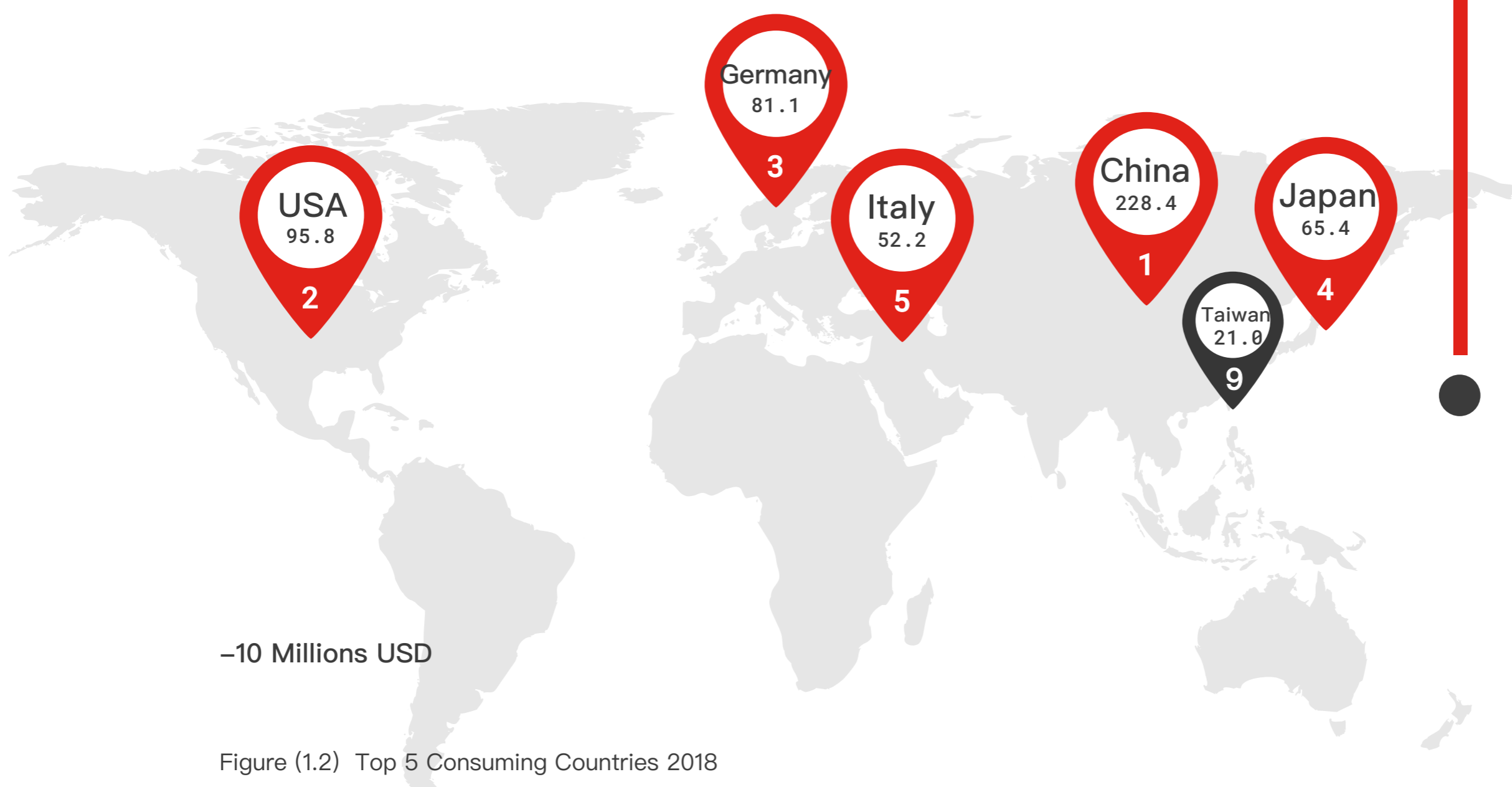
