

Investigative Report on the US Semiconductor and Battery Supply Chains: Key Points and Implications

| Summary |

- On June 4, 2021, the U.S. White House released a report assessing its supply chains in four critical areas: semiconductors, batteries, pharmaceuticals, and rare-earth minerals. The report included policy recommendations for securing competitiveness in the above sectors.
- The report's authors found that domestic supply chains were weakening, especially in the assembly, testing, and packaging (ATP) processes and critical materials. And given these deficiencies, the authors argued that it is necessary to build more advanced production facilities to secure industrial hegemony in the semiconductor sector.
- The U.S. Department of Commerce recommended seven policy actions to secure the semiconductor supply chain. These include: the expedient execution of the CHIPS for America Act, building the necessary infrastructure to attract semiconductor production facilities, reform to the visa system to attract foreign talent, and technology protection through cooperation with allies.
- The review found the battery supply chain to lack an independent foundation for production, with particular weaknesses in raw materials mining, refining and manufacturing.
- The U.S. Department of Energy recommended four policy approaches to address these shortfalls. The recommendations include: using government purchasing power to beget domestic supply in the transportation and utilities sector, promoting investment and recycling tailored to minerals, providing subsidies and tax credits, and utilizing other investment incentives to strengthen the domestic supply chain for batteries.
- Since American tech policy can have significant influence on Korea's strategic industries, Korea needs to prepare precise and effective counterstrategies.
- The policies proposed in the report may be either threats or opportunities, and we must simultaneously approach competition and cooperation in a strategic way. We must thoroughly evaluate the level of potential risk to the structure of our supply chain, the stages of which are located in neighboring countries including China, Japan, and Taiwan. Through this risk assessment, we need to develop industry-specific strategies to strengthen the supply chain. We must build a governance and legislative structure that can comprehensively handle supply chain issues from both an economic and a security perspective.

■ Supply Chain Assessment: Semiconductors and Batteries

- On June 4, 2021, the U.S. White House released its supply chain assessment review. The authors of the report offered policy recommendations for diagnosing and securing supply chain competitiveness for four critical product groups: semiconductors, batteries, pharmaceuticals, and rare-earth minerals.¹⁾
- The analysis of the four critical product groups was undertaken pursuant to Executive Order 14017 which took effect in February 2021.²⁾ The study was conducted over the course of 100 days by the four cabinet departments that oversee the four product groups: the Department of Commerce for semiconductors, the Department of Energy for batteries, the Department of Health and Human Services for pharmaceuticals, and the Department of Defense for rare-earth minerals.³⁾
- Based on the executive order, the analysis determines the nature of relevant supply chains, provides a risk assessment of the current state of affairs globally (threat/opportunity factors) and offers policy suggestions for strengthening U.S. supply chain competitiveness in each of the four critical product groups.
- The initiatives proposed in the report may eventually impact Korea's comparative advantage in the key strategic industries it is investing in as future growth engines. Semiconductors and high-capacity batteries, which Korea is also developing as part of its "Big Three" new industries being cultivated as future growth engines, are key determinants of industrial competitiveness in the age of digital transition and decarbonization.⁴⁾
- Considering the fact that Korea's supply chain structure is closely tied to both the U.S. and China, U.S. perspectives on semiconductors and batteries, along with efforts the U.S. and China make toward strengthening competitiveness in these areas, are two of the most important external factors confronting Korea and must be closely monitored.⁵⁾

1) The White House, "Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth", 100-Day Reviews under Executive Order 14017, June 2021, The White House.

2) Executive Order 14017 "America's Supply Chain", The White House, February 24, 2021.

3) Executive Order 14017 orders a hundred-day investigation into the four critical product groups that have weak supply chains. At the same time, it ordered a one-year supply chain investigation for the six flagship industries of national security, bio-health, information and communication technology (ICT), transportation, and agriculture and food.

4) The "Big Three" new industries are future automobiles, system semiconductors, and bio-health.

