

## A Proposed Strategy to Strengthen Resilience of ROK Defense Supply Chain

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As geopolitical tensions and nationalism intensify globally, risks to the supply chain are emerging, making it difficult to provide materials and services. Consequently, the U.S., Japan, the EU, Australia and others are taking steps to mitigate these risks for the sake of economic security. It is important to recognize that these trends in major countries also affect ROK's defense supply chain.

The defense supply chain encompasses processes of resource acquisition and procurement, production and maintenance, logistics and transportation, along with the associated infrastructure and information flows. Supply chains are affected by a variety of risks, including traditional risks such as natural disasters, as well as geopolitical conflict such as trade sanctions. Furthermore, the defense supply chain has the inherent characteristics and complexity of defense security, preparing for both peacetime and wartime.<sup>1</sup>

In this context, defense supply chain must evolve from a risk management perspective to ensure resilience. Resilience means to the ability to adapt flexibly to change and shocks, respond swiftly, and recover. Supply chain risk management, based on this principle, proactively identifies risks in order to adapt flexibly to change and shocks, enabling a rapid response and

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<sup>1</sup> Defense supply chains are difficult to manage when considering required performance, technological level, and lifecycle. First, they are often specialized for defense, leaving few replaceable components. Second, the supply market tends to be concentrated among a small number of companies. Third, while users are limited, mature technology is often required, leading to reliance on overseas imports when prioritizing cost-effectiveness and speed. Fourth, long lifecycles necessitate sustained supply relationships, involving follow-on procurement and maintenance even after initial production. Fifth, these systems are directly linked to national security and are highly sensitive to geopolitical factors.

recovery. As the ROK military currently focuses on efficiency in logistics and program management, it is imperative to develop a supply chain risk management focused on resilience. Against this backdrop, this article examines trends in ROK's defense supply chain risk management compared to the U.S., and proposes a development strategy to enhance the ROK military's resilience.

## **ROK's National Supply Chain Strengthening Policy and the Need for Defense Supply Chain Risk Management**

Following successive supply chain disruptions, such as Japan's removal from the white list, the global shortage of urea solution, and restrictions on minerals supply, ROK enacted the so-called three supply chain laws. 'The Framework Act on Supply Chain Stabilization Support for Economic Security (hereinafter referred to as the Supply Chain Stabilization Act)' has been in effect since June 2024. This law provides a fundamental framework to prevent supply chain risks and respond effectively when disruptions occur, ensuring the smooth supply of essential items to the public. The other two laws are the 'Act on Special Measures to Strengthen Competitiveness And Stabilize Supply Chain of Materials, Components, and Equipment Industry,' which was fully revised and enacted in April 2020, and the 'Special Act on National Resources Security,' which came into effect in February 2025.

In December 2024, ROK announced the 'Master Plan for Supply Chain Stabilization 2025-2027', which involves the entire government and is based on the Supply Chain Stabilization Act. The plan outlines four key policies: stabilizing the supply of and demand for economic security items, strengthening supply chain resilience, developing the economic security infrastructure and securing a position within the global supply chain. Specifically, in order to stabilize the supply of and demand for economic security items, the plan first mandates the designation of targets for vulnerability assessments. Of the designated economic security items (spanning 61 industries across 13 ministries), the largest share (11 industries) is held by the Defense Acquisition Program Administration (DAPA) on behalf of the Ministry of National Defense (MND). To strengthen supply chain resilience, specific tasks include upgrading public stockpiles, expanding domestic production bases and establishing overseas supply chains. At the government-wide level, plans are in place to integrate supply chain information and enhance the 'Supply Chain Early Warning System' to monitor the domestic and foreign supply and demand.

The defense supply chain is essential not only for the smooth provision of the military supplies required by the armed forces, but also for combat readiness and sustainment. Therefore, it is necessary to examine the current state of the defense supply chain. The defense supply chain

is divided into domestic and overseas procurement. Analysis of the DAPA's central procurement information indicates that, although the proportion of domestically produced finished weapon systems is increasing, a significant proportion of components still rely on overseas sources.<sup>2</sup> It raises concerns as it could affect the defense industry's self-reliance and its ability to provide stable, sustained support during wartime.

The Defense supply chain management is conducted across various domains. Each military branch manages military supplies as inventory, with wartime basic items being critical components that significantly impact combat operations and sustainment capabilities. Examining the procurement records for class IX (repair parts) over the past decade reveals that overseas procurement occurred more frequently than domestic procurement. The procurement period averaged 164 days, which is longer than for domestic procurement. When wartime basic items were compared specifically to the overall data, the procurement period was shorter at 144 days and the proportion of overseas procurement was approximately 8 percentage points higher. Meanwhile, the DAPA is undertaking initiatives such as designating defense materials and companies, and promoting the localization of parts, to enhance the defense industry's self-reliance.<sup>3</sup>

In a situation of increasing domestic and international supply instability, a systematic, a comprehensive risk management approach is required to effectively manage the defense supply chain. The ROK military has pursued an efficiency in supply chain management, focusing on procuring the most competitive items at the lowest cost. However, efficiency-oriented management struggles to respond to supply chain risks or demand surges caused by external shocks. This could lead to disruptions or delays in sustained support, which could undermine national security or render operational execution impossible during wartime.