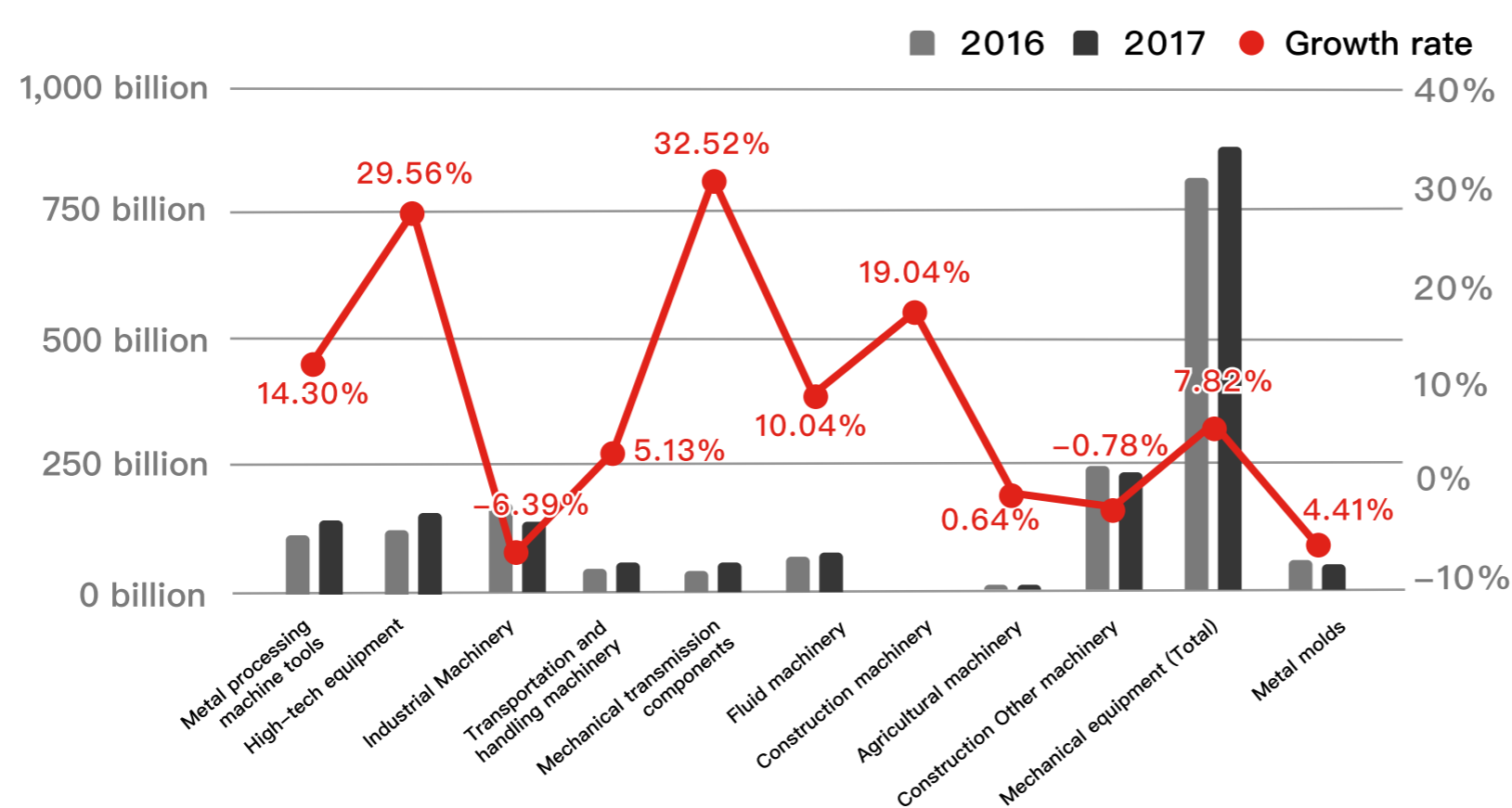


