

Roadmap to Resilient Supply Chains



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Foreword



The COVID pandemic has taught economies around the world a few hard lessons, including the need to have trusted partners and secure supply chains. In addition to adjusting resource allocation and accelerating industrial transformation, it is also important for governments, industries, and civil societies to make concerted efforts to develop a more resilient supply chain.

In recent years, Taiwan and the United States have enhanced our partnership to promote supply chain resiliency through enhanced ties across bilateral trade, investment, industrial cooperation, innovation, and talent exchange. Under this joint partnership, TAITRA and the American Institute in Taiwan (AIT) continue to collaborate to make progress on securing and diversifying supply chains for the future.

Well before the devastation wrought by the global COVID-19 pandemic made economies around the world consider the vulnerabilities of their supply chains, TAITRA and AIT were working together closely to expand Taiwan's critical role in diversifying and securing supply chains. We foresaw the opportunities and challenges brought by the supply chain restructuring trend. Our collective work has been a great success in raising awareness of this key policy priority for both Taiwan and the United States.

Over the past year and a half, we have brought thought leadership and catalyzed action on this topic, organizing a series of events large and small, public and private, bilateral and regional, to elevate awareness and to make progress in diversifying and securing supply chains of the future, bilaterally and through engagement with like-minded partners and economies.

Some of these highlights include:

In December 2019, with the support of the Ministry of Economic Affairs (MOEA) and the Bureau of Foreign Trade (BOFT), TAITRA collaborated with AIT, the American State Offices Association (ASOA), and AmCham Taiwan to open the “Taiwan-USA Trade and Investment Networking Center,” a one-stop, all-purpose platform to advise and assist Taiwan and American enterprises to expand two-way trade and investment between the United States and Taiwan.

In July 2020, TAITRA and AIT co-organized a supply chain restructuring forum, inviting Taiwan’s information and communications technology (ICT) industry players to discuss the challenges and opportunities they face in shifting global supply chains. In August of the same year, the Taiwan-U.S. Business Alliance was established to share information, create value, and integrate strategies for supply chain restructuring. TAITRA also launched the ‘Taiwan Global Anti-Covid-19 Pavilion’ website, a virtual pavilion to connect Taiwan’s industries with countries and economies seeking high-quality, anti-epidemic related products and to provide a link to public health expertise from Taiwan hospitals and service providers.

In September 2020, TAITRA and AIT, the Japan-Taiwan Exchange Association, the European Economic and Trade Office (EETO), the Ministry of Foreign Affairs (MOFA) and the Ministry of Economic Affairs (MOEA) successfully organized the landmark "Forum on Supply Chain Restructuring: Improving Resilience Amongst Like-Minded Partners " to discuss a variety of policy tools to restructure supply chains while ensuring that businesses and economies can thrive. The forum explored bilateral, regional, and global opportunities for cooperation on this shared priority.

Following the September 2020 forum, TAITRA and AIT issued a “Joint Statement on Securing Supply Chains” to strengthen our consultations and cooperation on supply chain restructuring and resiliency, especially in the ICT and medical industries. The joint statement encourages partners to bring supply chains closer to home or like-minded economies, develop new supply chains based on shared values, and ensure that supply chains are secure and free from political coercion.

In October 2020, AIT arranged for TAITRA to co-host the first-ever Taiwan session in the Indo-Pacific Business Forum (IPBF) since the Forum's inception in 2018. This public session, entitled "Taiwan Model on COVID-19: Forging public private partners in the medial industry," highlighted Taiwan's central role in creating reliable global supply chains for medical equipment and other critical goods and services, during the global pandemic and beyond.

TAITRA took part in the regular working group discussions under the inaugural and historic U.S.-Taiwan Economic Prosperity Partnership Dialogue (EPPD) that was launched in November 2020. The EPPD established a senior-level framework for increased bilateral cooperation through regular working groups on topics like supply chain resilience and high-tech cooperation, and TAITRA will continue to make valuable contributions to the EPPD.

TAITRA also joined AIT in sharing Taiwan's success in diversifying its supply chains and supporting small and medium enterprises under an April 2021 Global Cooperation and Training Framework (GCTF) workshop focused on supply chain resilience. Participants from more than 26 countries joined the workshop. The GCTF is jointly administered by AIT, Taiwan, and Japan-Taiwan Exchange Association and serves as a platform for Taiwan to share its expertise with partners around the world; this workshop was an exemplar of how relevant and high-impact the GCTF platform has become.

These forums promoting supply chain resiliency demonstrate one of the areas in which Taiwan continues to play a key role in the world: Taiwanese industry players are important managers, key component producers, and digital platform integrators in the ongoing wave of global supply chain restructuring. The United States is the leader of global technological innovation and led the trend of supply chain restructuring. Our combined efforts can help lead enterprises around the world to move from digital transformation to green transformation, and establish a free, equitable, and mutually beneficial new ecosystem.

TAITRA has been in existence for over 50 years and continues to pursue its original goal of assisting Taiwanese businesses to expand in the international market space. The evolving international economy is accelerating the restructuring of global supply chains. At this critical moment, TAITRA has published this book: Roadmap to Resilient Supply Chains. This book explores supply chain restructuring trends over the past two years, including enterprises that are relocating production bases in response to trade tensions, pandemics, geopolitical uncertainty, and technological competition. We hope that this book will provide useful insights that help industry players navigate the waters ahead.

In the past two years, TAITRA and AIT have worked together on promoting supply chain resiliency for the global economy, and we believe this book will highlight the pivotal roles the United States and Taiwan can play at this critical juncture. The U.S.-Taiwan friendship is built on a foundation of shared values, including our shared economic values that will drive future supply chains: We value free markets. We aim to foster private sector-driven, sustainable growth. We support innovation and entrepreneurship. We respect intellectual property rights. We abide by international rules and agreements that create a level playing field.

We would like to thank the Ministry of Economic Affairs and the Bureau of Foreign Trade for their full support and appreciate the cooperation and participation of like-minded partners from various countries, Taiwan business leaders, and industrial associations in Taiwan for joining us in this effort in improving supply chain resiliency for the global economy.

Looking to the future, the collaboration between Taiwan, the United States and other like-minded partners on supply chain resiliency will bring about peace, stability and prosperity for the global community.

Taiwan

**Standing at the forefront of
global supply chain
restructuring.**

President Tsai Ing-wen's speech on the National Day (Oct. 10, 2020) mentioned:

*The rapid deconstruction and **restructuring of the global supply chain** is irreversible.*

Taiwanese businesses are also accelerating adjustments in the direction of segmenting markets, transferring production bases, and investing Taiwan.

AIT Director Brent Christensen's speech in the Forum on Supply Chain Restructuring: Improving Resilience Amongst Like-Minded Partners (Sep. 4, 2020) highlighted:

*As we plan for a post-pandemic world and evaluate what changes to the global supply chain are necessary, one thing is certain: **Taiwan has demonstrated** time and again that it is **a reliable partner and a critical player** for moving toward a more sustainable global economy.*



The role of
TAITRA
in supply chain restructuring

TAITRA

The main task of TAITRA is to **grasp present conditions and future trends**, and work with **international partners** to assist businesses in strengthening their resilience and participation amid the global supply chain restructuring.

July 8, 2020

Supply Chain Restructuring Workshop

TAITRA and AIT co-organized a **supply chain restructuring workshop**, inviting Taiwan's information and communications technology (ICT) industry players to discuss the challenges and opportunities they face in shifting global supply chains.



Photo caption: Second from left: Ms. Arati Shroff, Deputy Chief of the AIT Economic Section; Yeh Ming-Shui, former TAITRA President & CEO; Liu Zhi-Hong, Deputy Director of the Bureau of Foreign Trade, Ministry of Economic Affairs; and Lin Fang-Miao, current TAITRA President & CEO.

Forum on Supply Chain Restructuring: Improving Resilience Amongst Like-Minded Partners

Sep. 4, 2020



Photo caption: From left: TAITRA Chairman James Huang; Director of the European Economic and Trade Office Filip Grzegorzewski; Speaker of the Czech Senate Miloš Vystrčil; AIT Director Brent Christensen, Foreign Minister Joseph Wu; and Representative Izumi Hiroyasu of Japan-Taiwan Exchange Association.

TAITRA and AIT, the Japan-Taiwan Exchange Association, the European Economic and Trade Office, the Ministry of Foreign Affairs and the Ministry of Economic Affairs successfully organized the landmark forum to discuss a variety of policy tools to restructure supply chains while ensuring that businesses and economies can thrive. The forum explored bilateral, regional, and global opportunities for cooperation on this shared priority.

Following the September 2020 forum, TAITRA and AIT issued

Joint Statement on Securing Supply Chains

As the COVID-19 pandemic and geopolitical uncertainties continue to impact supply chains around the world, the **American Institute in Taiwan (AIT)** and the **Taiwan External Trade Development Council (TAITRA)** will strengthen consultations and cooperation on supply chain restructuring and resiliency, especially in the ICT and medical sectors.

This partnership will focus on:

- Encouraging partners to bring supply chains **closer to home or like-minded economies**.
- Engaging with like-minded partners to develop **new supply chains based on shared values**, standards, and best practices to create crisis-resilient supply chain networks.
- Ensuring that supply chains are **secure and free from political coercion**.

(continued)

Joint Statement on Securing Supply Chains

To strengthen this partnership, we will seek to share best practices and cooperate on a range of activities, including:

- Increasing the frequency, size, and scope of conferences within and outside of Taiwan.
- Expanding the depth and breadth of participation from like-minded countries and economies.
- Establishing an **Experts Advisory Board Network** to capitalize on expertise from the private sector, industry associations, academia, and think tank community.
- Coordinating virtual and physical **delegations to third countries** to facilitate supply chain restructuring.
- Sharing best practices to incentivize and support reorientation of supply chains to reliable partners.
- Developing **supply chain resilience in like-minded priority regions**, such as India, ASEAN, and the Visegrad Group, which will collectively reinforce the Taiwan New Southbound Policy and U.S. Indo-Pacific strategy.

Oct. 15, 2020

2020 U.S. Business Day

TAITRA and **AIT** held the iconic event “U.S. Business Day” to facilitate bilateral trade and investment.

Photo caption: From left: Director General of the Bureau of Foreign Trade Cynthia Kiang; TAITRA Chairman James Huang (middle); and AIT Director Brent Christensen. On the back, joining via video : former Under Secretary of Commerce Joseph Semsar, former Deputy Under Secretary Greg Kalbaugh, former Assistant Secretary Ian Steff, and representatives of officials from the Chambers of Commerce in 30 US states.



INDO-PACIFIC BUSINESS FORUM

TAIWAN MODEL ON COVID-19

Forging public private partners in the medical industry

Oct. 28, 2020

Photo caption: From left: TAITRA Executive Vice President Simon Wang; TAITRA President & CEO Lin Fang-Miao; Vice President, Wistron Medical Technology Brian Chong; AIT Director Brent Christensen, TAITRA Chairman James Huang (middle); Deputy Leader of AIT Economic Division Arati Shroff; Director General of the Bureau of Foreign Trade Cynthia Kiang; Deputy Chief of Economic Affairs of the Department of North American Affairs of the Ministry of Foreign Affairs Chen Hui-Zhen; and President, Mytrex Health Technologies, Inc., Goo Sy-Ming.



AIT arranged for TAITRA to co-host the first-ever Taiwan session in the Indo-Pacific Business Forum (IPBF) since the Forum's inception in 2018. This public session, entitled "Taiwan Model on COVID-19: Forging public private partners in the medical industry," highlighted Taiwan's central role in creating reliable global supply chains for medical equipment and other critical goods and services, during the global pandemic and beyond.

Nov. 20, 2020

U.S.-Taiwan Economic Prosperity Partnership Dialogue

TAITRA took part in the regular working group discussions under the inaugural and historic U.S.-Taiwan Economic Prosperity Partnership Dialogue (EPPD)

The EPPD established a senior-level framework for increased bilateral cooperation through regular working groups on topics like supply chain resilience and high-tech cooperation, and TAITRA will continue to make valuable contributions to the EPPD.

Global Cooperation and Training Framework April 14, 2021



TAITRA also joined AIT in sharing Taiwan's success in diversifying its supply chains and supporting small and medium enterprises under an April 2021 Global Cooperation and Training Framework (GCTF) workshop focused on supply chain resilience.

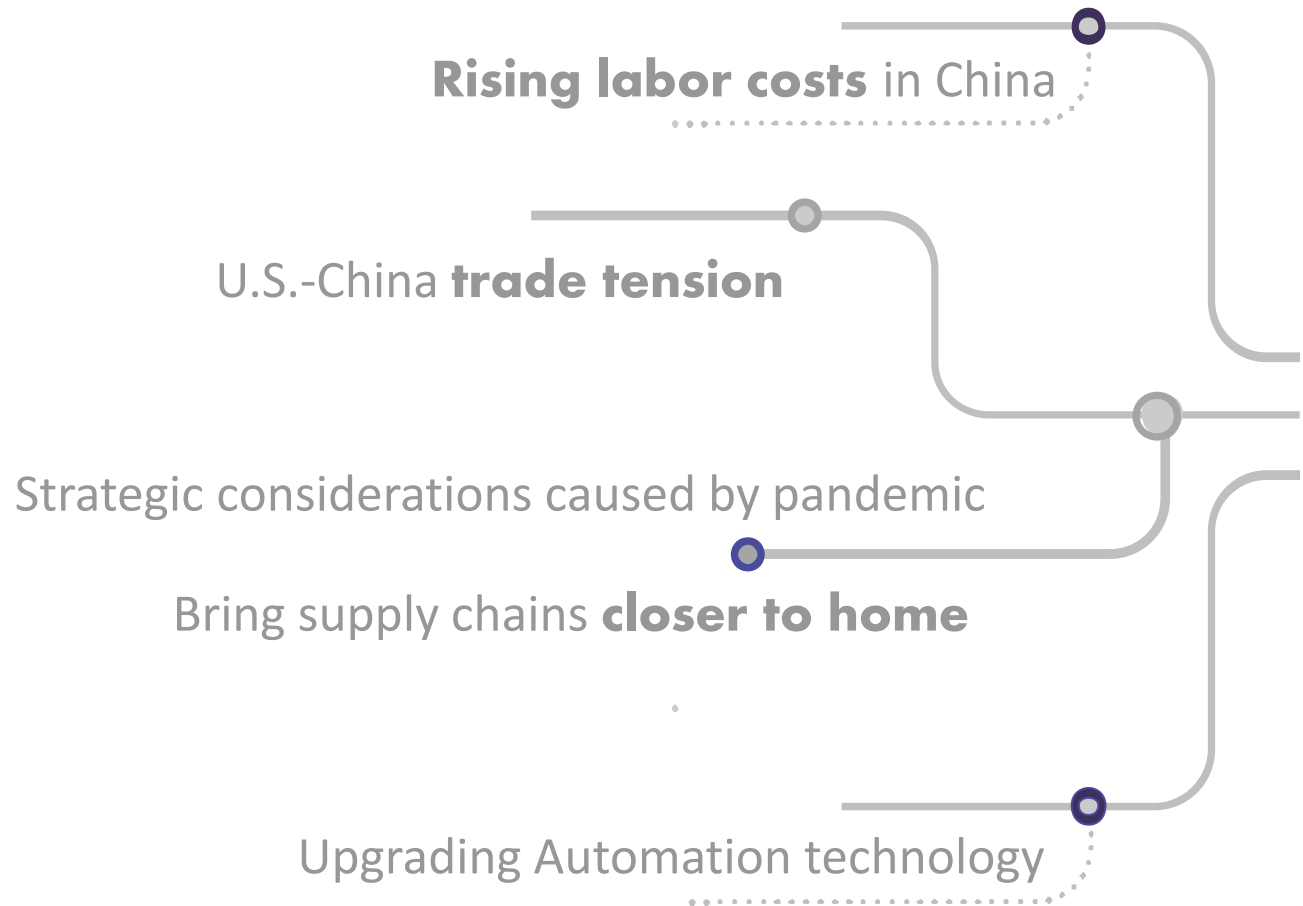
Participants from more than 26 countries joined the workshop. The GCTF is jointly administered by AIT, Taiwan, and Japan-Taiwan Exchange Association and serves as a platform for Taiwan to share its expertise with partners around the world; this workshop was an exemplar of how relevant and high-impact the GCTF platform has become.

The **trends** of supply chain restructuring

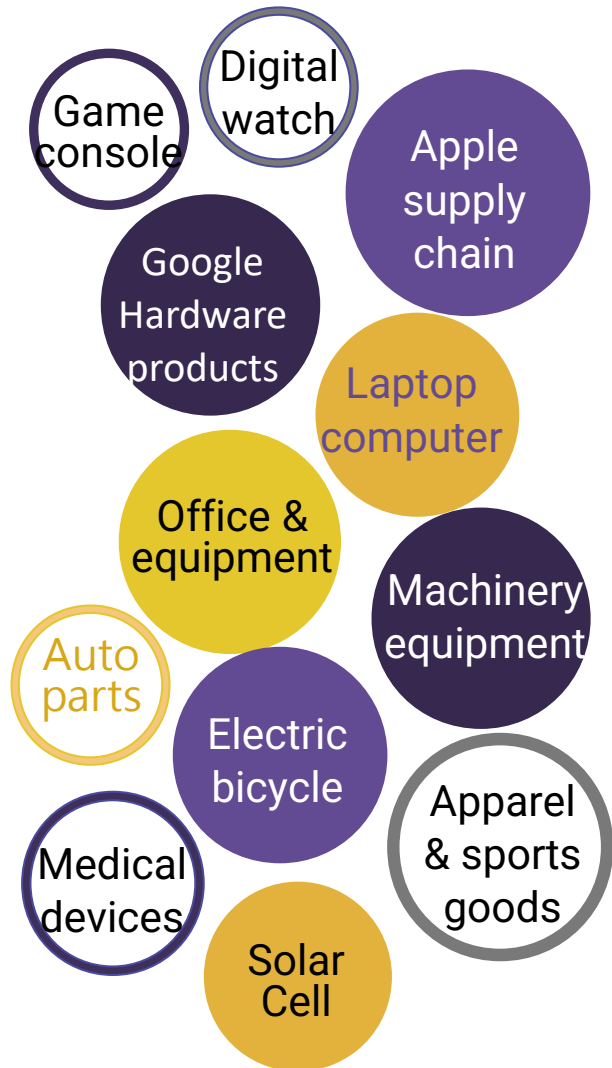
The background features a series of overlapping, wavy lines in shades of blue, green, and yellow, creating a sense of movement and flow. The lines are thin and densely packed in some areas, while more sparse in others. A solid yellow horizontal bar is located at the bottom of the slide.