▣ Semiconductors : “CHIPS for America” and the U.S. Push for Semiconductor Manufacturing

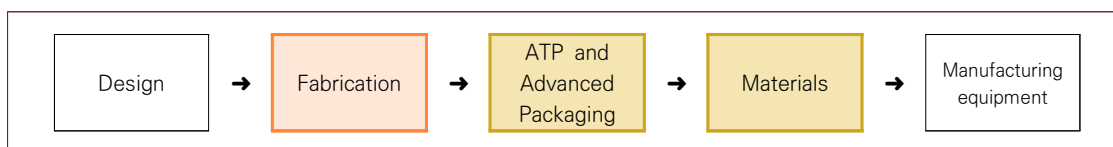
- The U.S. is focused on leveraging the CHIPS (Creating Helpful Incentives to Produce Semiconductors for America) for America Act to rehabilitate the domestic semiconductor manufacturing environment.
- The review asserts that semiconductors are a strategic product group critical to national security and a core part of the physical foundation that will determine who leads in cutting-edge industries. The report makes it clear that American authorities see semiconductors as a foundational element in the competition for technological hegemony in artificial Intelligence (AI), 5G, high-tech weaponry, and both tangible and intangible infrastructure.
- Although the U.S. excels in “fables” segments (domestic design, foreign production), the report argues the U.S. production infrastructure in leading-edge and mature-node semiconductors lags behind Asian chip manufacturing powerhouses Korea and Taiwan.⁶⁾⁷⁾
- Seeing that an overall weakness in manufacturing has led to a decline in assembly, testing, and packaging (ATP) capabilities and general fragility in the supply chain for materials and related components, the authors of the review posit that it is necessary to build cutting-edge manufacturing facilities retake the lead in semiconductors.

5) Out of the four critical product groups, this paper analyzes the parts of the review that deal with semiconductors and batteries, which are closely tied to Korea’s future strategic industries, and provides insights based on this analysis.

6) China is providing large-scale subsidies that violate WTO regulations to develop its semiconductor industry. The key players in the existing supply chain such as Korea, Taiwan, and Japan are also expanding their own manufacturing bases with semiconductor support policies.

7) China is planning to inject roughly 200 billion USD in central government subsidies into the semiconductor industry and roughly 145 billion USD in local government subsidies between 2015 and 2025 through its National Integrated Circuit Industry Investment Fund (ICF).

Figure 1. Self-Assessment of the U.S. Semiconductor Supply Chain



Source: KIET summary.

Note: Satisfactory, Weak, Very weak

Table 1. Self-Assessment of U.S. Semiconductor Supply Chain by Component

Supply Chain Component	Current Issues and Diagnoses
Design	<ul style="list-style-type: none"> • Highly competitive Integrated Device Manufacturers (IDM) and “fabless” manufacturers • Leader in intellectual property (IP) and electronic design automation (EDA) • Risk factors: high dependence on sales to China, dependence on foreign workers
Fabrication	<ul style="list-style-type: none"> • Assessed to be the weakest sector • Overall weakness in foundation for semiconductor manufacturing • U.S. is dependent on Korea and Taiwan for leading-edge logic chips and on China for low-tech mature-node chips. • Due to the lack of a manufacturing base for ATP, materials, equipment, etc, sectors closely related to semiconductor manufacturing are unable to acquire technology and knowledge from manufacturing processes.
ATP and Advanced Packaging	<ul style="list-style-type: none"> • Assessed as a weak sector • Report argues China is distorting the market with large-scale investment and price tampering. • US manufacturing base for printed circuit boards (PCBs), a crucial packaging material, is very weak. • Difficult for US to grow ATP industry depending solely on domestic (military) market
Materials	<ul style="list-style-type: none"> • Assessed as a weak sector • Competitiveness in ultra-high purity polysilicon, wafers, photomasks, photoresists, and other key materials relatively weak compared to Japan and Europe. • However, gas and wet chemicals highly competitive
Manufacturing Equipment	<ul style="list-style-type: none"> • Strong competitiveness of front-end manufacturing equipment • US dependent on the Netherlands and Japan for lithography equipment • U.S. equipment sales dependent on Asian customers, particularly Taiwan, China, and Korea

Source: KIET summary

The U.S. Semiconductor Supply Chain

● The report illustrates the semiconductor supply chain stages as follows:

- (1) Design (Fabless) → (2) Fabrication (Foundry) → (3) ATP and Advanced Packaging →
- (4) Materials → (5) Manufacturing Equipment

- The overall assessment goes as such: independent domestic supply capabilities in the U.S. are generally insufficient, with fabrication being the weakest sector. The United States Department of Commerce has proposed seven policies to ameliorate this, which include large-scale financial aid and investment incentives.