Meanwhile, the U.S. has been developing risk management policies that prioritize defense in order to build supply chain resilience. Therefore, the U.S. case could serve as a model

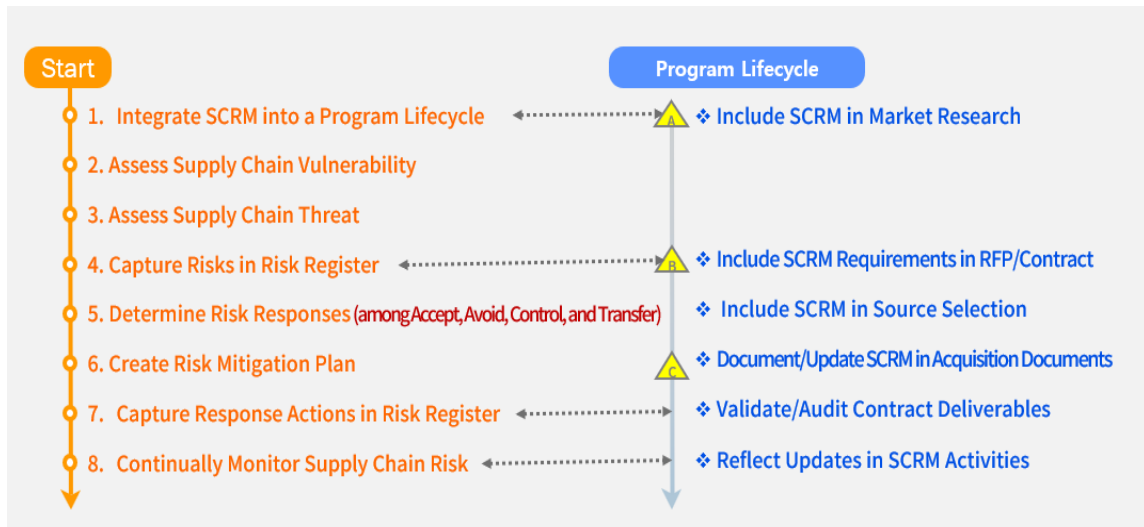
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<sup>2</sup> An analysis of procurement expenditures under the Force Improvement Program from 2010 to 2024 showed a decreasing trend in the proportion of overseas procurement, at 32.2% and 25.3, respectively. However, during the same period, the proportion of overseas procurement in equipment and maintenance and repair parts procurement expenditures increased to 46.2% and 49.3%, respectively.

<sup>3</sup> During the defense material designation process, companies must submit supply chain management plan for each component. This plan must include the location of materials and components, supply chain risk factors and management objectives, a component discontinuation management plan, current delivery status, and delay countermeasures. Component localization development projects are categorized into three types based on development objectives and the scale of government funding: core component localization, export-linked component localization, and strategic component localization.

for enhancing the resilience of the military's supply chain. Figure 1 illustrates the U.S. military's supply chain risk management process<sup>4</sup> in associate with program.

<Figure 1> U.S. DoD's Supply Chain Risk Management Process in associate with Program Lifecycle



## A Proposed Strategy to Enhance ROK's Defense Supply Chain Resilience

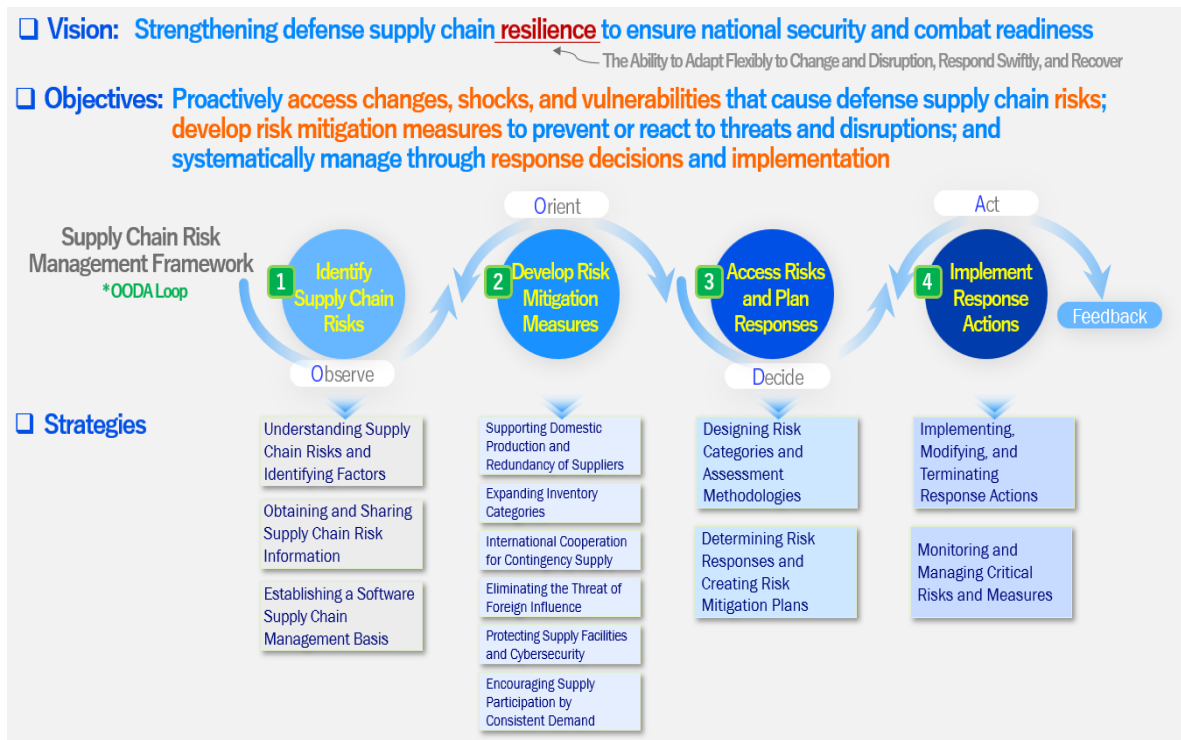
Based on the above discussion, Figure 2 presents the strategy for enhancing ROK's defense supply chain resilience. Ultimately, the defense supply chain must adopt a vision of strengthening resilience in order to contribute to national security and combat readiness assurance, which requires a focus on the development of a risk management system. Therefore, an effective approach to risk management is to use the Observe-Orient-Decide-Act (OODA) loop. The process can accordingly be divided into the following phases: identifying supply chain risks; developing risk mitigation measures; accessing risks and planning responses; and implementing response actions.