Supply chains are moving

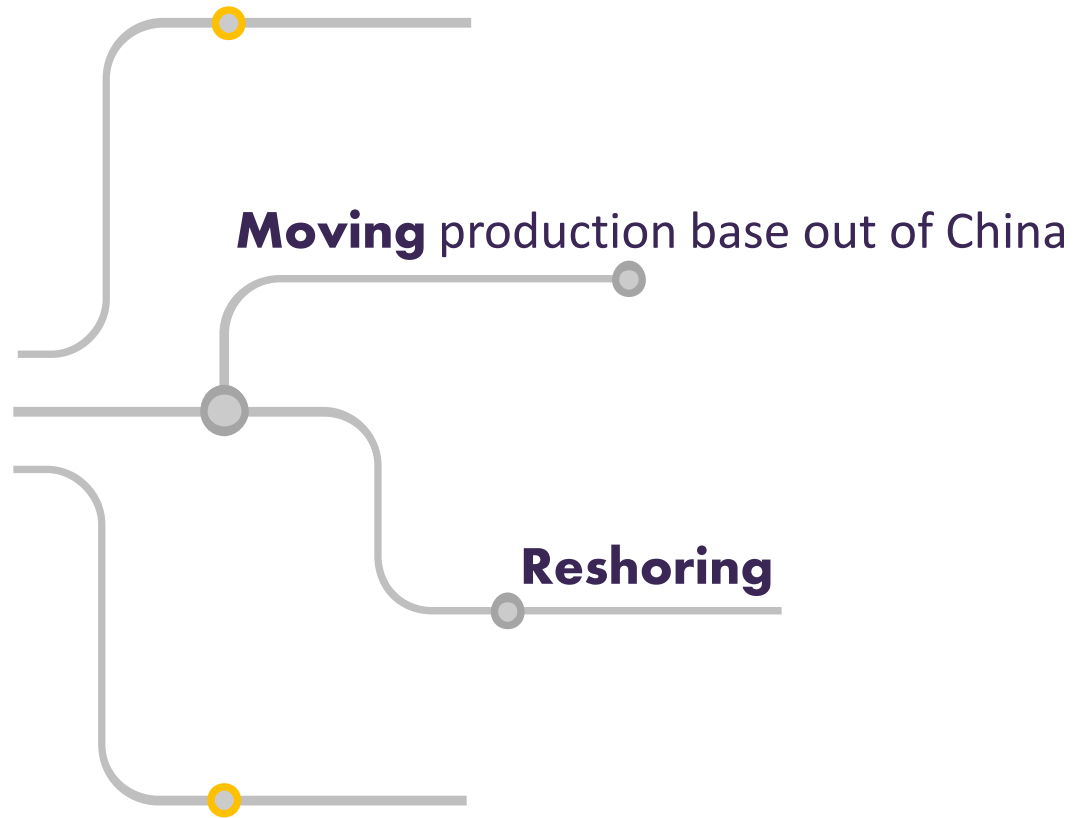
Under these circumstances



Companies shifted their production lines



Relocating to Southeast Asia with **low labor cost**



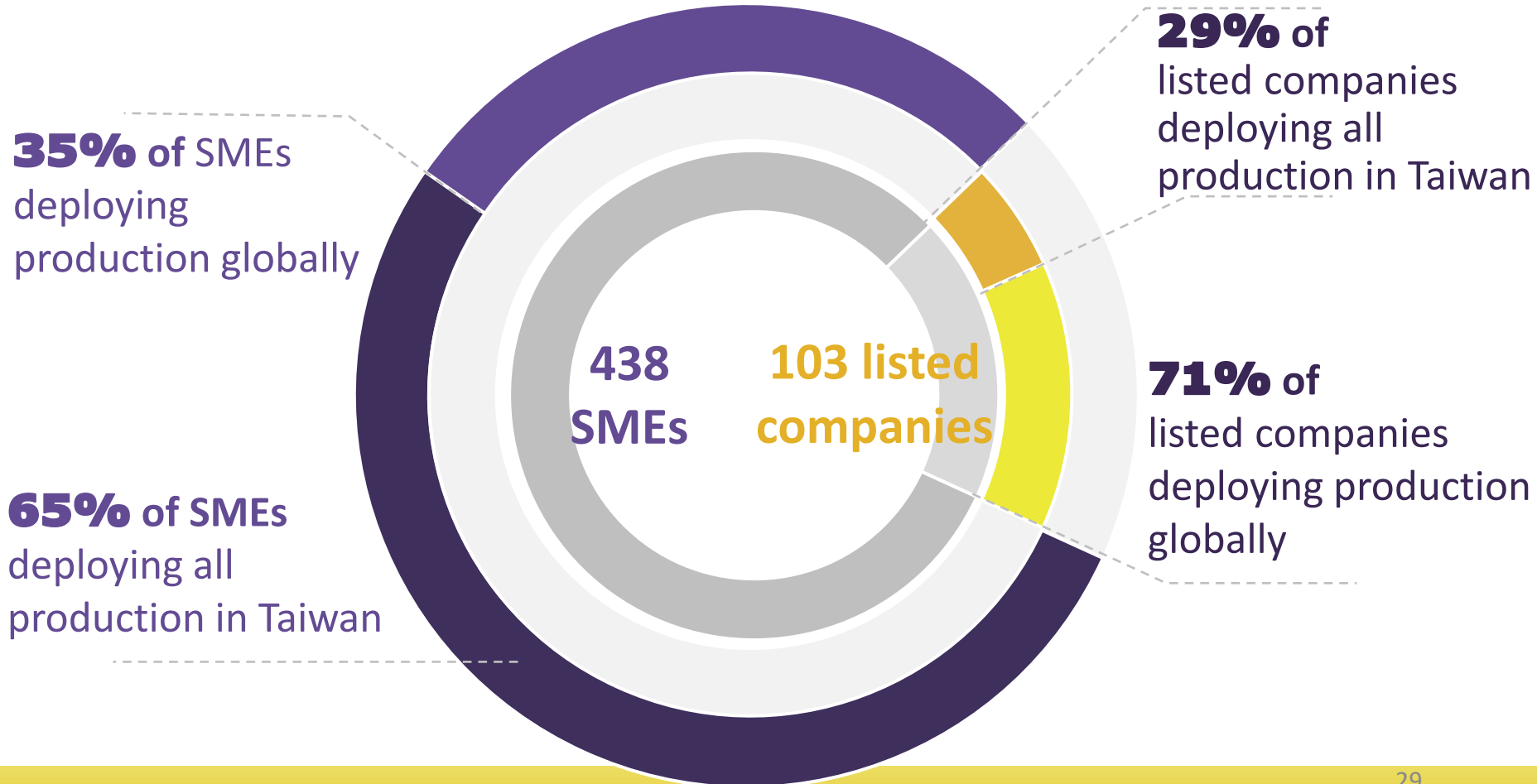
Migrating & adopting **automated** production



Surveys on
domestic and overseas
Taiwanese Businesses

Domestic business surveys

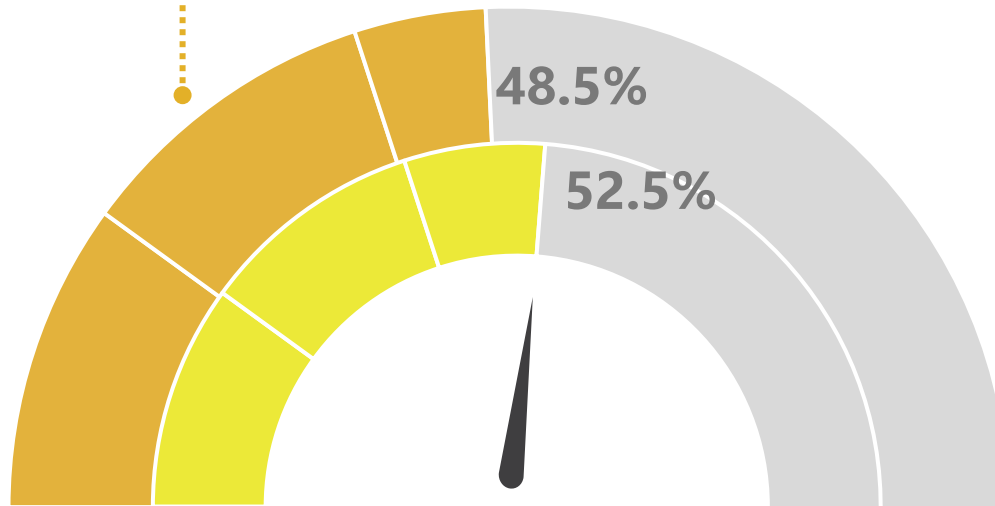
541 domestic Taiwan businesses interviewed by **TAITRA**



Survey results on listed companies

In the next three years

48.5% of listed companies
will **adjust** production deployment



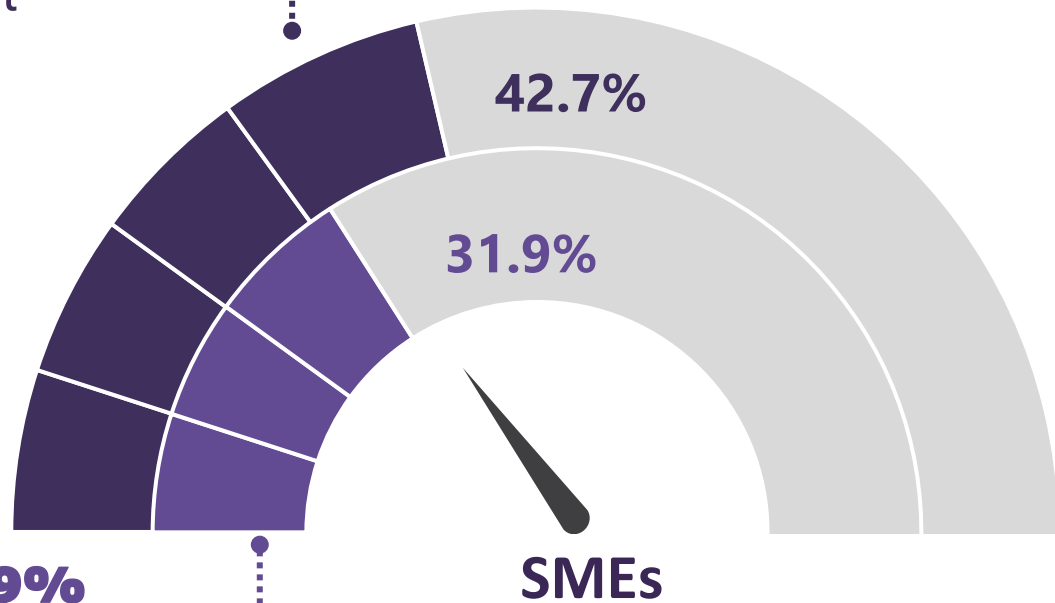
Listed companies

In the past two years

52.5% of listed companies
have **adjusted** production deployment

Survey results on SMEs

In the next three years
42.7% of SMEs **will adjust**
production deployment

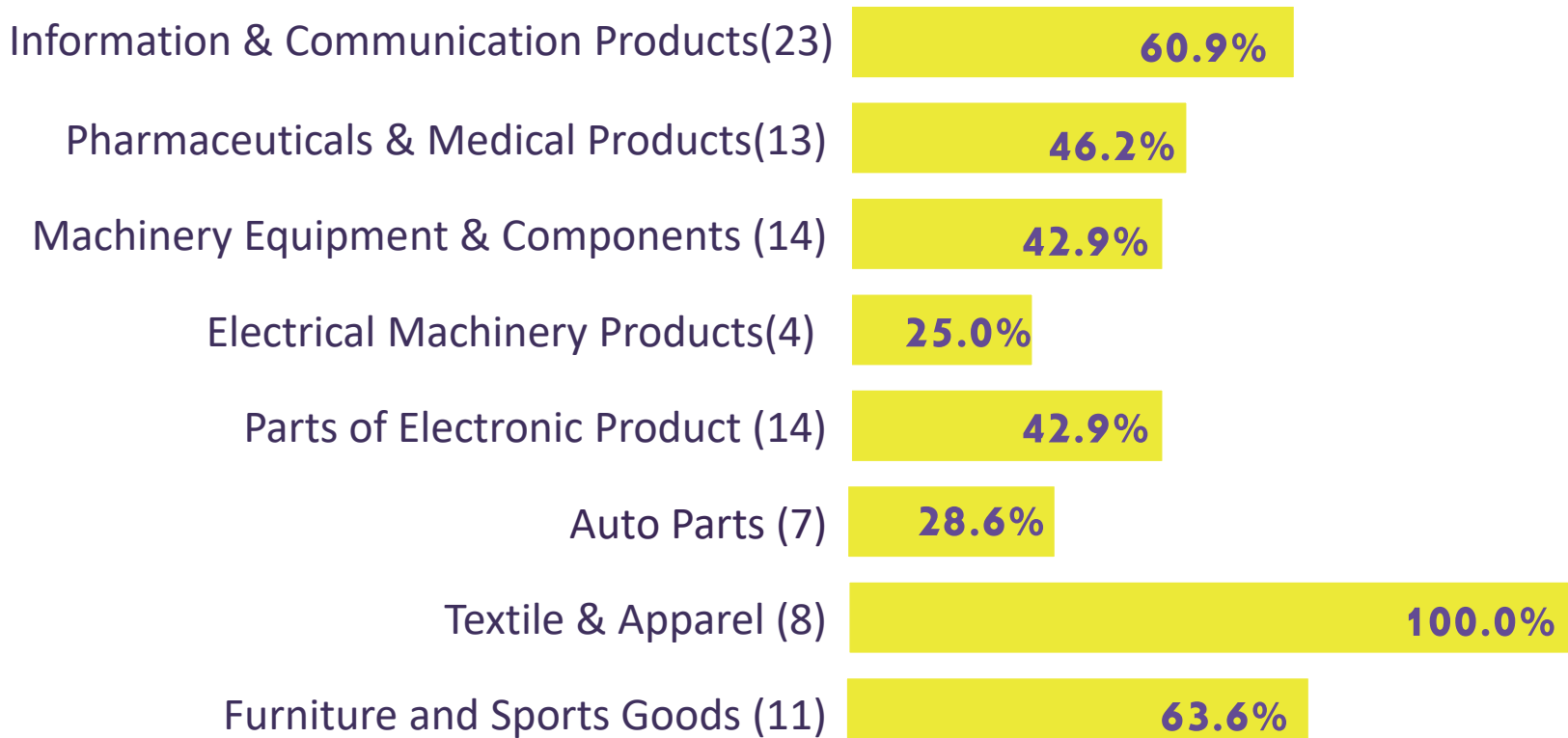


In the last two years **31.9%**
of SMEs **have adjusted**
production deployment

Survey results of listed companies by industrial categories

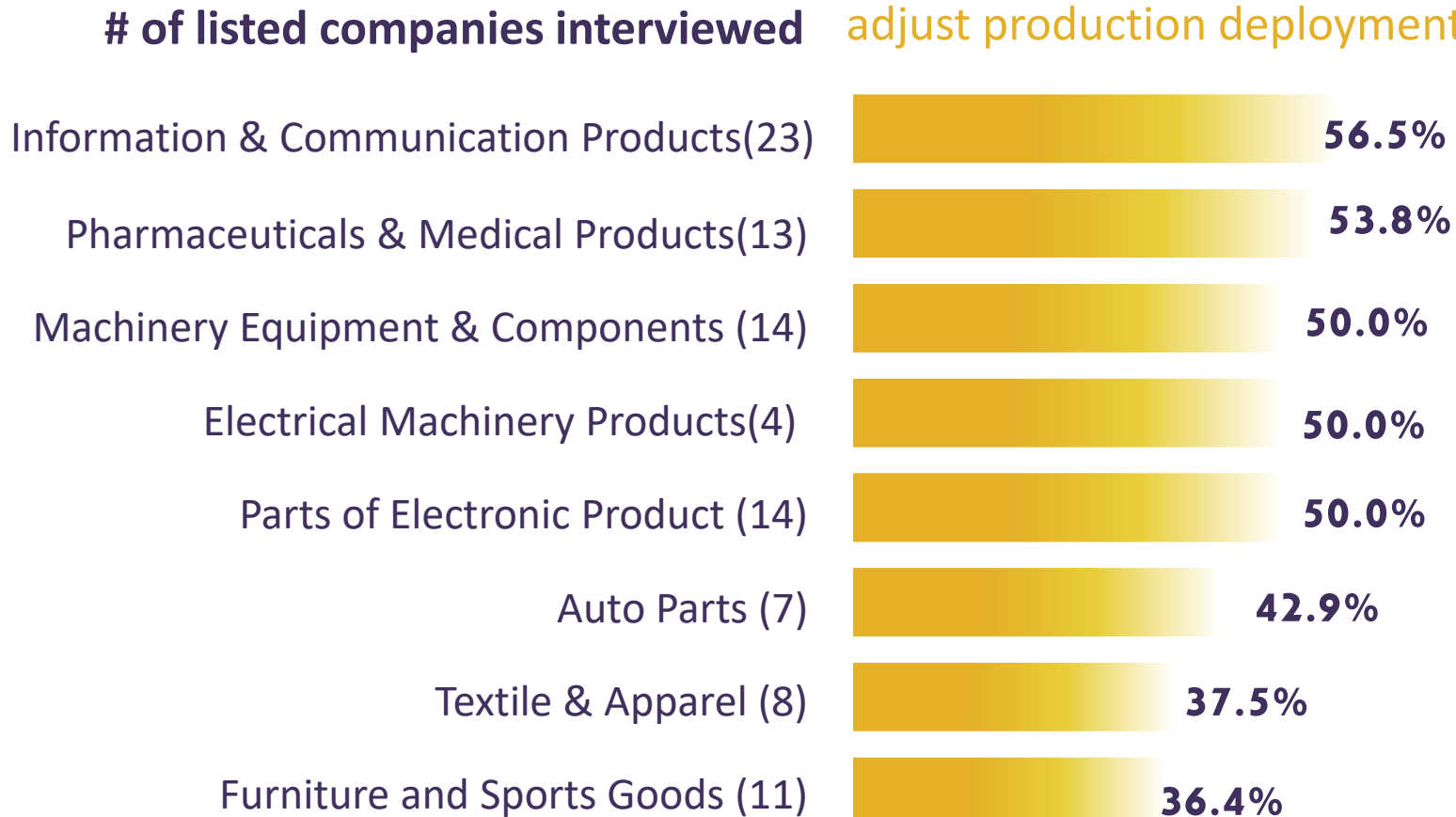
% of respondents:
in the last two years have
adjusted production deployment