Table 2. Department of Commerce Policy Recommendations to Strengthen the Semiconductor Supply Chain

Main policies	Key measures
① Boost domestic investment and strengthen close communication and cooperation with industry	<ul style="list-style-type: none"> • Expand information sharing between suppliers and consumers by actively utilizing the convening authority of the Department of Commerce and the consultive groups of other departments. • Strengthen association and cooperation with enterprises in ally and partner countries. • Develop a response system for each scenario to enhance the ability to address current supply chain issues.
② Expedite implementation of CHIPS for America Act to gain technological competitive advantage	<ul style="list-style-type: none"> • Rapidly disburse 50 billion USD budget allocated in CHIPS for America Act to support construction and expansion of domestic manufacturing facilities. • Expand R&D support and secure cutting-edge semiconductor technology; establish a national semiconductor technology center (NSTC). • Establish a multilateral fund to strengthen supply chain security through export restrictions, foreign direct investment (FDI) screening, and intellectual property protection.
③ Strengthen the domestic semiconductor manufacturing environment	<ul style="list-style-type: none"> • Expand basic infrastructure (electricity, water, etc.) for semiconductor manufacturing based on the American Jobs Plan Executive Order. • Provide funding to SMEs in materials, parts, and equipment sectors • Strengthen testing capability related to national defense and security.
④ Support SMEs to strengthen innovation capacity	<ul style="list-style-type: none"> • Utilize the Small Business Innovation Research (SBIR) program and Small Business Technology Transfer (STTR) program to provide financial support for startups and small businesses related to semiconductors. • Support technology commercialization and scaling-up. • Provide SMEs with financial support through the Small Business Administration (SBA) and the U.S. Export-Import Bank (EXIM).
⑤ Develop and secure manpower for semiconductors	<ul style="list-style-type: none"> • Utilize programs and funds from the Department of Labor's Employment and Training Administration (ETA) to strengthen vocational training. • Attract foreign talent through visa reform and strengthen education in science, technology, engineering, and mathematics (STEM).
⑥ Cooperate with allies to secure supply chain resilience	<ul style="list-style-type: none"> • Locate foreign production facilities in on allied territory • Pursue joint R&D and strengthen joint response capacity • Multilateral and bilateral strategy discussions
⑦ Protect technology	<ul style="list-style-type: none"> • Maintain and strengthen export restrictions in order to address weaknesses in the supply chain. • Work with allies to restrict exports of advanced equipment to countries of concern. • Maintain and strengthen the function of the Committee on Foreign Investment in the United States (CFIUS).

Source: KIET summary

- The U.S. Department of Commerce recommends expediting the implementation and enforcement of the CHIPS for America Act in order to support the construction and expansion of manufacturing facilities within the U.S. and recommends establishing a national semiconductor technology center (NSTC) to support the early adoption of next generation technology. It also recommends expanding semiconductor manufacturing infrastructure (electricity, water, etc.) to bolster the semiconductor manufacturing environment and providing funding for materials, parts, and equipment SMEs. The Department also suggests visa reform, particularly increasing the H1B visa quota in order to attract foreign talent.
- In addition to strengthening cooperation with allies, the Department advises taking strong measures to prevent technology leaks by strengthening export restrictions and enhancing the function of the Committee on Foreign Investment in the United States (CFIUS).

■ **Batteries : Incentivize Private Sector Participation in the Battery Supply Chain with Rigorous Demand-Side Measures**

- The report recognizes the importance of batteries as a promising industry that creates high-quality jobs and a central tool in battling climate change, but found that even though the demand for high-capacity batteries is expected to skyrocket due to growing interest in “green growth” and other factors, the independent domestic supply chain is weak.
- At present, the EU and China are pursuing national-level industrial policies; the report claims China is distorting market prices by providing large-scale subsidies and limiting competition. Thus strategic and structured policy measures are necessary the federal level in order for the U.S. to gain a competitive advantage in the global battery market.
- Given the demand for finished products such as electric cars and energy storage systems (ESS), it is possible to encourage integration between power-consuming

enterprises and battery-producing enterprises. The report states that it is necessary to utilize this induced integration as a basis for U.S. competitiveness in the global market.