Figure (1.2) Top 5 Consuming Countries 2018

## Taiwan's Machinery Industry – Current State and Development Potential

According to IEK Consulting, in 2018 Taiwan's machinery industry had an export value of US\$27.4 billion. The top three export markets – China, the United States and Japan – accounted for a combined output value of NT\$1.18 trillion, an increase of about 7.3% and a continued record high. A number of factors, primarily the stabilization of global oil prices and exchange rates, a recovery of the major industrial economies of Europe at the end of 2016, as well as an industrial upgrade in China leading to an expansion in automation and demand for new equipment, have contributed to remarkable growth in the output values of two industries: high-tech equipment and metal-processing machine tools. While 2017 saw declines from 2016 in a few categories (namely, industrial machinery, other machinery, and metal molds), other secondary machinery industries in Taiwan, including high-tech equipment, metal-processing machine tools, mechanical transmission components, and fluid machinery, all showed increasing output values.

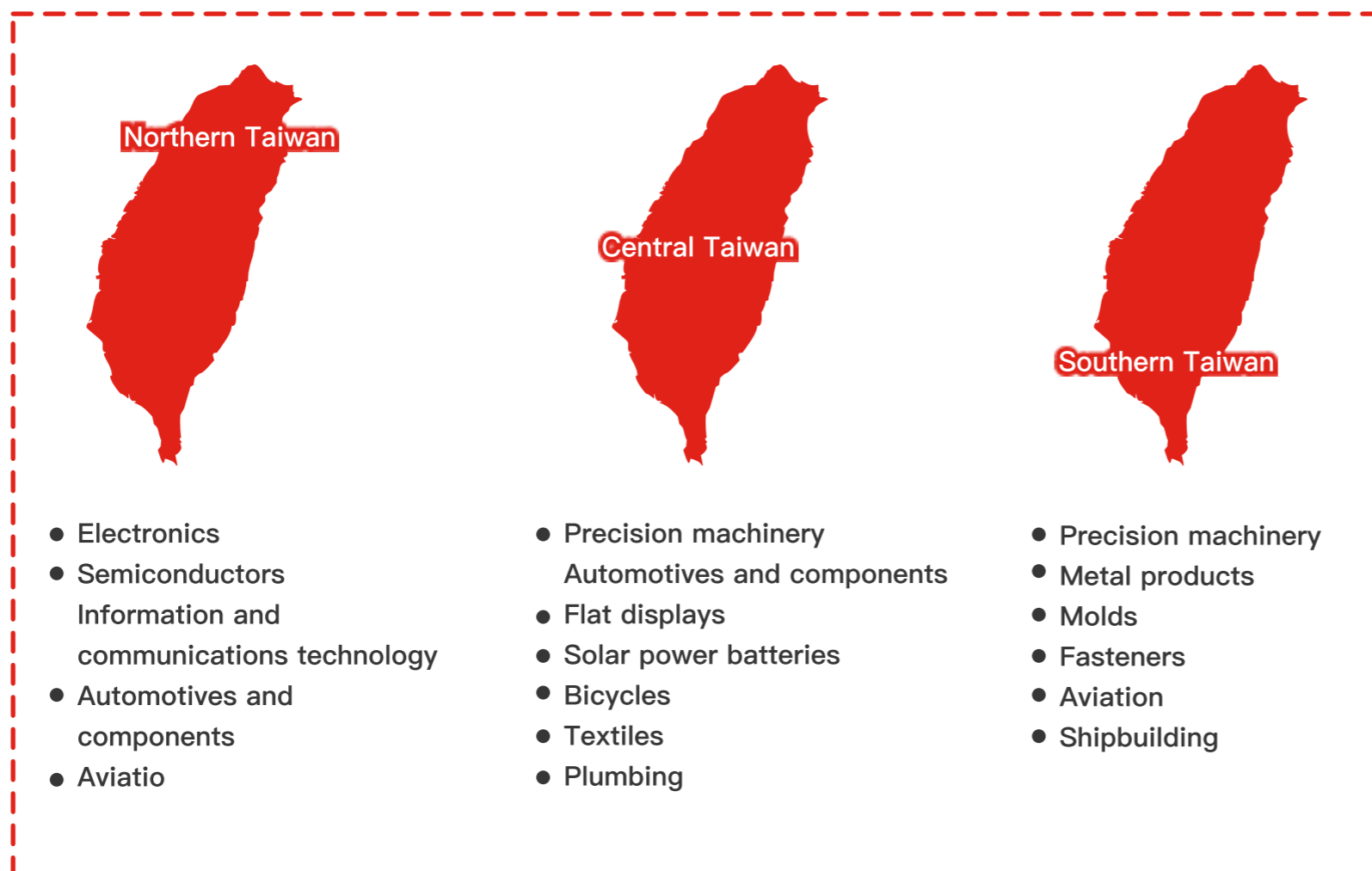


## Providing Global Equipment Users with the Best Solutions

Approximately 90% of Taiwan's machine tool and component vendors can be found within a 60km radius in Greater Taichung. All aspects of the machine tool industry, from the manufacture of parts and components to the assembly of whole machine tools, takes place in close proximity here, making central Taiwan the world's only industry cluster for machine tools and components. Because of the constant quality upgrades and price advantages this creates, Taiwanese components have become the DNA of machine tools in many countries around the world.

Upstream machine tool components include ball screws and linear slides. In particular, Taiwan has become the world's second largest supplier of ball screws. Meanwhile, Hiwin Technologies Corp. and other companies adequately support Taiwan's domestic market demand and mainly provide components such as spindles required in machine tool assembly.

## Key Applications of Taiwan's Smart Machinery Industry Cluster



## Taiwan's Key Smart Machinery Industries with Global Influence

- A major global manufacturing base for semiconductor components