of listed companies interviewed

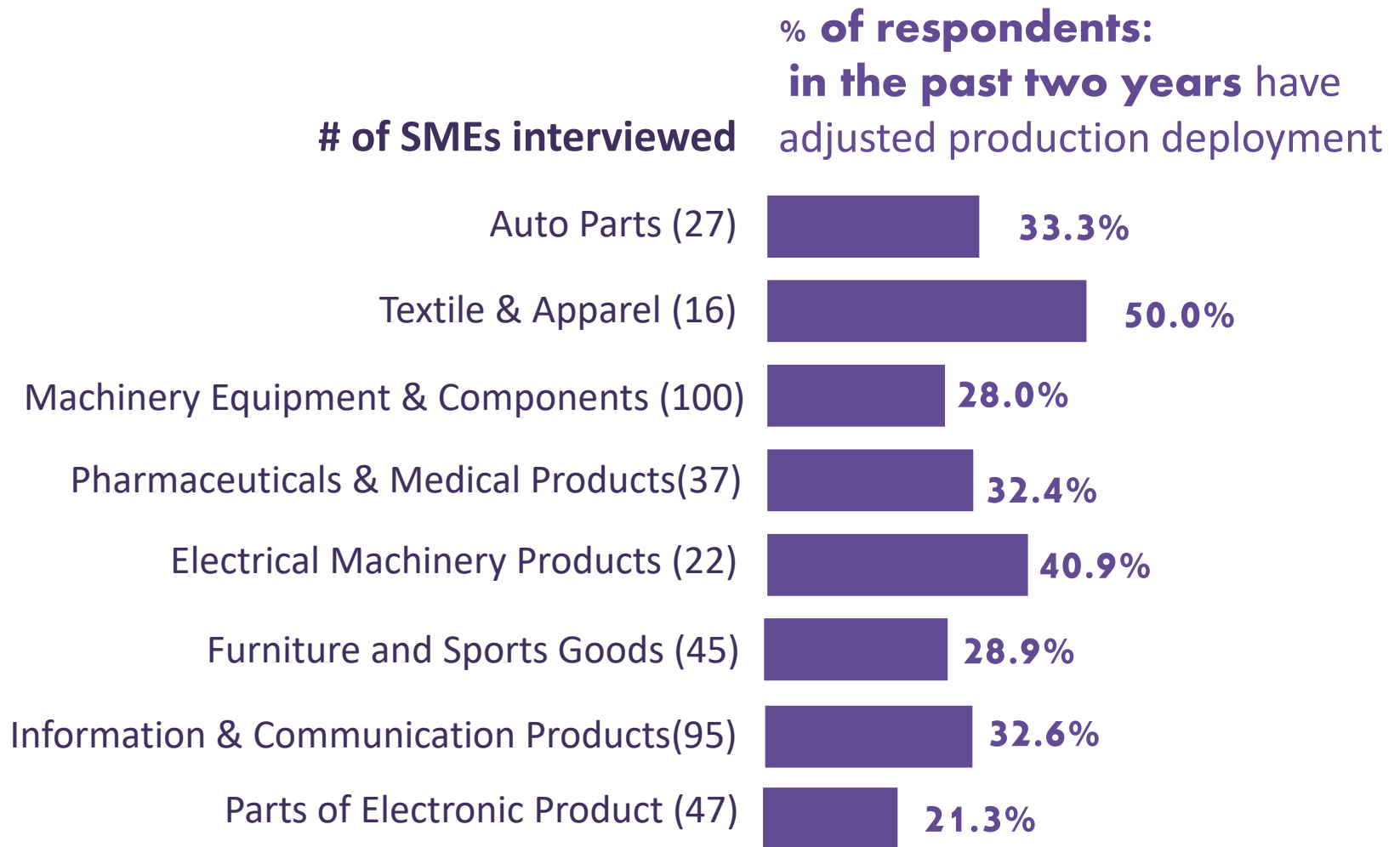


Listed companies have been very active in adjusting their production deployment. ICT industries are the most active in supply chain restructuring in the next three years.

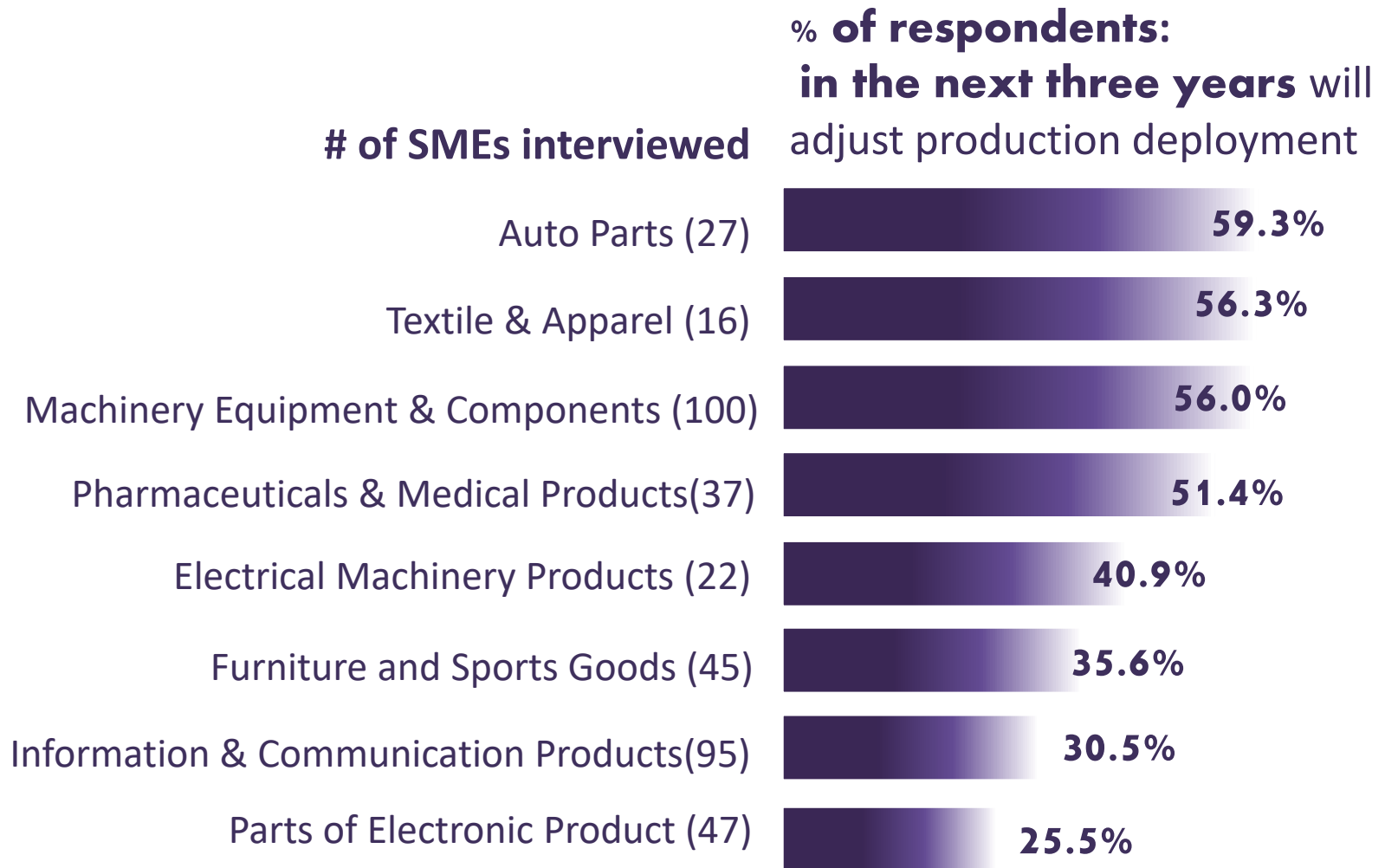
**% of respondents:
in the next three years will
adjust production deployment**



Survey results of SMEs by industrial categories

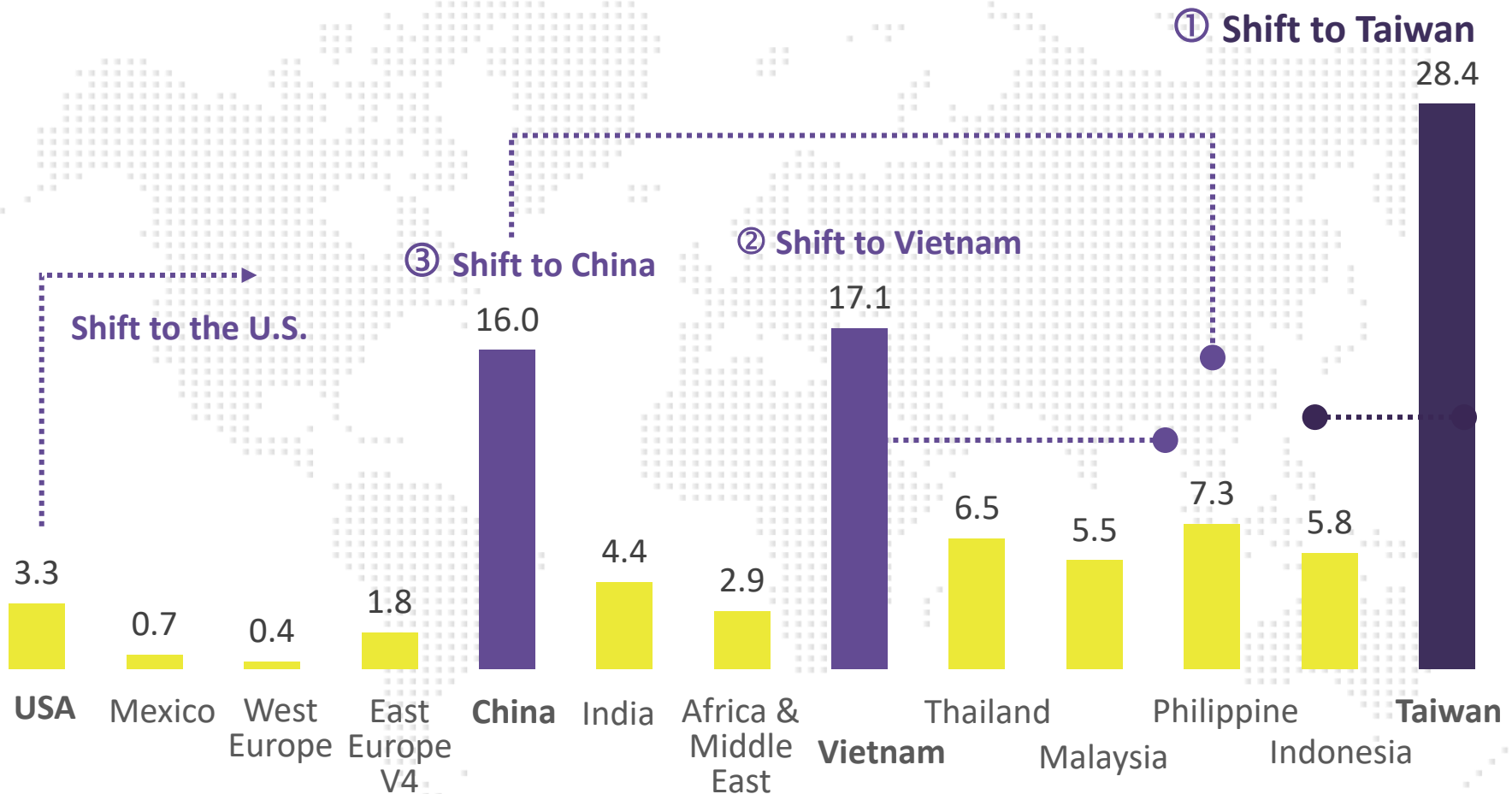


In the last two years, SMEs have had a conservation and wait-and-see attitude. However, in the next three years, **SMEs will be more active in adjusting production.**



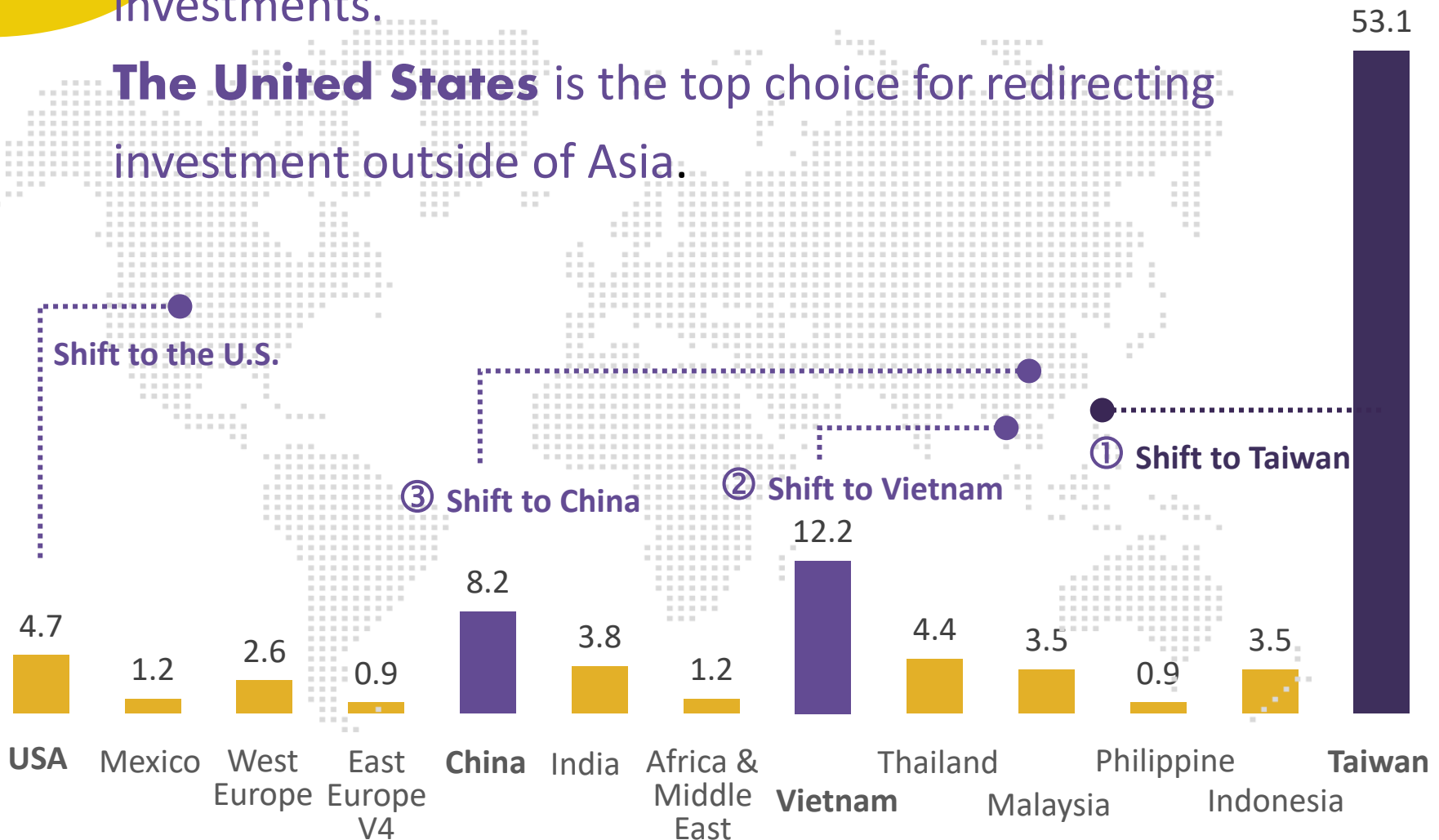
In the last two years, Taiwan has been the top choice for Taiwanese businesses to redirect their investments.

Vietnam was the second destination of choice. The third was to stay in China.