Figure 2. Self-Assessment of the U.S. Battery Supply Chain



Source: KJET summary

Note: Satisfactory, Weak, Very weak

Table 3. Self-Assessment of U.S. Battery Supply Chain by Stage

Supply Chain Stages	Current Issues and Diagnoses
Raw Materials Production	<ul style="list-style-type: none"> • Assessed as a weak sector • Focuses on nickel, lithium, and cobalt, which are key ingredients of cathode materials for batteries. • Difficult to meet the rapidly increasing demand by using only recycled and alternative materials. Production of key materials must be increased. • New labor and environmental standards are necessary to make domestic production economically feasible. • Necessary to diversify supply and demand channels through cooperation with allies and spread global labor and environmental standards.
Materials Refinement and Processing	<ul style="list-style-type: none"> • Assessed as the weakest sector • Mined raw materials are exported owing to lack of refining and processing facilities in the U.S. • Refining and processing capacities need to be secured (in addition to recycling) in order to strengthen the supply chain. • Report states that the above factors have given China the lead in supply chains.
Manufacturing Materials and Cell Fabrication	<ul style="list-style-type: none"> • Diagnosis: US possesses less than 10 percent of global supply capacity. • China accounts for more than 75 percent. • Lack of demand hinders private investment; U.S. accounts for only 12 percent of the global battery demand.
Pack Fabrication	<ul style="list-style-type: none"> • Expanding federal support for cell fabrication and packaging can facilitate private investment.
Recycling and Reuse	<ul style="list-style-type: none"> • Recycling and reuse in early stages of development. • Recycling and reuse supplements the supply of new mined raw material. • With the appropriate policies and investment, US can gain competitive status in global battery supply chain.

Source: KJET summary

The U.S. battery supply chain is organized as follows:

- (1) Raw materials production (mining) → (2) Materials refinement and processing → (3) Manufacturing materials and cell fabrication → (4) Pack fabrication → (5) Recycling and reuse
- The report concludes that the independent domestic manufacturing base for batteries is generally weak along the entire supply chain. The weakest link is upstream in the value chain. The U.S. Department of Energy recommends four policies focused on promoting private sector investment and participation in the battery supply chain using strong demand-side measures.
- In addition to creating demand for domestic batteries by utilizing public sector purchasing power in transportation and utilities, the report recommends promoting the transition to battery power by strengthening emissions standards, among additional measures. These include mining investments, the modernization of environmental and labor requirements, and the fostering of the recycling industry to supplement the supply of key raw materials and strengthen the supply chain. The report argues that subsidies, loans, tax credits, and other measures could be used to attract private sector investment in battery production and expand investment in human resources in order to strengthen the American battery industry ecosystem.

Table 4. Department of Energy Policy Recommendations to Strengthen the Battery Supply Chain

Main policies	Key measures
① Increase demand for American-made batteries	<ul style="list-style-type: none"> • Electrify public fleet of, school buses, and carpool vans. • Build more charging infrastructure, strengthen energy efficiency and emissions standards. • Include energy storage systems (ESS) in investment tax credits. • Revise transmission regulations to support renewable energy and ESS.
② Expand domestic supply capabilities for key materials	<ul style="list-style-type: none"> • Support manufacturing and refining of domestic lithium. • Promote nickel and cobalt recycling. • Invest in nickel smelting facilities and secure supply through cooperation with allies. • Modernize environmental standards and revise labor requirements.
③ Stimulate production of materials, cells and packs	<ul style="list-style-type: none"> • Create a new federal subsidy program to promote private sector investment in batteries. • Utilize the Department of Energy’s Advanced Technology Vehicle Management Loan program to promote investment. • Revise tax credit policy to support cell fabrication and materials processing SMEs • Strengthen domestic production by using subsidies, R&D, and other policies with federal budget
④ Invest in human resources and innovation to strengthen the battery ecosystem	<ul style="list-style-type: none"> • Expand investment in workforce training for next generation battery and electric car industries. • Recruit battery manufacturing workers. • Expand R&D to alleviate weaknesses in the supply chain. • Establish the Manufacturing USA Institute for large-capacity batteries.

Source: KIET summary

■ Short-Term Positive Impacts of U.S. Policies on Korean Industry Outweigh Short-Term Negative Impacts

- The assessment of semiconductor and battery policies as set forth in the White House report suggests that there will be more positive than negative short-term positive impacts on Korean industries. Korea can provide significantly large-scale and advanced manufacturing facilities in a short time frame, so the U.S. policy recommendations vis a vis semiconductors may have a positive impact on securing markets for Korean goods, enhancing technological capabilities, and widening the semiconductor gap with China in Korea's favor.