- The largest demand market for semiconductor equipment
- A major global manufacturing base for panel displays
- A major global producer of composite materials and frames for commercial machines
- A major base of jet engine case manufacturing
- The world's 4th largest manufacturing country of luxury boats
- The world's major metal fastener production base

## Smart Manufacturing Spearheading a 2-trillion-dollar Industry by 2025

Taiwan's machinery industry is set to hit the threshold of 2 trillion Taiwan dollars by 2025, according to the Taiwan Association of Machinery Industry, and the key to this transformation of traditional industry is smart manufacturing. In particular, smart manufacturing combining AIoT and robotics will lead the next wave of industrial development. According to the 2021 industrial robot development forecast by Freedonia, the demand for industrial robots in Asia, Europe, North America, and emerging countries will exceed that of 2011 by 80%, while the demand for service-type robots (including hospitals, public places, etc.) will be four times higher than that of industrial robots.



New-generation smart machine tools incorporate machine tools, sensors, IoT, cloud platforms, big data, and data analysis. Each of these offers tremendous blue ocean business opportunities.

— Ren C. Luo, “father of Taiwanese robotics,”  
distinguished professor, National Taiwan University



Taiwan already has an excellent foundation in machine tool and precision machinery technology. Looking ahead, the smart machinery industry will be moving in the directions of smart machine tools and special production equipment, smart industrial robots, multilayer manufacturing equipment, smart production systems, smart modules, and components.

## Sources

- Figure (1.1): “Global Trends in Machine Tool Spend,” Compiled by Gardner Publication, Inc. TMBA
- Figure (1.2): “The World’s Top Five Machinery Purchasing Countries in 2018” – Compiled by Gardner Publication, Inc. TMBA
- Figure (1.3): “Machinery Industry Growth Rate” – Industrial Technology Research Institute, Taiwan Machinery Industry Output Statistics (IEK 2018/05)
- Figure (1.4): “Key Applications of Taiwan’s Smart Machinery Industry Cluster” –Industrial Technology Research Institute (IEK 2017/05)

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