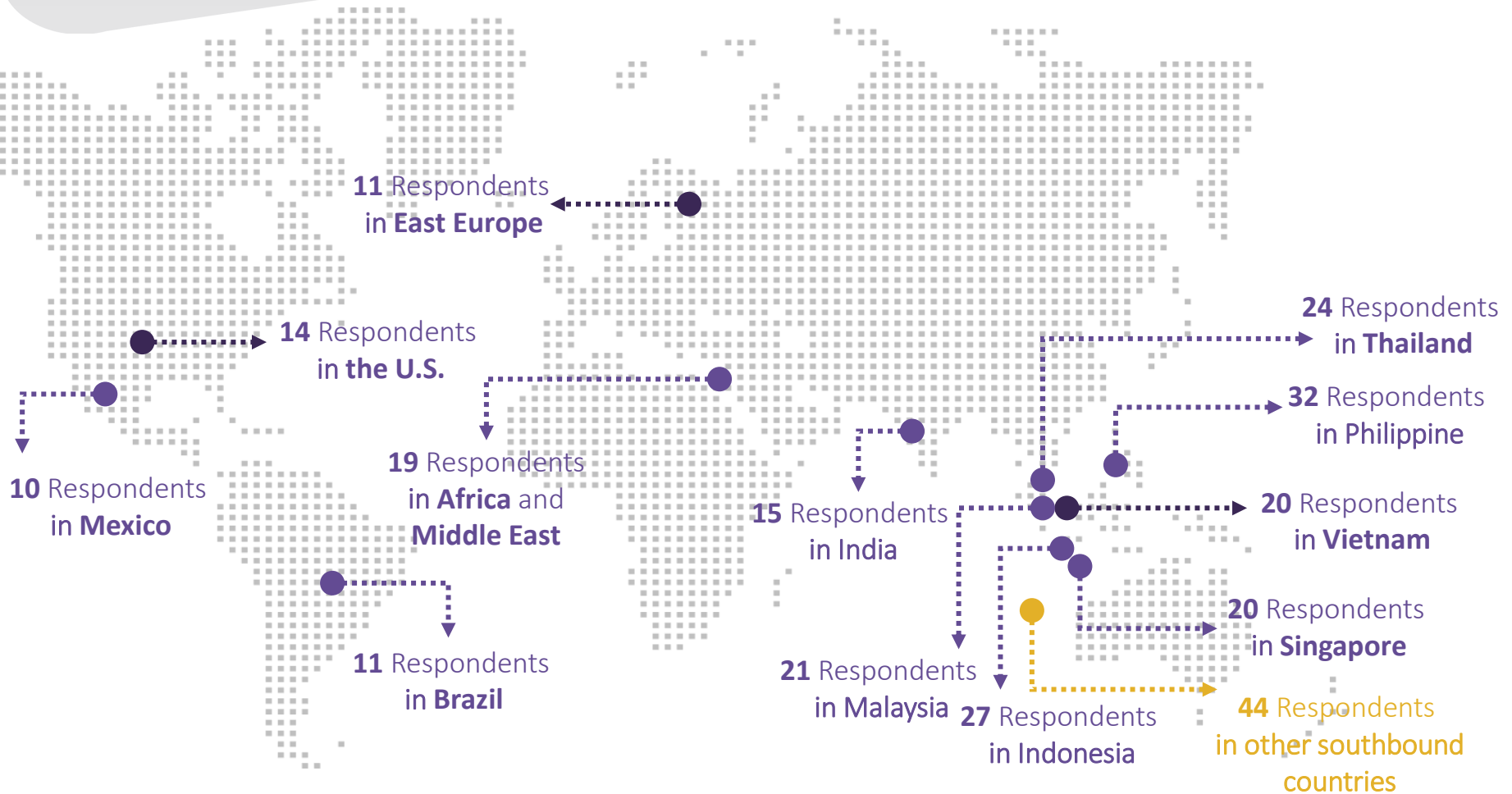
In the next three years, Taiwan will continue to be the top choice for Taiwanese businesses to redirect their investments.

The United States is the top choice for redirecting investment outside of Asia.



Overseas business surveys

268 overseas businesses interviewed by **TAITRA**



Overseas business surveys

A clear pattern of supply chain restructuring among overseas Taiwanese manufacturers

- **Overseas** Taiwanese businesses are **diversifying** their production bases
- They are developing regional production bases that are **close to markets** with growth potential and high domestic demand
- In doing so, they are **diversifying** to minimize risks.

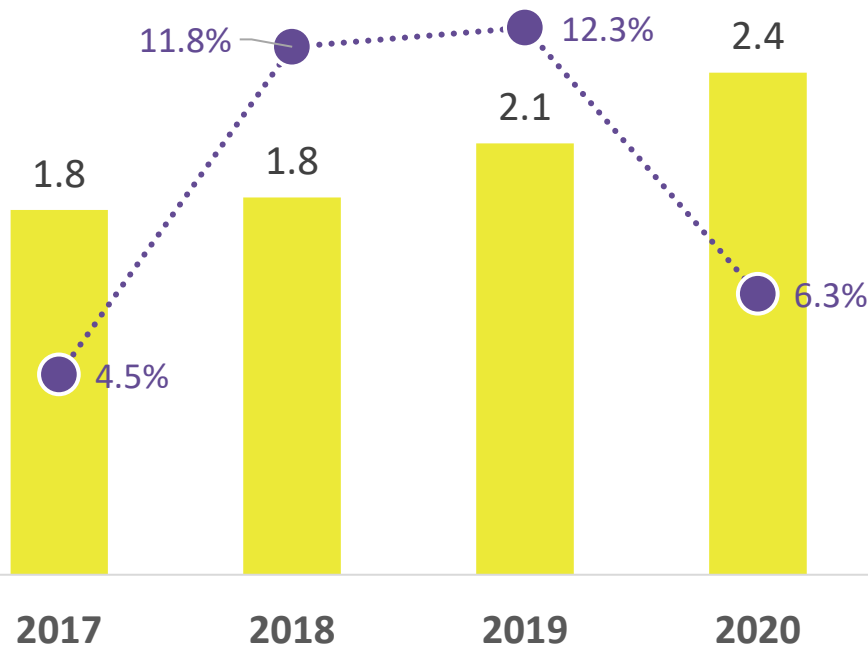


The **impacts** of supply chain restructuring **in Taiwan**

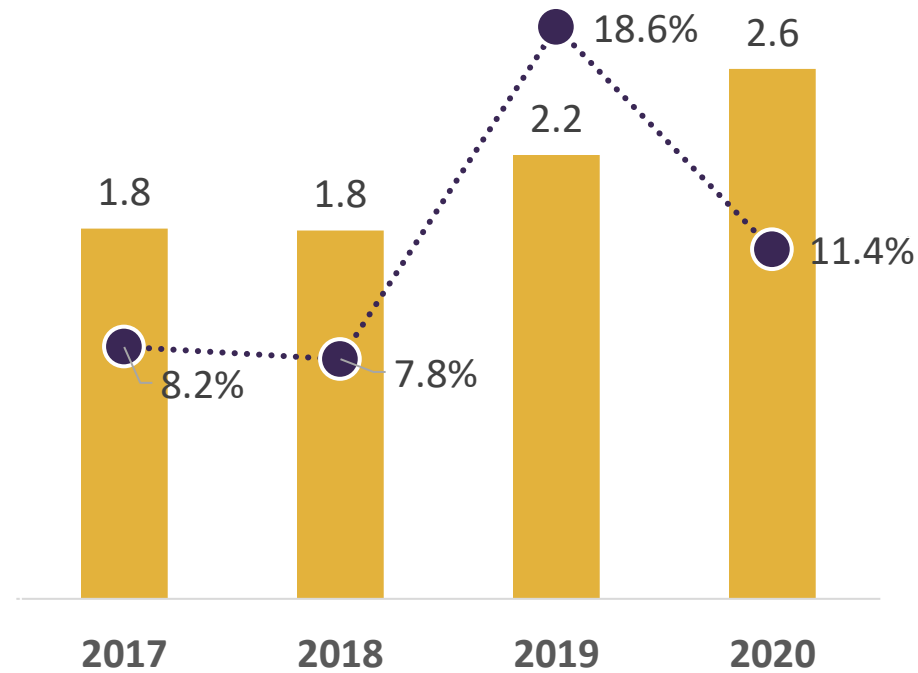
Bilateral trade

Taiwan-U.S. bilateral trade and **Taiwan's share** in the U.S. import market has increased significantly.

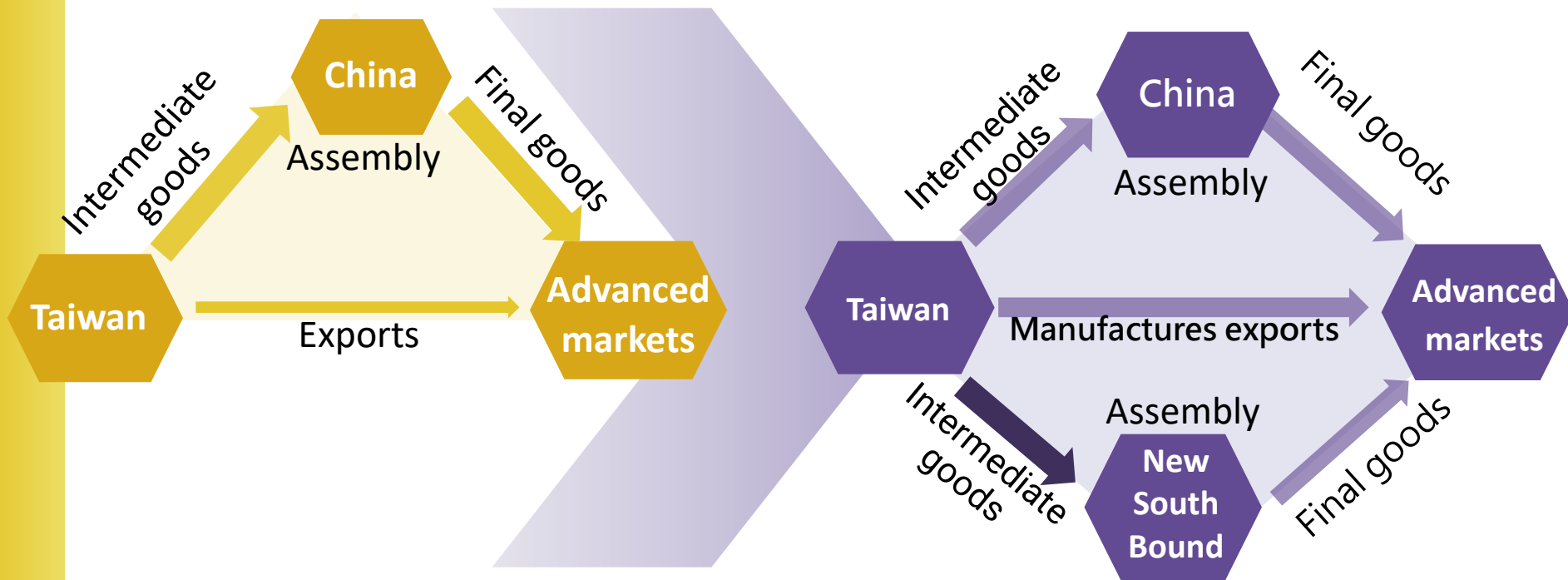
■ Taiwan-U.S. bilateral trade as a share of U.S. total trade
●●● Growth rate of Taiwan-U.S. bilateral trade



■ Taiwan's share of U.S. imports
●●● Growth rate of U.S. imports from Taiwan

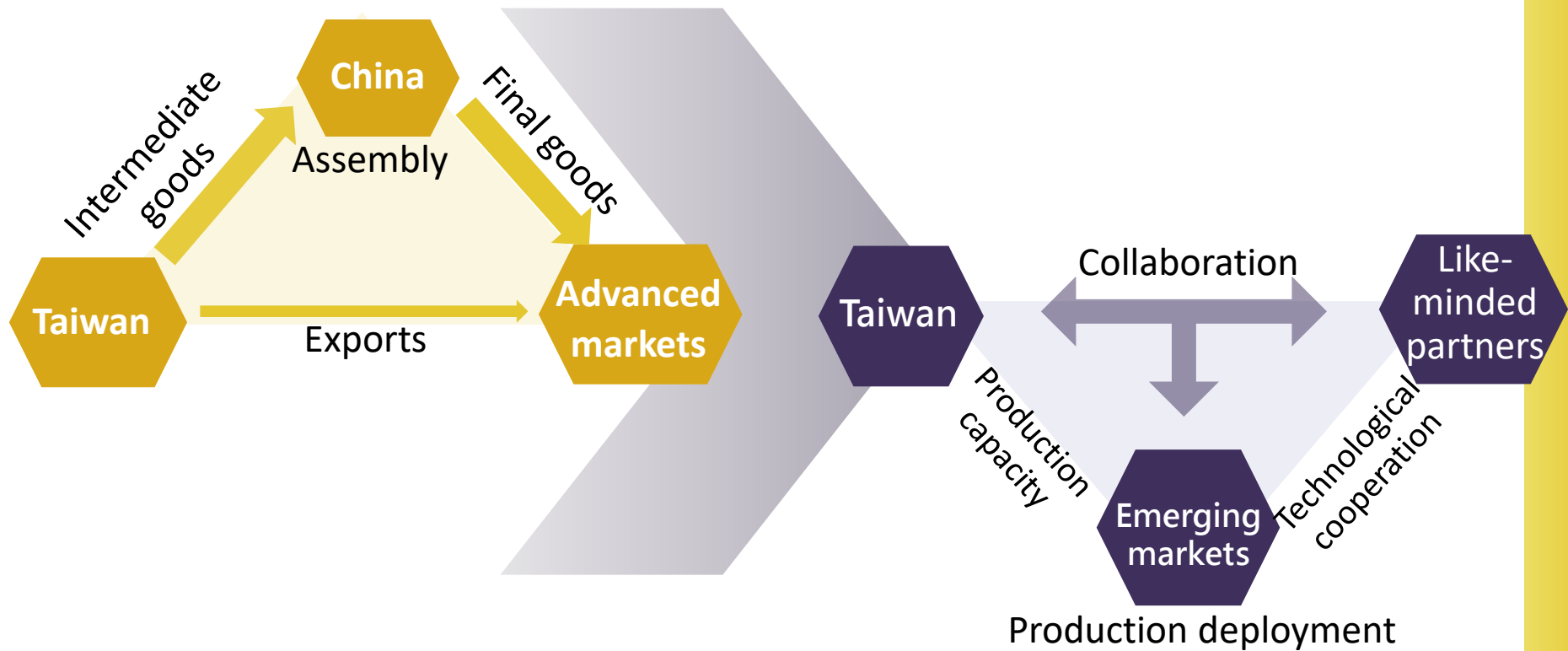


A **Paradigm shift** in trade relations among Taiwan, the U.S., China and the new southbound countries.



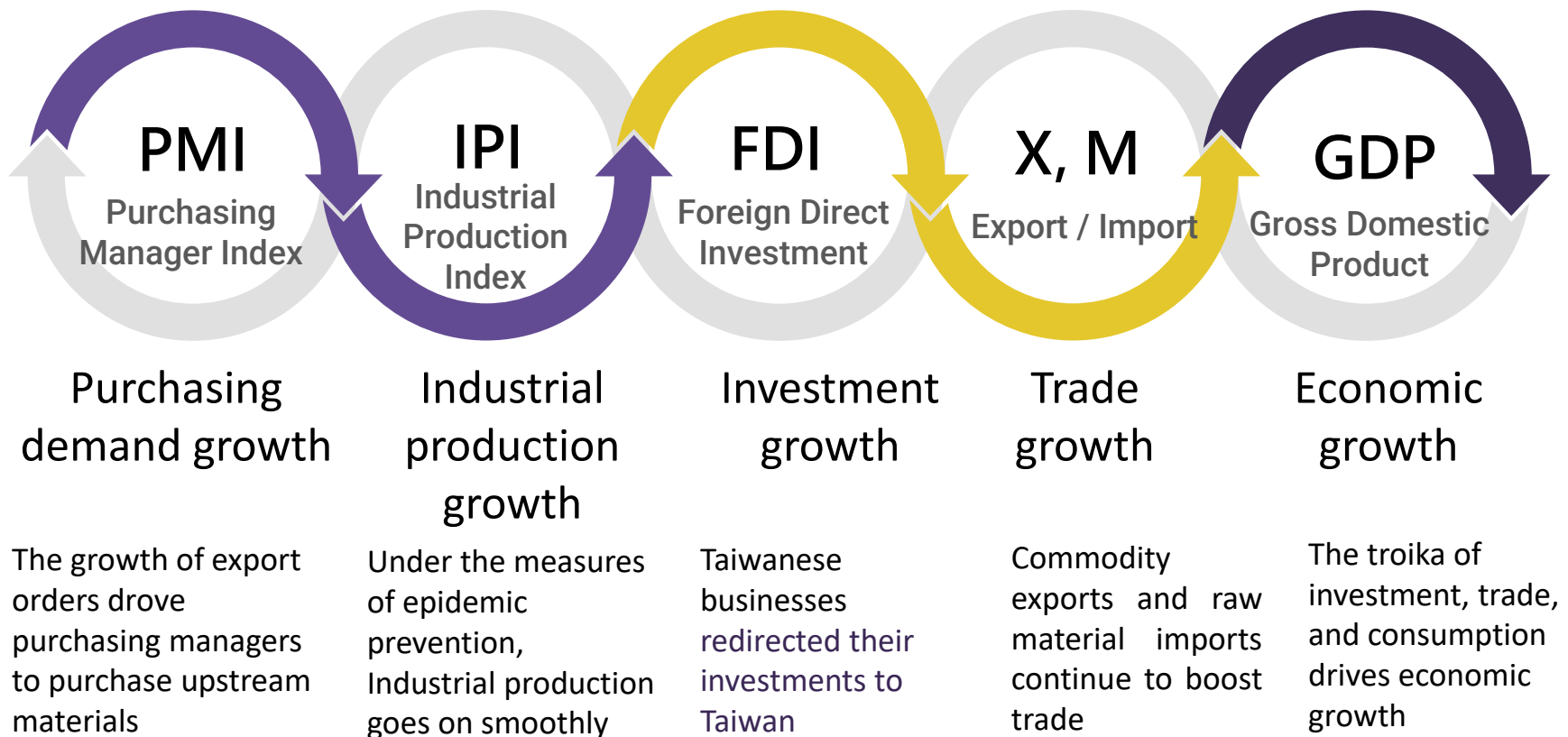
New Southbound countries have become other important overseas production bases for Taiwanese businesses, which are picking up the production capacity moved out from China.

For products with **strategic considerations**, supply chain restructuring will be based on collaboration among Taiwan and like-minded partners.



All-round growth

Taiwan has been one of the best performing economies in the world under the trend of supply chain restructuring in 2020.





The **state** of the
global supply chain
in recent years



Globalization

- For the past 30 years, **cost efficiency** was the core consideration for globalization: the creation of a global supply chain.
- In the era of **globalization**, a purely profit-oriented, centralized supply chain was formed.