◆ Semiconductor Policies: The Positives

- Stronger U.S. federal and state incentives for attracting investment in U.S. firms will contribute to improving the business conditions of Korean investment companies. Further, we can expect that increased interaction between producers and suppliers through institutions such as the recently formed Semiconductors in America Coalition (SAC) will benefit Korean companies investing in the U.S. by giving them more opportunities to obtain information and business opportunities.
- It will be possible for Korea to improve the response capabilities of its supply chain through the establishment of a "connection-cooperation" system with the U.S. and its allies. We can look forward to participating in the U.S.-led process of developing next-generation semiconductor technologies and standards through R&D. We can also expect relevant materials, parts, and equipment businesses to see opportunities to secure technology and business opportunities. In addition, should the U.S. strengthen its intellectual property protections for semiconductors, it will help widen the technology gap with China.

◆ Semiconductor Policies: The Negatives

- If the U.S. mobilizes its full national capacity to secure semiconductor manufacturing capabilities, this will inevitably weaken Korea's standing in the global market in the long run. In addition, if aggressive U.S. recruitment of foreign talent

is successful, this may deal a significant blow to Korea’s semiconductor industry ecosystem. Moreover, if Korea, as a U.S. ally, openly participates in the U.S. efforts to stave off China, Korea can expect direct economic retribution from China. This retaliation could decimate Korea’s markets for memory semiconductors.

Table 5. The Impact of Key U.S. Semiconductor Policies on the Korean Semiconductor Industry

Main policies	Short Term	Mid to Long Term	Impacts
① Boost domestic investment and strengthen close communication and cooperation with industry	⚙️⚙️	⚙️	<ul style="list-style-type: none"> • The new Semiconductors in America Coalition (SAC) and other channels will provide opportunities to gain information and expand business opportunities. • It will be possible to jointly address supply chain issues.
② Expedite implementation of CHIPS for America to gain technological competitive advantage	⚙️⚙️	☔	<ul style="list-style-type: none"> • Expanded incentives for Korean companies investing in the U.S. • However, enhanced U.S. semiconductor manufacturing capabilities may weaken Korea’s position in the global semiconductor market in the mid to long term.
③ Strengthen the domestic semiconductor manufacturing environment	⚙️	☔	<ul style="list-style-type: none"> • Expansion of manufacturing infrastructure can provide Korean companies investing in the U.S. with a stable manufacturing base. • However, if a competitive semiconductor ecosystem is developed in the U.S., this will help the U.S. regain market share within the semiconductor industry leading to an overall improvement in U.S. competitive advantage.
④ SME support to strengthen innovation capacity	☁️	☔	<ul style="list-style-type: none"> • No direct benefits for Korean materials, parts, and equipment enterprises. • This policy will contribute to strengthening the U.S. materials, parts, and equipment ecosystem.
⑤ Develop and secure a workforce for the semiconductor industry	☁️	☔	<ul style="list-style-type: none"> • May help Korean companies in the U.S. secure a high-quality workforce to some extent. • At the same time there is a possibility that Korea may lose high-quality talent to the U.S.
⑥ Cooperation with allies to secure supply chain resilience	⚙️⚙️	☁️	<ul style="list-style-type: none"> • Close communication between semiconductor allies will allow for joint responses to issues in the semiconductor supply chain as well as foster cooperation. • May help blunt China’s ascent in technology and thus help maintain the current technology gap. • However, if Korea openly participates in counter-China measures, it may suffer indiscriminate trade retaliation from China.
⑦ Technology protection	⚙️⚙️	☁️	

Source: KIET.

Note: ☔=Negative; ☔☔=Very negative; ☁️=Neutral; ⚙️=Positive; ⚙️⚙️=Very positive.

◆ **Battery Policies: The Positives**

- We can expect that Korean battery firms may share in the benefits conferred by strong measures by the U.S. to increase its domestic battery supply. In the short term, the U.S. will face difficulties in securing competitive battery manufacturers in front and rear ecosystems; Korean firms should be able to take advantage of new, significant growth in American battery demand
- We can expect that the U.S. will make large-scale investments and provide other support to cultivate a domestic battery industry. But it will take time for the U.S. to obtain manufacturing competitiveness. If the Korean battery industry continues to improve its technological capabilities, it could secure additional market share. Expanding investment in and exports to the U.S. will be an important opportunity for Korean materials, parts, and equipment firms to gain global experience. Korea may also reap the benefits of restrictions faced by Chinese battery firms on accessing the U.S. market.
- In the mid-to-long term, expanded U.S. production of battery raw materials, as well as enhanced connections and cooperation with allies will help Korea diversify and stabilize its domestic battery industry supply chain.