Globalization

**Profit-oriented
Cost Efficiency**

Supply Chain



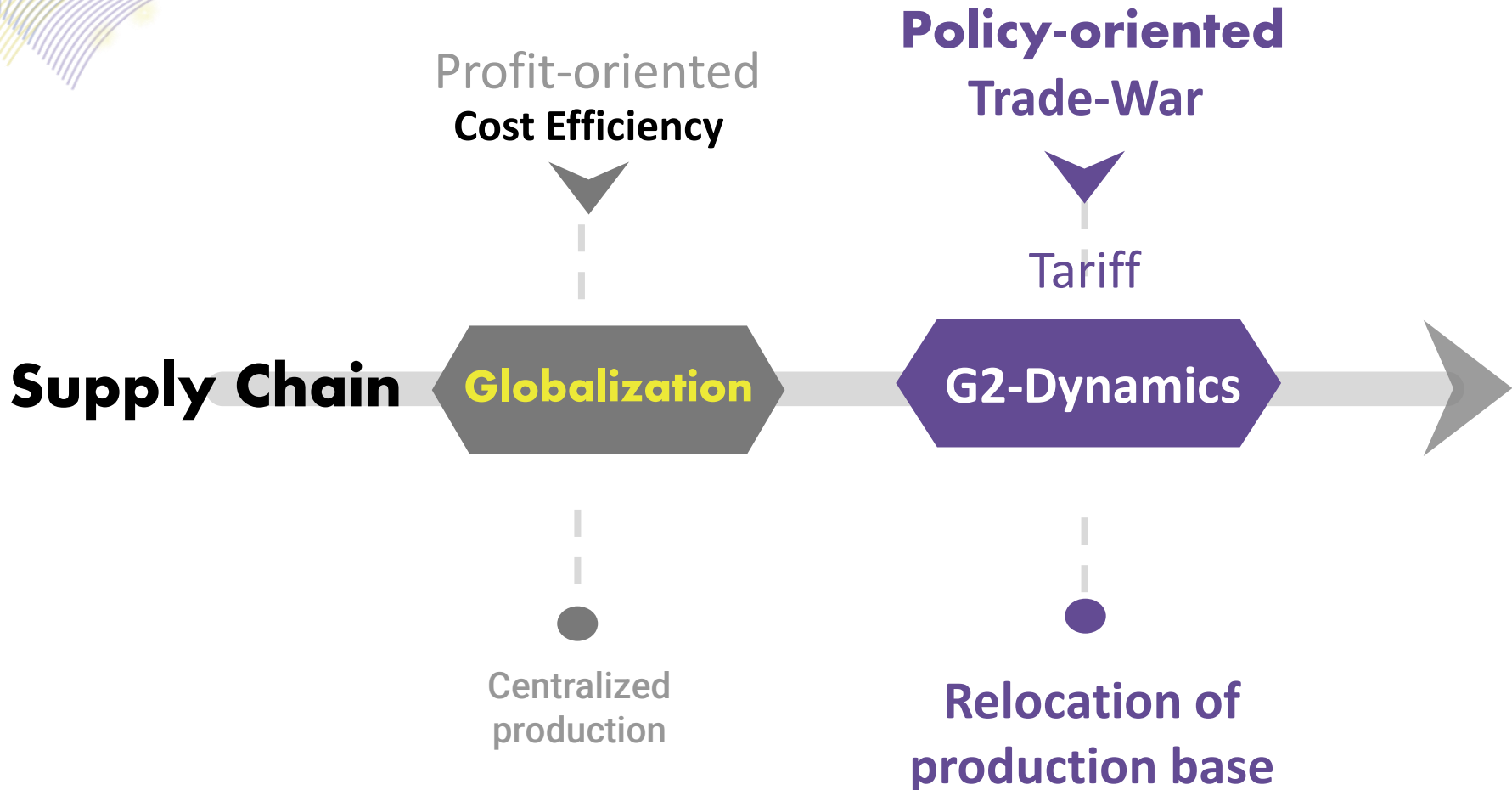
Globalization

**Centralized
production**

- 
- But in the last two years, major changes in the world have led to the restructuring of this globalized, centralized supply chain system.
 - From 2018 to 2020, this global supply chain was put to the test: **a trade war and an epidemic.**
 - Coupled with **advancements in industrial automation**, we now have a clear and present need to make updates and restructure the global supply chain.

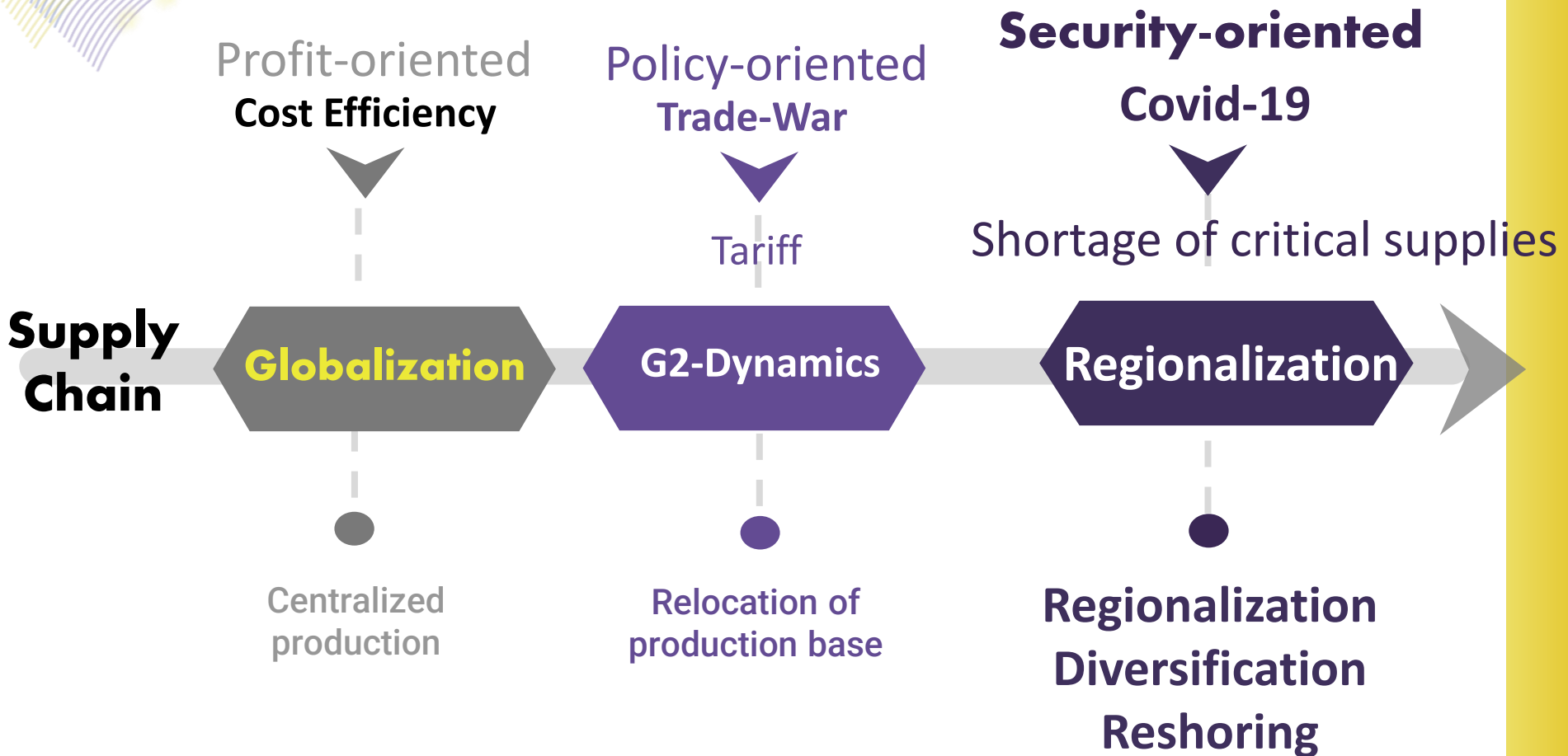
G2-Dynamics

In 2018, policy changes and the trade war led to the **G2 dynamics**, and manufacturers began to shift their production bases to reduce tariffs.



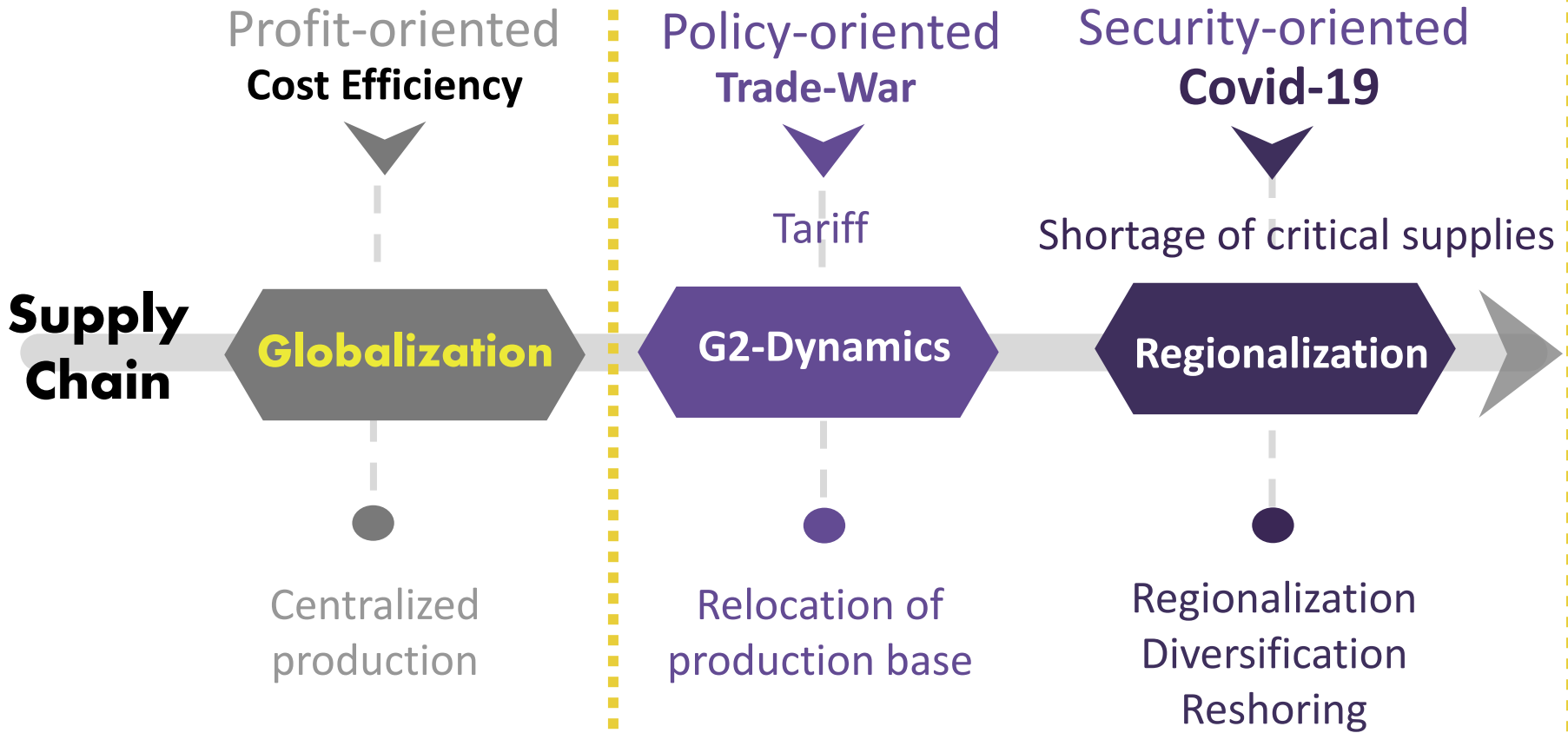
- 
- In 2020, the pandemic highlighted the importance of having secure supplies of critical production materials.
 - And it was clear that in order to **secure critical supplies**, the supply chain needed to be made more resilient to deadly threats like COVID-19.
 - So began the process of **regionalization**, diversification, and reshoring to home markets.

Regionalization



This **policy** and **security-oriented** strategy implementation and shifting of supply chains are referred to as **Resilient Supply Chain 1.0**

Resilient Supply Chain 1.0

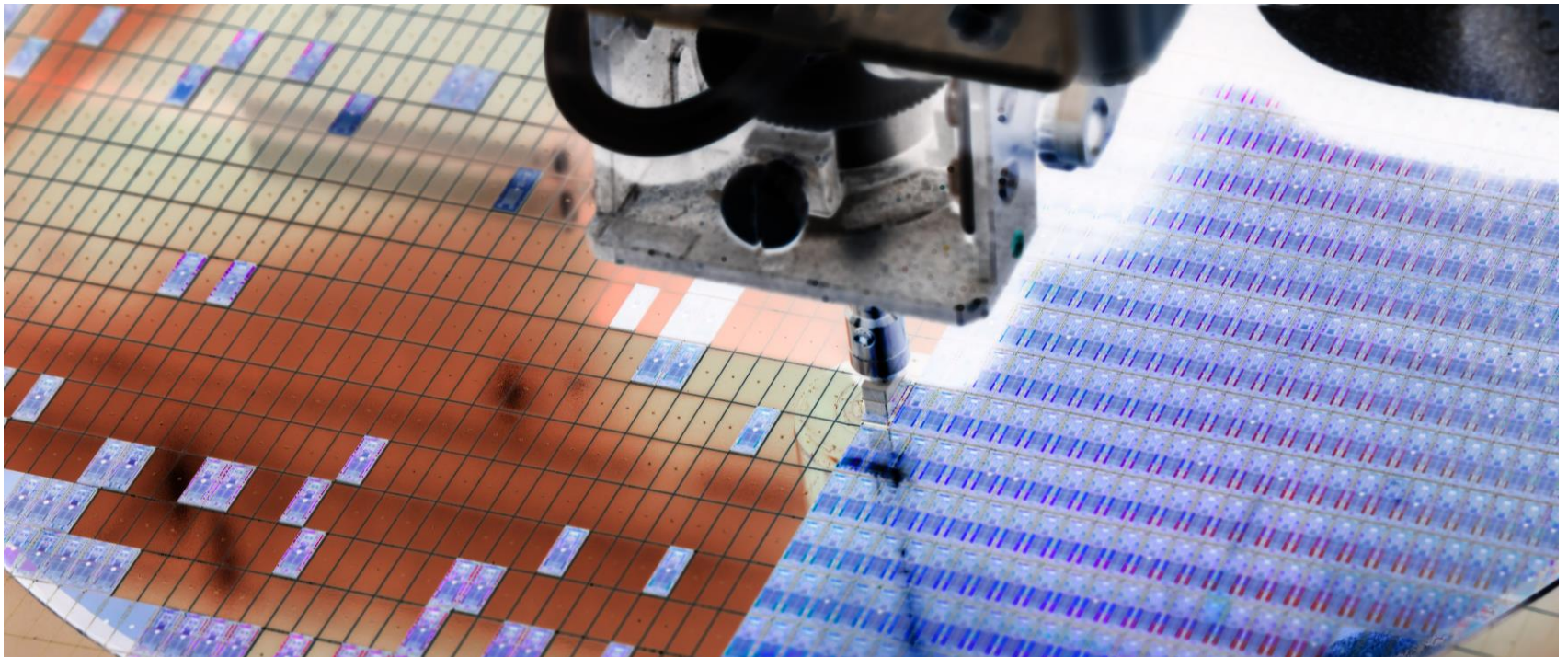


However, under **Resilient Supply Chain 1.0**,
there are some major unsolved issues:

chip shortage, disorder of logistics, supply chain inflation.

The global shortage of semiconductors

Since 2021, the world's biggest supply chain issue is the shortage of semiconductor chips: not only were car manufacturers forced to cut production, but chips of other electronic products have also been in short supply.



On February 24, 2021, U.S. President Biden signed an executive order regarding critical supply chain security. This kicked off a 100 day review of four sectors covering pharmaceutical ingredients, critical minerals, semiconductors and large capacity batteries.



source: shutterstock.com

The sourcing of semiconductors **may be the hardest to address** given the scale, cost and time taken to build new fabrication facilities.

The problem of chip shortages is caused by the imbalance of supply and demand, which has been caused by the inaccuracy of forecast that are based on multi-dimensional and dynamic supply and demand variables.

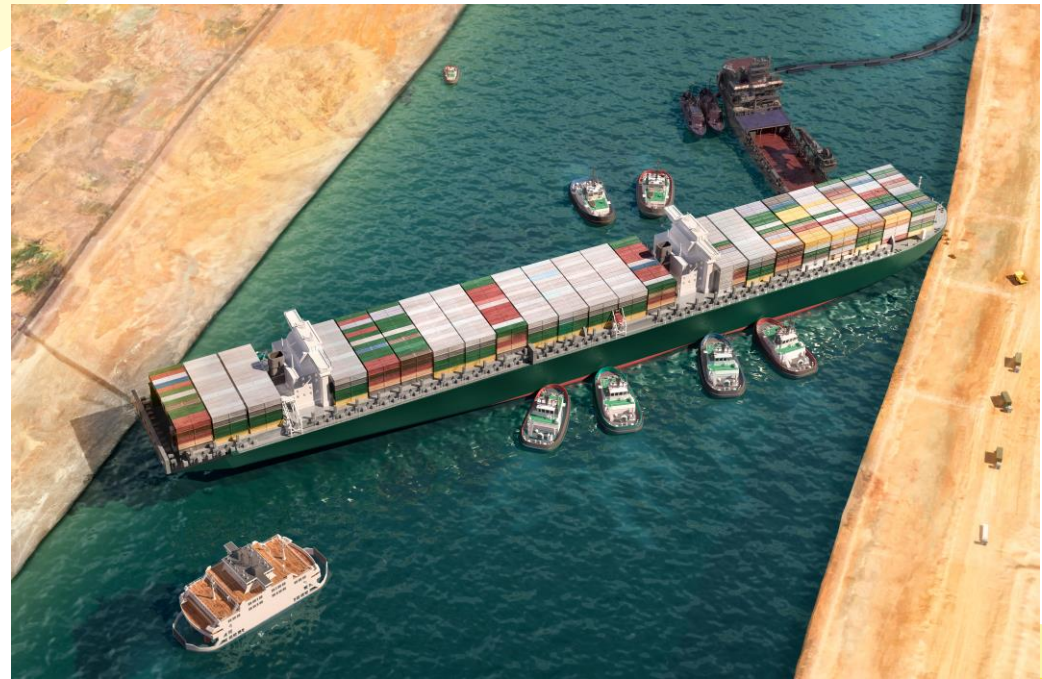
Disorder of logistics

Container shortage, port congestion,
Logistics challenge of lengthy supply chains

Looking further ahead, the environmental characteristics of logistics within supply chains is becoming more and more important.