◆ **Battery Policies: The Negatives**

There are no evident short-term negative impacts that are expected to arise from the key recommendations to strengthen U.S. battery industry competitiveness. However, increased investment in the U.S. battery industry will help the U.S. secure a domestic battery industry in the long term. If U.S. support is focused on domestic firms, we can expect the relative standing of Korean battery firms within the U.S. market to decline.

Table 6. The Impact of Key U.S. Battery Policies on the Korean Battery Industry

Main Policies	Short Term	Mid to Long Term	Impacts
① Increase demand for American-made batteries	☀☀	☀	<ul style="list-style-type: none"> • Korean battery firms can supply the new demand created by promotional measures. • U.S. firms may enter the competitive market in the mid to long term, but it will be difficult for them to gain manufacturing competitiveness immediately. This will allow Korean battery manufacturers to maintain a large market share of the U.S. domestic market.
② Expand supply capabilities for key materials	☁	☀	<ul style="list-style-type: none"> • Mid- to long-term development of U.S. capabilities in raw materials will help Korea's battery industry diversify its supply channels. • Joint R&D in recycling and reuse will contribute to enhanced technological capabilities and stabilization of the supply chain.
③ Stimulate production of materials, cells, and packs	☁	☹	<ul style="list-style-type: none"> • We can expect the U.S. battery industry and the related ecosystem to attain competitiveness in the mid-to-long term. • If U.S. domestic firms are prioritized for government support (much like China has done), we can expect the U.S. to gain competitiveness quickly. • Korean firms will inevitably lose market share in the U.S. market. Competitive pressures within the global market will intensify in the mid-to-long term as well.
④ Invest in human resources and innovation to strengthen the battery ecosystem	☁	☹	<ul style="list-style-type: none"> • U.S. battery industry will strengthen in the mid-to-long term. • Active recruitment of foreign talent could lead to loss of manufacturing workers in Korea .

Source: KIET.

Note: ☹=Negative; ☹☹=Very negative; ☁=Neutral; ☀=Positive; ☀☀=Very positive.

■ The Economy–Security Perspective: An Approach to Korea’s Supply Chain Agenda

● Korea must approach its supply chain agenda from a comprehensive economy–security perspective. The U.S. has clearly expressed a strong intent to pursue a U.S.-centric reorganization of the supply chain of key strategic products. The results of the analysis and the policy recommendations are not unexpected. However, the results underscore how the U.S. understands the current situation and points to the direction of future U.S. policy. Washington has announced that it will continue to take steps towards reorganizing its high-tech industries and technologies in the long term; Korea also needs to adopt a long-term approach to respond to changes in the supply chain.

◆ Policy Recommendations

① Recommendation 1: Strategic, Parallel Pursuit of both Competition and Cooperation

- The policies recommended by the report carry both opportunities and risks that may impact Korean industry either positively or negatively.
- In order to make the most of opportunities to secure share in a large new market, accumulate global capabilities for Korean materials, parts, and equipment firms, and to maintain Korea's lead over China, we must develop strategic cooperation measures to establish ourselves firmly as a reliable global partner of the U.S. and as a technology ally. We must think of measures to connect and cooperate with the U.S. on each of the policies outlined in the review and actively work to find ways to create mutual benefits between Korea and the U.S.⁸⁾⁹⁾
- On the other hand, in order to respond to risk factors, such as improved American industrial competitiveness, the shock of a rapid reorganization of the supply chain, or the vacuum in Korea's domestic industrial ecosystem, we must maintain our global top-tier technological advantage and advance the position of Korea's domestic ecosystem along the global value chain.
- Because the rise in U.S. manufacturing competitiveness is directly connected to the weakening of Korean industry in the global market, we need to secure a dominant position in the global supply chain by developing strategies to maintain and secure at least some leverage (i.e., a strategy to secure technology focused on choke points in the supply chain).