Starting in 2020, the global logistics has been hit by five broad phases:



source: shutterstock.com

Phase 1. **supply side disruptions**

Phase 2. **demand destructions**

Phase 3. **uneven reopening**

Phase 4. **long term restructuring.**

Phase 5. **blockage of the Suez Canal.**

Supply chain inflation

...driven up by chip shortage and container shortage

"Shortage" is the main cause of price increases, and this is because it makes manufacturers stockpile as much as possible to reduce the uncertainty of future shipments.

This makes the problem of shortages even worse.



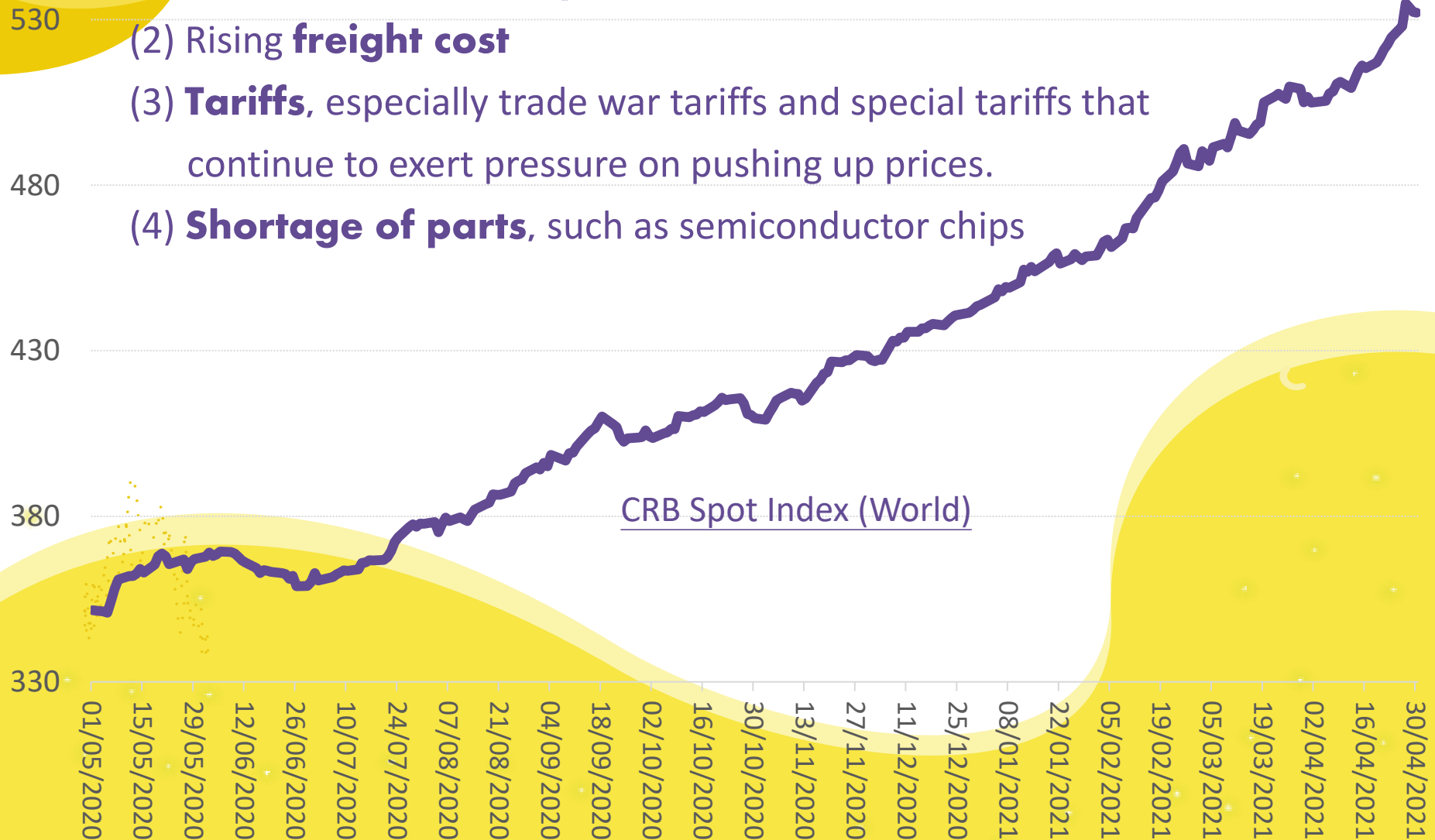
Supply chain inflation caused by four factors :

(1) Rising **raw material prices**

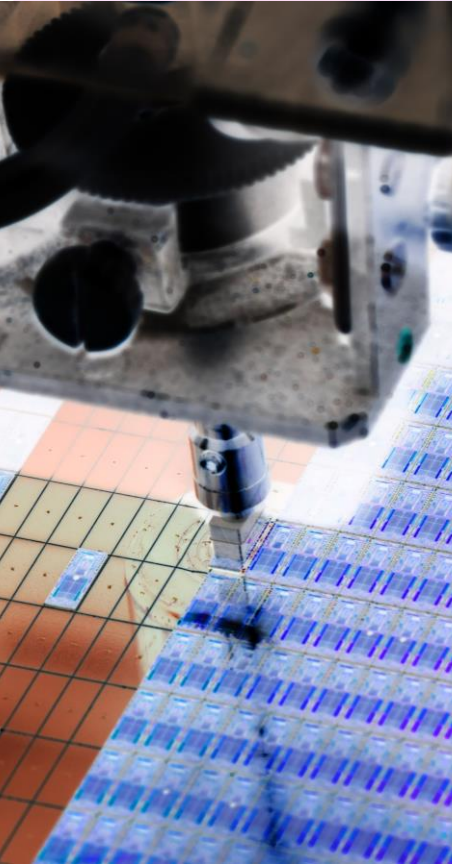
(2) Rising **freight cost**

(3) **Tariffs**, especially trade war tariffs and special tariffs that continue to exert pressure on pushing up prices.

(4) **Shortage of parts**, such as semiconductor chips



CRB Spot Index (World)



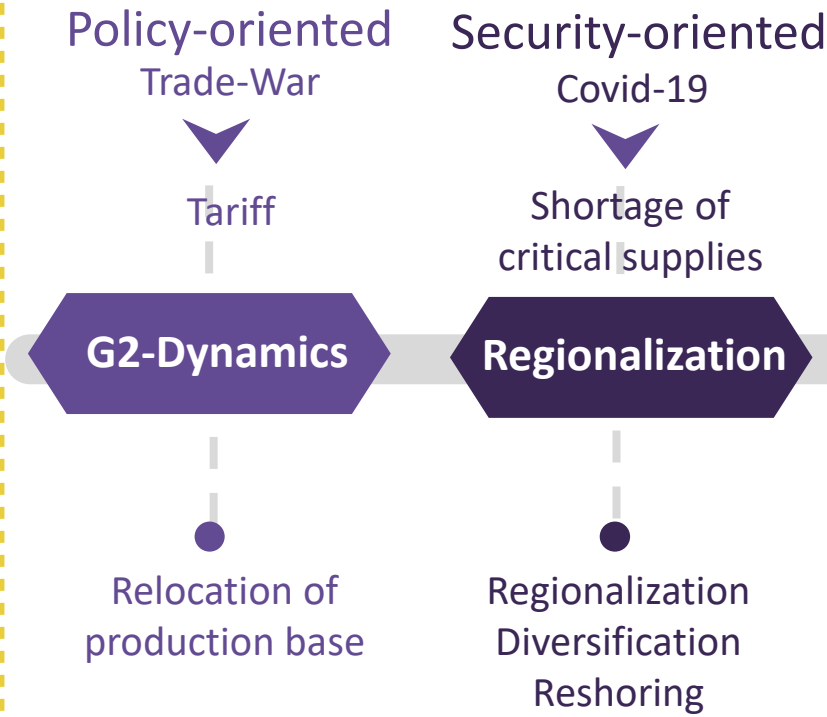
These issues will add to the uncertainties and risks in 2021.
we need a set of new strategies to address these issues.

A new set of strategies

**- from Resilient Supply
Chain 1.0 to 2.0**

Here we propose a new set of strategies which will help us upgrade from **Resilient Supply Chain 1.0** to **2.0**

Resilient Supply Chain 1.0



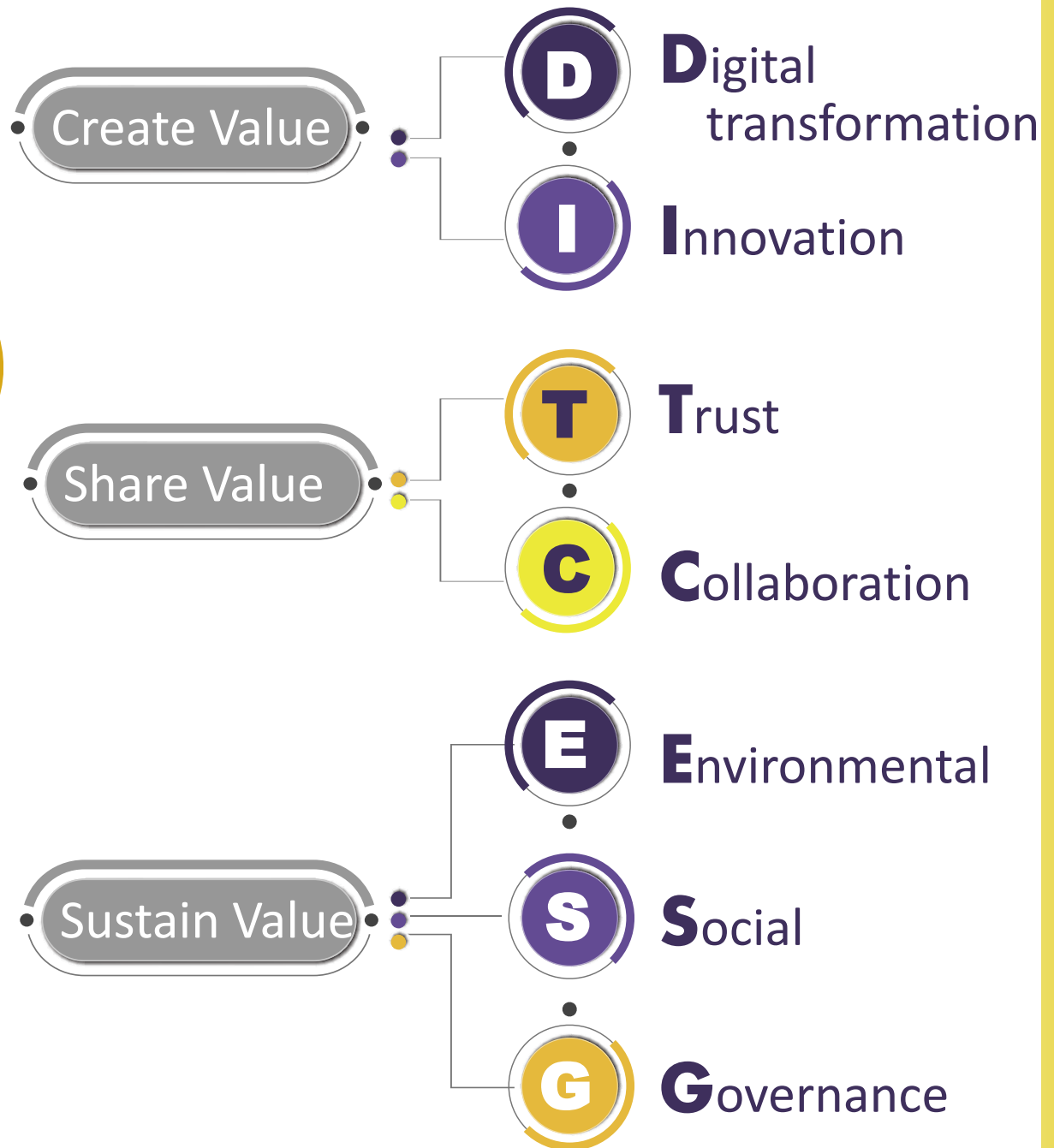
Resilient Supply Chain 2.0



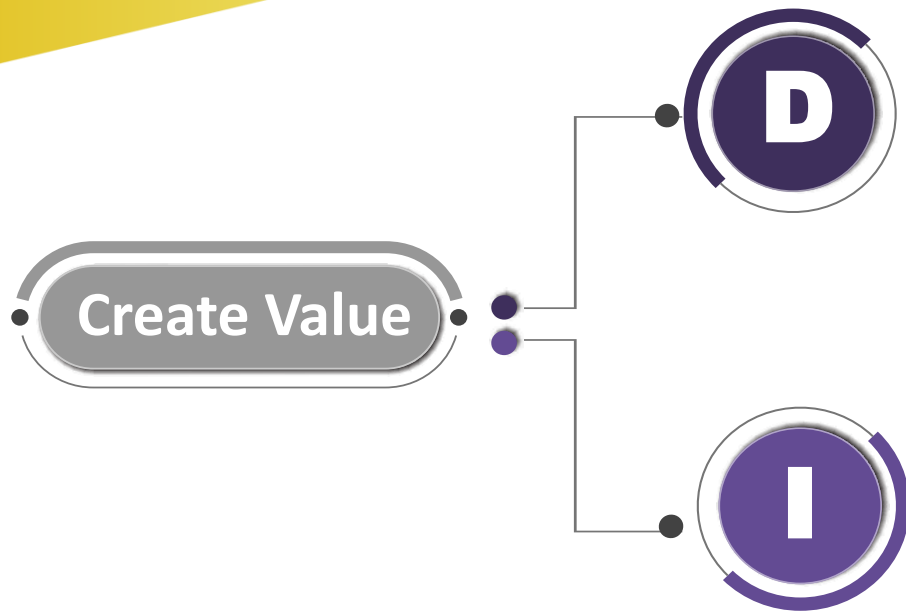
Strategies of resilient supply chain 2.0



7 Keywords



The idea of creating value through digital transformation and continuous innovation is to overcome the impact of natural and man-made disasters on the supply chain.



Digital transformation represents the digitization of all links in the supply chain so as to be able to flexibly control risks, respond to crises, and enhance the adaptability and resilience of the supply chain.

Innovation happens when changes in the supply chain are actively introduced, such as new business models or disruptively innovative products, so as to create or increase the value of the supply chain.

In the process of digital transformation, enterprises must consider different industrial characteristics, choose the appropriate time to move from "digital management" to "automated production" or introduce industrial robots, and when the smart infrastructure is complete, then enter "**AI-oriented digital transformation**".

"**AI-oriented digital transformation**" involves the use of AI technology to adjust the most suitable production and business model to enhance the ability to handle the crisis of supply chain disruption.

The future world will become even more different.
Winning businesses must be fast-responding innovators able to develop digital platforms and quickly undergo digital transformations.

The reliable supply chain is built on trust and international collaboration **to share values:**

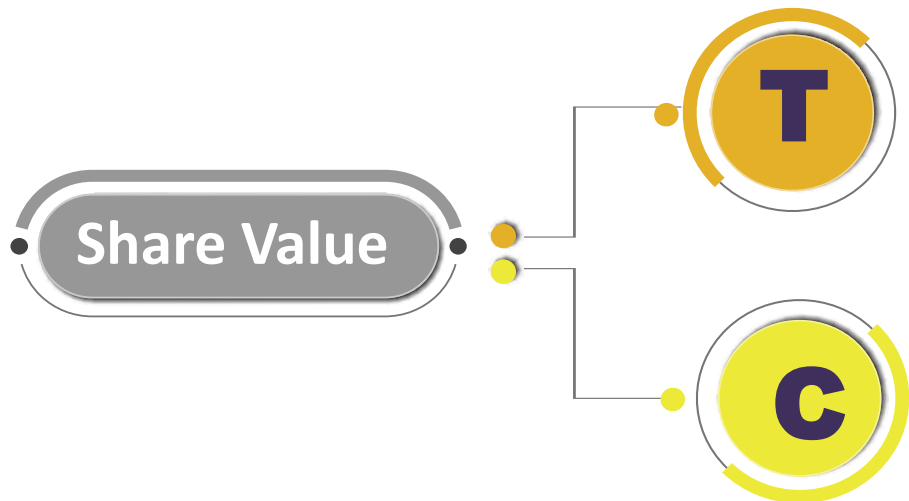
value free markets

foster private sector-driven, sustainable growth

support innovation and entrepreneurship

respect intellectual property rights

abide by international rules and agreements that create a level playing field.



Trust represents the adherence to the rule of law system, including the protection of IPRs.

Through **international collaboration**, a trustworthy network can be formed among like-minded partners to share values.