8) For example, in order for Korea to establish itself as a reliable supply partner, we can provide a stable supply chain to address the U.S. demand for high-tech industries using active investment strategies. In addition, we can also pursue joint strategic R&D for next-generation technology based on each country's strengths. We might also establish a joint research institute through which we can share the risk of developing new technology.

9) The CoRe partnership underway between the U.S. and Japan, which was established during the U.S.-Japan summit, is being pursued along these lines.

② Recommendation 2: Perform a Comprehensive and Detailed Diagnosis on the Current Supply Chain Structure to Reestablish a Supply Chain Strategy

- Korea has been pursuing a Global Value Chain (GVC) strategy that uses China as a key hub. However, this has exposed Korea to all the external risk associated with China. Such risks may arise from the current division of labor with China, in which all manufacturing from leading-edge to mature industries is centered.
- The U.S.-China technology conflict is expected to be a protracted affair, and if the restructuring of the supply chain along a U.S.-centered technology alliance is realized, the supply and demand channels that have formed around northeast Asia will undergo significant changes.
- Therefore, we need to assess risk levels and contributing factors stemming from the division of labor with our neighbors, including China, Japan, and Taiwan. Based on this, we must strengthen the supply chain by reestablishing strategies for each industry's supply chain.

③ Recommendation 3: We Need a Governance and Legal Structure that can address Supply Chain Issues from an Integrated Economy-Security Perspective

- The report shows how the issue of cutting-edge technology and industry supply chains goes beyond the scope of the economy and industry, having been elevated to the dimension of diplomacy and security.
- Recently, the U.S. has enacted bipartisan legislature focused on securing advanced technology from a national security perspective and containing China.¹⁰⁾
- Japan is considering establishing a committee on long-term strategy and response for economic security within the government in order to strengthen economic security. It also aims to launch an economic security investigation and research institute¹¹⁾ as part of its efforts to build systems to strengthen economic security.¹²⁾

10) Currently, the U.S. Congress is putting the final touches on measures to counter the growth of China, working to enact the U.S. Innovation and Competition Act. This Act combines a number of laws meant to counter China such as the Endless Frontier Act, the Strategic Competition Act, and the Meeting the China Challenge Act.

11) Japan's Ministry of Internal Affairs and Communication will connect the National Security Secretariat (NSS), the Ministry of Defense, Ministry of Economy Trade and Industry, the Ministry of Education, Culture, Sports, Science and Technology and others in order to analyze advanced technologies and collect and analyze relevant information (KITA, Weekly Market Report for Japan, May 10, 2021).

12) Japan is also discussing establishing an economic security consultative body that would create communication channels within and between institutions like the National Security Council (NSC), which is led by the Prime Minister, the Ministry of Economy Trade and Industry, economic organizations such as the Japanese Business Foundation (Keidanren) and the private sector in order to strengthen economic security (Hankyung, May 3, 2021).

- If we consider the industrial structure of Korea, which is highly exposed to external risk factors, we must carefully build a system that can look at issues of national security that are linked to advanced technology and supply chain issues from a perspective that integrates the economy and security.
- We must raise the level of governance, which is currently focused on stabilizing the supply chain and other industrial aspects, to one that can deal with issues where economic and security concerns are mixed. We must also enact legislation that will allow Korea to consolidate its national capabilities to respond when urgent issues arise.

Lee, Jun | Materials Industry Division
Director | jlee@kiet.re.kr | +82-44-287-3246

Kyung, Heekwon | ICT & Emerging Industry Division
Associate Research Fellow | khk880718@kiet.re.kr | +82-44-287-3288

Lee, Sungkyung | ICT & Emerging Industry Division
Associate Research Fellow | sunglee.sk@kiet.re.kr | +82-44-287-3249

Lee, Goeun | Materials Industry Division
Researcher | goeuni.lee@kiet.re.kr | +82-44-287-3177



A PUBLICATION OF THE KOREA INSTITUTE FOR INDUSTRIAL ECONOMICS AND TRADE
PUBLISHER **Ju, Hyeon**
EDITOR-IN-CHIEF **Kim, Youngsoo**
COPY EDITOR **Aaron Crossen**
370 Sicheong-daero, Sejong City, 30147, Republic of Korea
Tel. +82-44-287-3114 Fax. +82-044-287-3333 www.kiet.re.kr

This article from *i-KIET Issue & Analysis* is available for viewing and download at <http://eng.kiet.re.kr>.