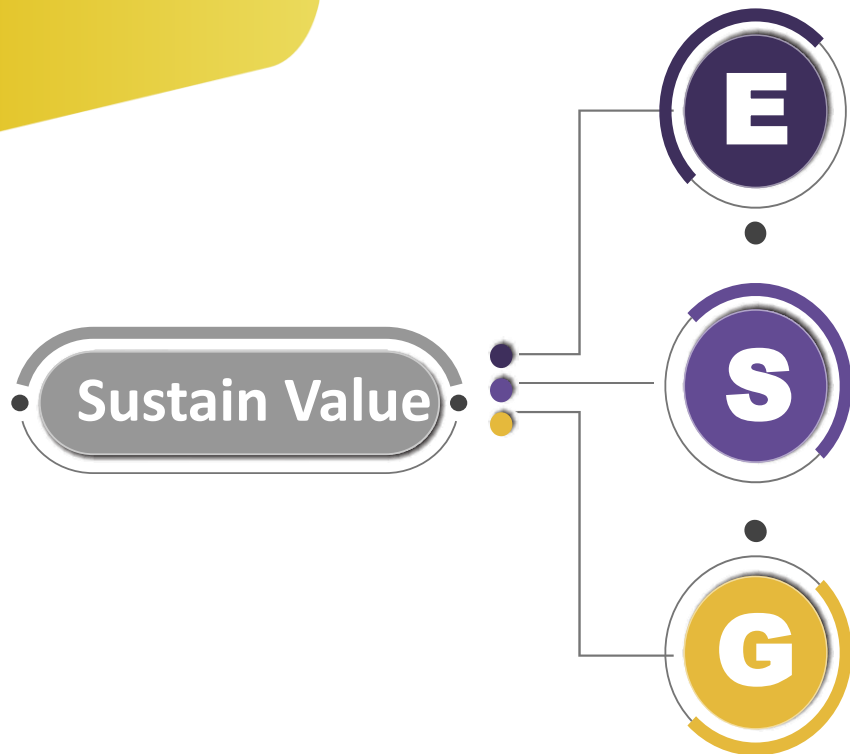
Share values from **the view of industry**

- Taiwan and the U. S. can jointly establish a semiconductor industry supply chain and strengthen exchanges of talent, R&D and investment.
- MIH electric vehicle alliance currently has more than 1,500 ICT and car manufacturers as members. This alliance not only links international partners, also secures Taiwan's key role in the global EV supply chain.

Share values **in the view of market**

- Taiwan-U.S. Partnership Opportunity Delegations (PODs), have jointly develop third-country markets and is built on a foundation of shared values, including shared economic values that will drive future supply chains.

ESG beliefs have become the management criteria and indicators of sustainable value in supply chain restructuring.



E stands for sustainable management of the environment and protection of ecological resources.

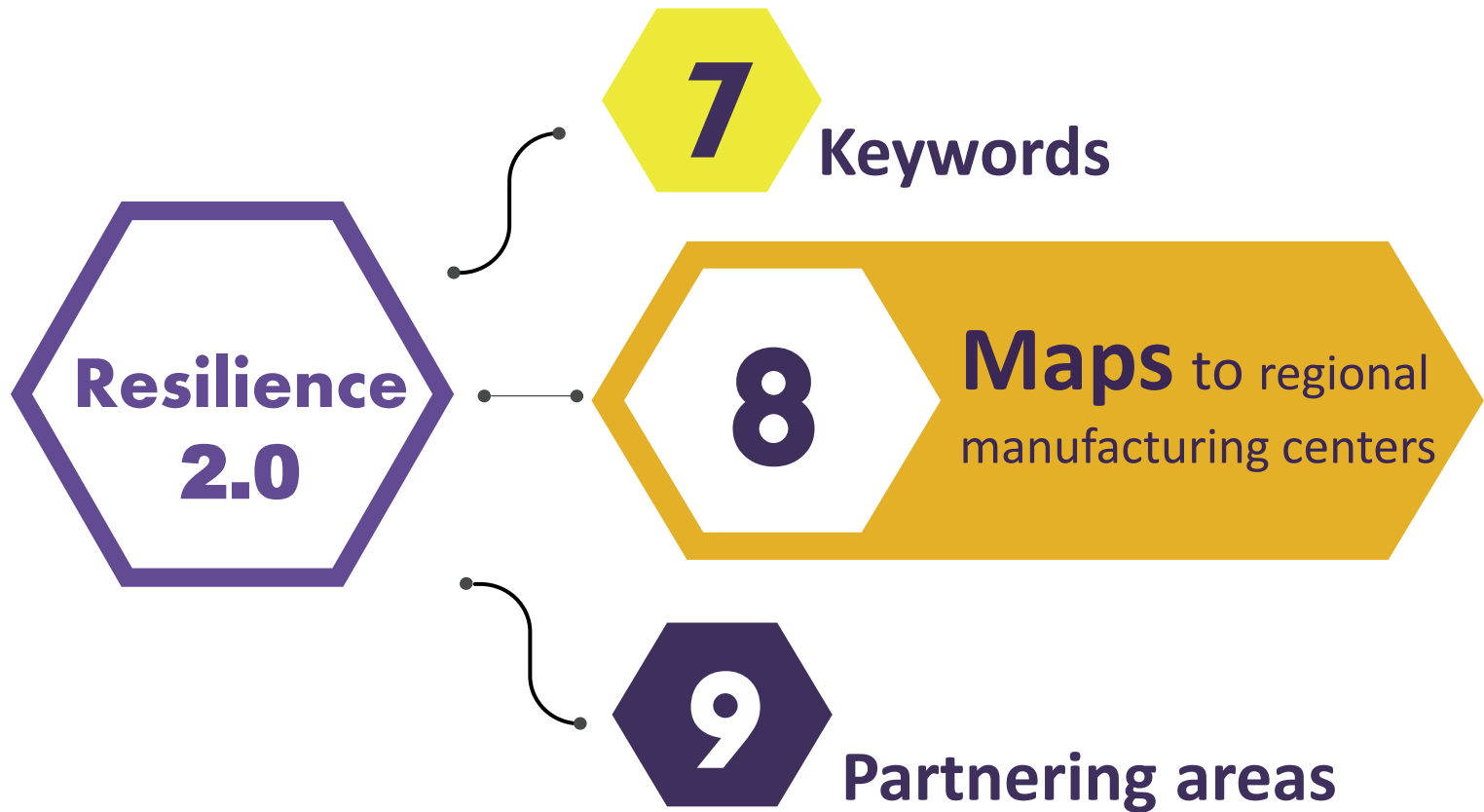
S stands for the commitment to the social responsibility such as labor rights, gender equality, and public security.

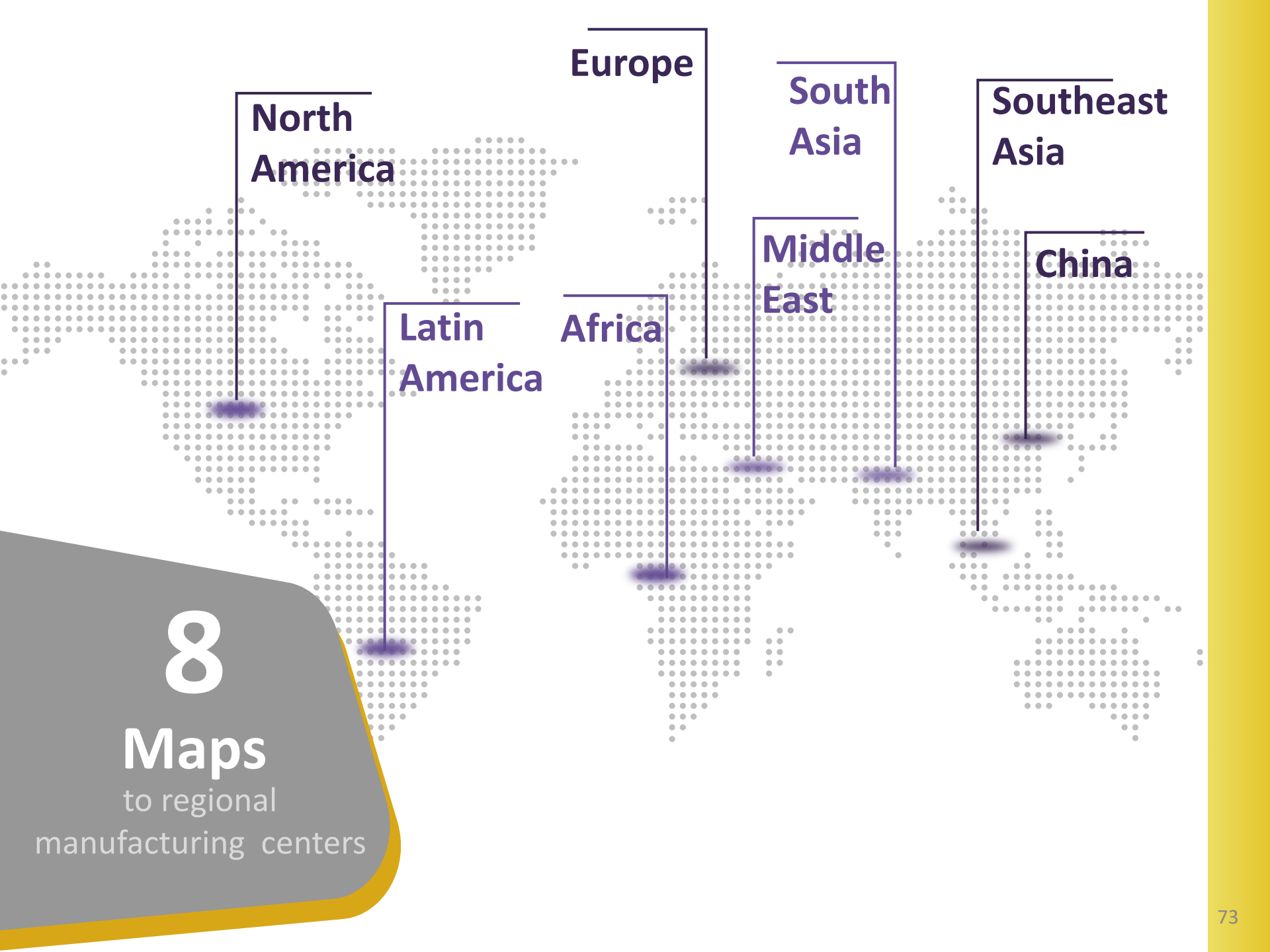
G represents a proper information disclosure and market mechanism to safeguard the greatest well-being of the whole supply chain.

- ESG beliefs have been deeply rooted in Western corporate cultures with the rise of the green revolution. ESG values are now the pivotal to decision-making in the deployment of the supply chain.
- In the future, buyers will have stricter inspection standards to ensure that **ESG** is followed by suppliers' use of raw materials, procurement sources, production processes and sales markets.



The strategies of resilient supply chain 2.0





8

Maps

to regional
manufacturing centers

North America

North American Market / Regional Manufacturing Center

The North American market includes two advanced economies — the United States and Canada, and an emerging economy — Mexico.



Economic trends in **the U.S.** in the next ten years

Global leader in S&T innovation

In the next 10 years, the U.S. economy will affect the world in five main ways: trade, finance, energy & agricultural, high-quality consumption, and **technological innovation**.

Technology and innovation are the areas where the United States has the most profound influence on the world.

The influences of workforce **talent, IPR, and R&D capital** are significant in the field of industrial manufacturing and commercial applications.

The role of **the U.S.** in supply chain restructuring

Trend Leader in supply chain restructuring

With:

- Power on the demand side with a huge consumer and service market
- Force on the supply side with purchasing re-orientation
- Strength in innovating key technologies.

The U.S. leads enterprises around the world in the move from **digital transformation** to **green transformation**, in order to establish a free, equitable, and mutually beneficial **new industrial ecosystem**.

Strategic suggestions for Taiwanese businesses to relocate supply chains to the **U.S.**

- Give priority to the use of automation, robots and AI technology
- Pay close attention to the main trends in the U.S.
- Take advantage of governmental incentives
- Exploit the FTA networks among the United States, Taiwan, and Central America and the Caribbean.

There are many collaboration opportunities between Taiwan and the U.S. in the three fields:

- Semiconductor
- PPE (Personal Protection Equipment) industries
- EV (Electric Vehicle)

Economic trends in **Europe** in the next ten years

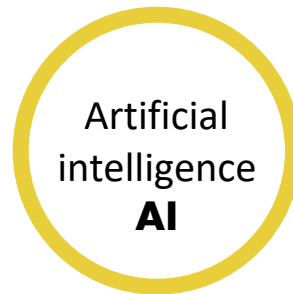
**As a role model of inclusiveness
for the environment and
economy, Europe**

- Reinforcing global competitiveness of EU business on EU's multinational trading system
- Leads the world in addressing climate change and environmental challenges
- Attracts both European and global talent
- Creates initiatives to develop the digital industry.

The role of **Europe** in supply chain restructuring

Leadership in technology, innovation and sustainability

- Developing and fostering resilience of supply chains with “The Digital Europe Program”
- Ensuring the widespread use of digital technology in the economy and society
- Establishing the European Green Deal to take action to boost the global circular economy.



Strategic suggestions for Taiwanese businesses to relocate supply chains in **Europe**

- Deploy value-added manufacture and regional supply chain in V4 countries to access Europe market.
- Develop smart supply chains by integrating digital and green economy
- Collaborate on R&D with European businesses to grow Taiwanese companies' competitiveness.



Mainland
China

Mainland China Market / Regional Manufacturing Center

Mainland China's Economy is turning inward and moving toward transformation in the next decade

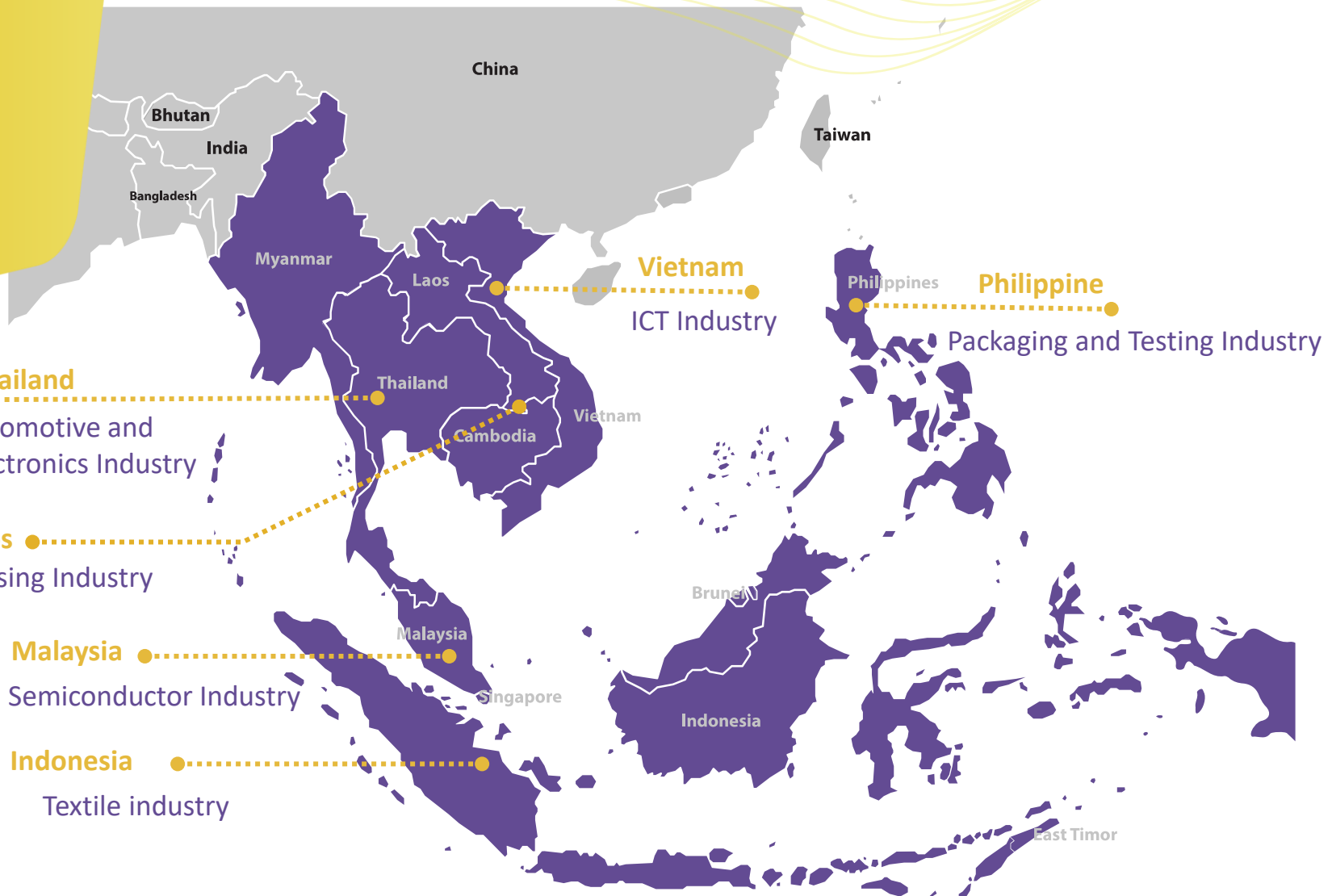
- A **Mainland China-based supply chain** has formed, which will promote the nation's **technological independence** .
- In the future, the domestic demand will be the axis of Mainland China's future economic development.

Strategic suggestions for Taiwanese businesses in deploying production in **Mainland China**

- Taiwanese companies have experiences in smart manufacturing with flexible production
- The domestic consumer market can provide business opportunities for a small amount of customization
- Facing increasing labor costs in the future, Taiwanese companies may look for business opportunities in production automation of factories in Mainland China.

Southeast Asia

Southeast Asian Market / Regional Manufacturing Center



Economic trends in **Southeast Asia** in the next ten years

The glorious ASEAN: a new stronghold for technological manufacturing

- Economic scale will grow rapidly, and GDP will double to 6.7 trillion US dollars
- Diversified and flexible industrial environment will attract FDI with quick response
- Digital network integration will deepen industry coordination.
- Advanced deployment by the governments in southeast Asian countries will lay an important foundation for technological production in the Asia-Pacific region.

The role of **Southeast Asia** in supply chain restructuring

Regional connection: a new hot spot for FDI in Asia

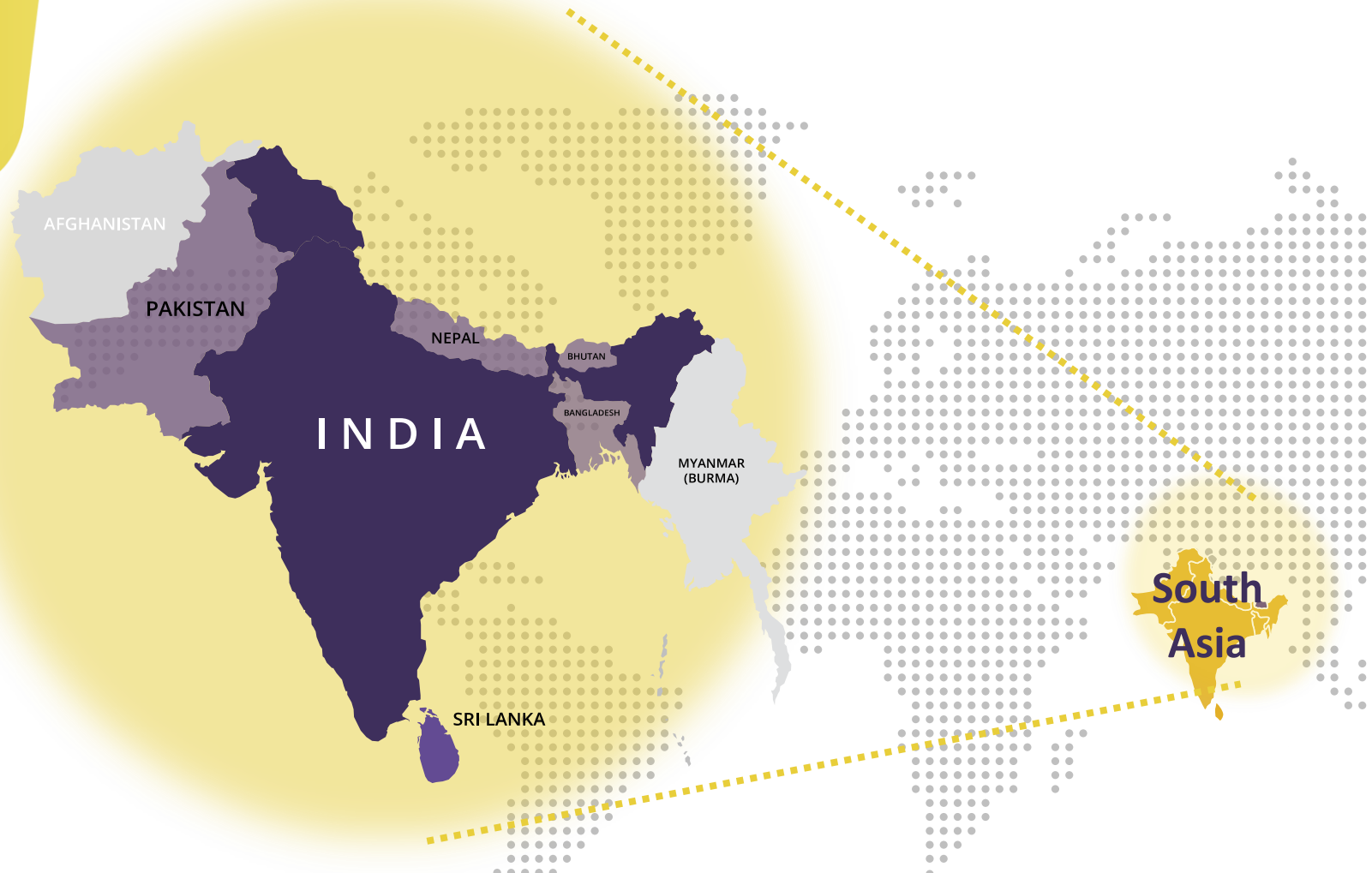
- **Location advantage:** Southeast Asia has become the first stop for shifting supply chains out from East Asia and China.
- **Diversified manufacturing:** Vietnam's ICT industry, Thailand's automobile industry, Malaysia's semiconductor industry, Indonesia's textile industry, and Cambodia's, Myanmar's, and Laos' export processing industry.
- Advantages in **regional integration**
- Abundance of professionals and strong digital adaptability.

Strategic suggestions for Taiwanese businesses to relocate supply chains in **Southeast Asia**

- Under the guidance of ICT Industry, Taiwan's technology and smart manufacturing will be influenced by the New Southbound Policy
- Follow economic trends of digital transformation and grasp domestic business opportunities from the manufacturing industry to the service Industries
- Follow the "Plus One" model to extend the cooperation of supply chains in the south Asian region
- Seek strategic alliances with local partners for business opportunities within the region.

South
Asia

South Asian Market / Regional Manufacturing Center



Economic trends in **South Asia** in the next ten years

The rise of the great power in the Indo-Pacific region: the coming of “Indian Century”

- Enormous domestic market: nearly $\frac{1}{4}$ global population
- Promising economic development: 7-9% GDP growth rate
- Market potential attracts increasing foreign investment
- Indo-Pacific strategically important country

The role of **South Asia** in supply chain restructuring

Manufacturing for the world: Hardware & Software Integration

- Regional manufacturing center:
'Make in India' & 'Self-Reliant India'
- Global electronics manufacturing hub:
'PLI', 'SPECS' & 'EMC 2.0' schemes
- High-tech talent pool:
Over 10 million IT talents

Strategic suggestions for Taiwanese businesses to relocate supply chains in **South Asia**

- Strengthen the cooperation model of **Taiwan's hardware and India's software**
- Target on India for its domestic market as well as for export potential.
- Since January 2019, "Taiwan Plus" desk under "Invest India" is fully operational for exclusively facilitating Taiwanese investments in India.
- In 2018, Taiwan and India signed a new Bilateral Investment Agreement (BIA) to ensure that Taiwanese business investments in India are treated in line with international standards.

Africa

African Market / Regional Manufacturing Center



Economic trends **in Africa** in the next ten years

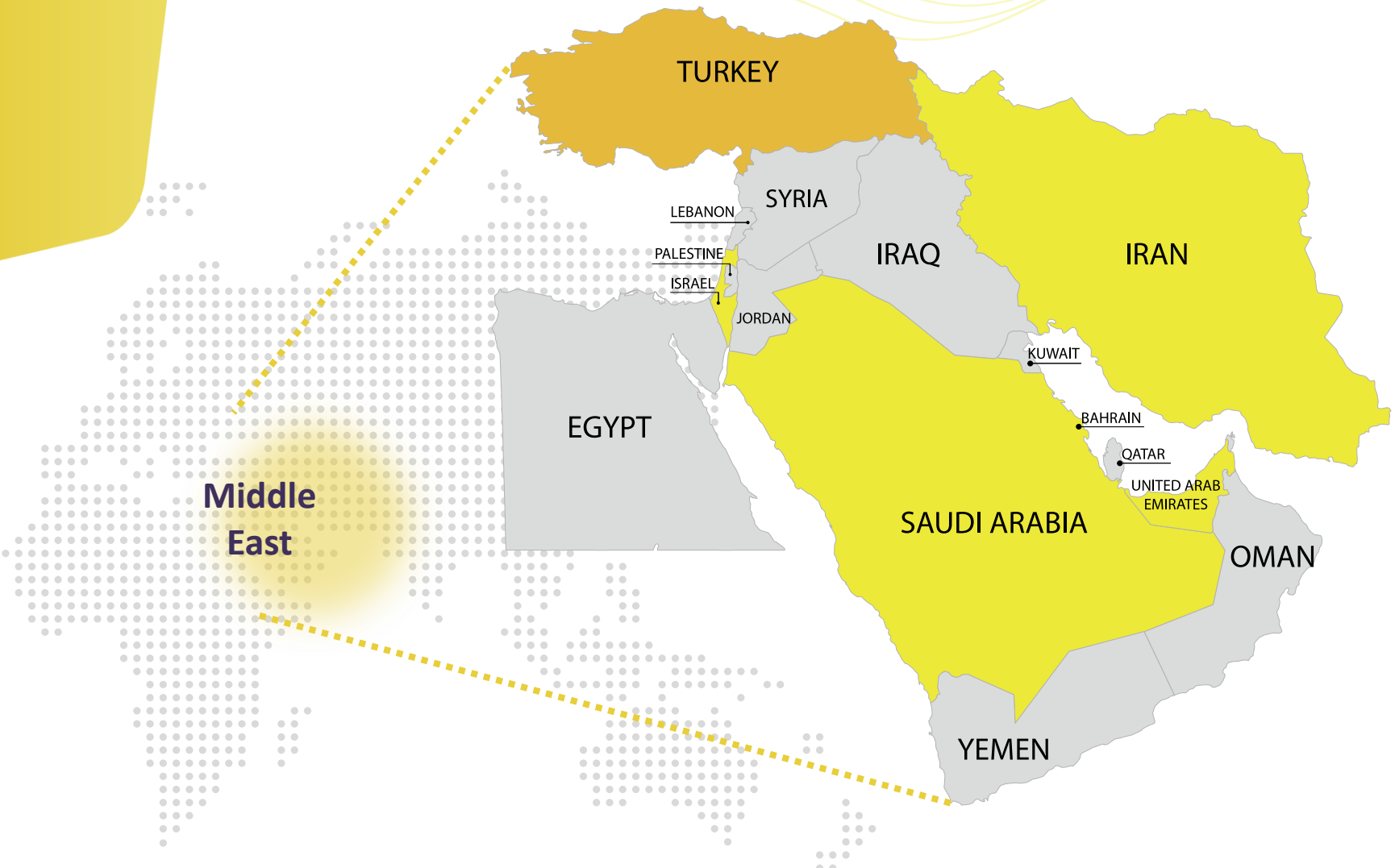
- Africa is integrating into an economic community, which will increase its weight in global trade.
- Africa has abundant natural resources and is also rapidly industrializing.

Regional manufacturing centers **in Africa**

- The African Union began to implement the African Continental Free Trade Area (AfCFTA) to promote intra-regional trade.
- The large African countries in AfCFTA with a manufacturing basis are expected to attract a flow of talent and resources from neighboring countries to become regional manufacturing centers.

Market /Regional Manufacturing Center in **the Middle East**

Middle
East



Middle
East

Economic trends in **the Middle East** in the next ten years

- Economic transformation and political rapprochement will increase market potential
- "Vision 2030", proposed by Saudi Arabia, will promote economic reforms and strengthen manufacturing and infrastructure in the next ten years
- The political reconciliation between Israel and Arab countries will help trade and cooperation, which will achieve a win-win effect and will be a great boost to regional economic development.

Regional manufacturing centers in **the Middle East**

- **Saudi Arabia**, a regional power simultaneously developing a diversity of industries, is hoping to become an “international investment power” and a “hub connecting Asia, Europe and Africa”.
- **Turkey** is currently the largest manufacturing country with the most complete industrial chain in the region. Turkey's geographical location as a bridge between Europe and Asia, coupled with cheaper labor than Europe, will enable Turkey to compete with Europe, Asia and Africa in the global supply chain in the future.

Strategic suggestions for Taiwanese businesses to deploy production in **the Middle East**

Making good use of each country's advantages and tapping into new business opportunities

- Turkey: the supply chains of the textile, machinery, automobile, medical materials, electronics and other industries are relatively complete. The huge domestic demand market is suitable for the establishment production bases.
- UAE is actively strengthening its position as a three-in-one center for regional operations, finance and transshipment. It can serve as a regional logistics center.
- For high-tech and new industries lacking in the Middle East, Israel is a suitable partner for cooperation.

Latin
America

Latin American Market / Regional Manufacturing Center



Economic trends in **Latin America** in the next ten years

The Spanish-Portuguese Economic Circle

is in a unique position

- An abundance of agricultural products and mineral resources are the exceptional strengths and economic assets of Latin America
- In the generally sluggish economy, medium-sized economies on the Pacific coast, such as Colombia, Chile, Peru, Panama, are expected to grow strongly
- Mexico and Brazil are among the world's biggest economies.

Regional manufacturing centers in **Latin America**

FTA network connects the two hemispheres across the Pacific Ocean

- As the hub of the FTA network, Mexico is conducive to the economy and trade between the Asia-Pacific region and the Americas
- The FTA networks between Central America, the Caribbean and the United States are important channels for Taiwan to deploy its supply chain in Latin America
- Brazil's role in the global supply chain is positioned on product assembly and raw material sourcing.

Strategic suggestions for Taiwanese businesses to deploy production in **Latin America**

- The focus of investment in Mexico is to enter the U.S. consumer market and the industrial clusters of Taiwanese companies. Recommended Industries are electronics, ICT, auto parts, machinery, motors, home appliances, and textiles.
- The focus of investment in Brazil is mainly on domestic demand and raw material procurement. Recommended sectors are the computer, electronics, wholesale and retail industries.
- Paraguay is the only diplomatic ally that Taiwan has in South America. It is also a member state of Mercosur that has great potential. The Mercosur is an important channel for Taiwanese businesses to enter the Brazilian market.

The strategies of resilient supply chain 2.0



9

Partnering areas

- ① Create an intelligent ecosystem of new supply chain
- ② Commercialize new technologies
- ③ Joint ventures and merge to complete the supply chain
- ④ Facilitate Indo-Pacific infrastructure development
- ⑤ Form an alliance of like-minded countries
- ⑥ Establish Industrial alliances
- ⑦ Strengthen the cultivation of talent
- ⑧ Accelerate software and hardware integration
- ⑨ Develop disruptive innovation

① Create an intelligent ecosystem of new supply chain ...

... by implementing 5G, AI, IoT, and Big Data analysis to establish a short-chain or regional manufacturing center, to realize a “just-in-case” supply chain.

- Effectively share production information through the IoTs, not only to connect in the factory, but also to analyze and integrate the information horizontally and vertically.

② Commercialize new technologies ...

... by connecting international innovators with Taiwan ICT industries to achieve Complementary advantages.

- Taiwanese companies can cooperate with reliable partners in strategic industries such as 5G, AI, smart manufacturing, quantum technology, and the defense industry to implement and commercialize their technologies.
- The resilient supply chain of Taiwanese companies can be adjusted according to customer needs. The chain can also jointly expand the market and develop new business models, or stick to the traditional industries, and finally expand the prosperity of the next generation with a stable flow of profits.

③ **Joint ventures and merge to complete the supply chain ...**

...to help companies quickly reach their goals, especially in IoT, FinTech, and Semiconductor manufacturing.

- Mergers and acquisitions are a good strategy to consolidate resources and accelerate enterprise expansion. In the past two years, Taiwanese companies in the electronic components and semiconductor industries have actively merged and acquired to optimize their product portfolio and enhance the resilience of their supply chains.

④ Facilitate Indo-Pacific infrastructure development ...

... with the Marshall Plan 2021”, The U.S. and Taiwan can cooperate to build infrastructures for the Indo-Pacific region.

- Advanced countries can integrate partner companies to jointly improve the local infrastructure in the Indo-Pacific region to promote the establishment of local factories.
- As the industrial chain becomes more and more mature, it will attract other manufacturing industries from other countries to establish a long-term resilient supply chain.



⑤ **Form an alliance of like-minded countries ...**

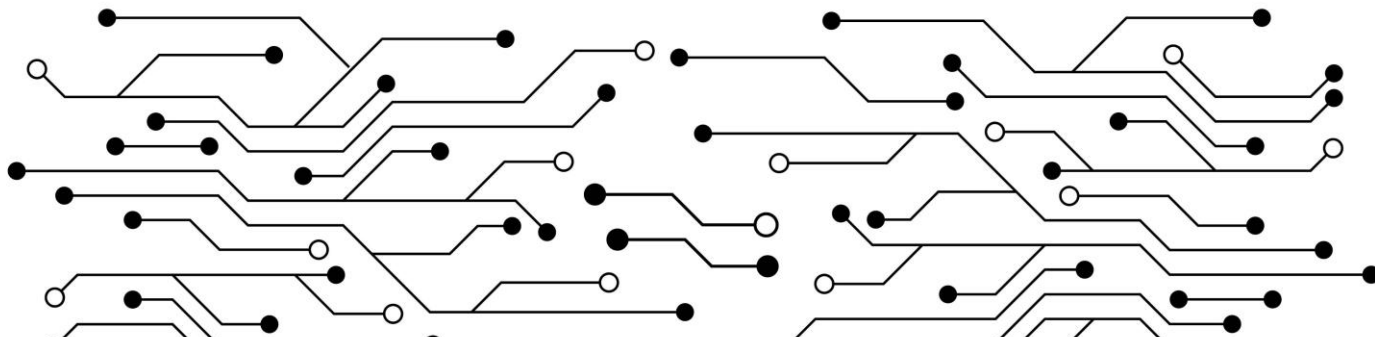
... and provide incentives to the alliance.

- Governments of partner alliances can provide incentives to encourage the purchase of ICT products from the alliance.
- Governments in the partner alliances can encourage companies to establish new factories in the alliance with tax reduction or exemption. It can also help solve labor, land, and infrastructure issues.

⑥ Establish Industrial alliances ...

... and cooperate in the field of cutting-edge technologies.

- The U.S. and Taiwan governments can provide incentives to encourage companies for the cooperation in cutting-edge technologies such as 5G/Smart Manufacturing/Electric & autonomous vehicles/Quantum technology.



⑦ Strengthen the cultivation of talent

- The high-tech industry needs a large number of high-end talents. In the future, the high-tech industry will develop across domains.
- It is necessary to communicate with top academic institutions among like-minded countries, strengthen the matching of talent and accumulate experience, retain high-end advanced technologies and spur the development of new key technologies.



⑧ Accelerate software and hardware integration ...

... by increasing the proportion of software R&D and by constantly upgrading and updating .

- In this wave of technological changes, the electronics industry will need to upgrade from a traditional components supplier and OEM to a total solutions or platform system provider.
- The industrial focus will also be upgraded from hardware manufacturing to software and hardware platform integrators. Taiwanese companies should gradually improve their ability to provide software solutions in order to seize the future business opportunities with software as their core value.

⑨ Develop disruptive innovation ...

... to stabilize the key position of the future supply chain.

- Continuously innovating business models change the economic structure. With the advent of the 5G era, disruptive innovation will shorten the life cycle of enterprises, reshuffle the industry, and open a new era of industry.
- Taiwan has always been good at hardware manufacturing. The addition of software integration in the future will accelerate disruptive innovation in the industry. In this wave of supply chain restructuring and industrial renewal, Taiwan has a good position to become the best partner for global supply chain management.

Thank you for your collaborations and contributions

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Taiwan Printed Circuit Board Industry Association

Market Intelligence and Consulting Institute

Photonics Industry & Technology Development Association

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