### Phase 1. Identify supply chain risks

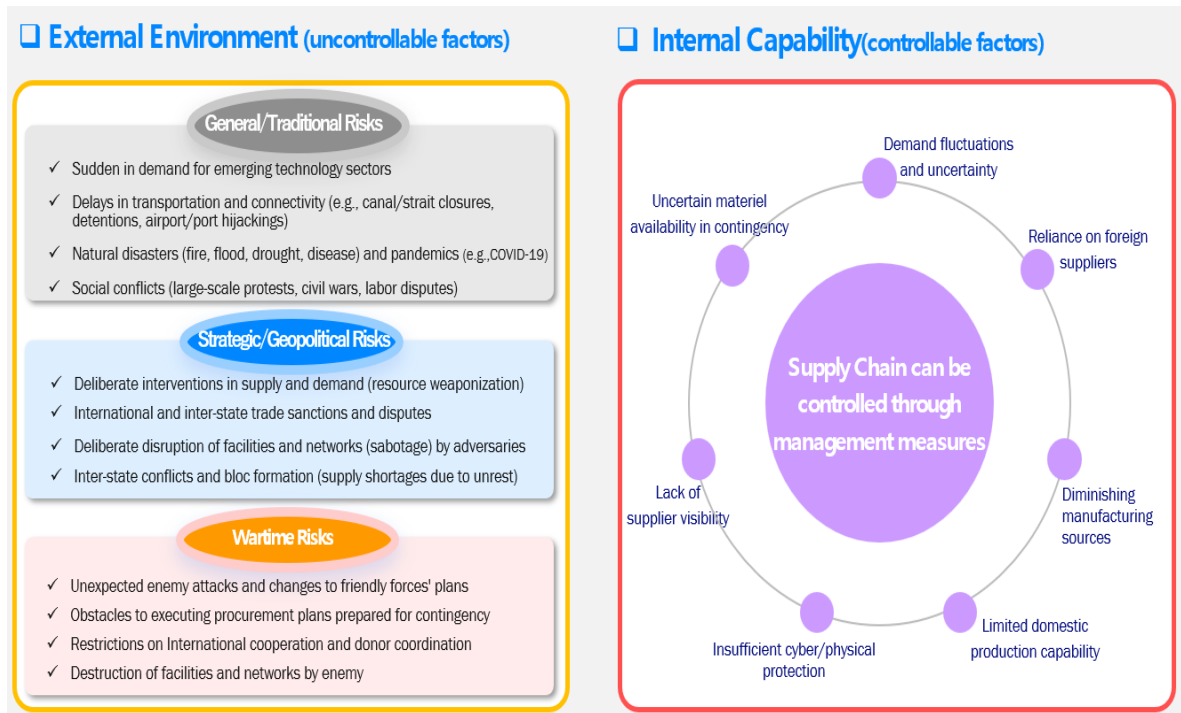
Effective supply chain risk management requires an understanding of overall risk factors that can affect the supply chain. As shown in Figure 3, MND, the DAPA and services must develop supply chain management objectives and encourage cooperation among stakeholders, taking risk factors from the external environment, internal conditions and capabilities into account.

<sup>4</sup> DoD USD(A&S). (2025). *DoD Supply Chain Risk Management Guidebook*.

<Figure 2> Proposed Risk Management Strategy to Enhance Defense Supply Chain Resilience



<Figure 3> Supply Chain Risk Factors



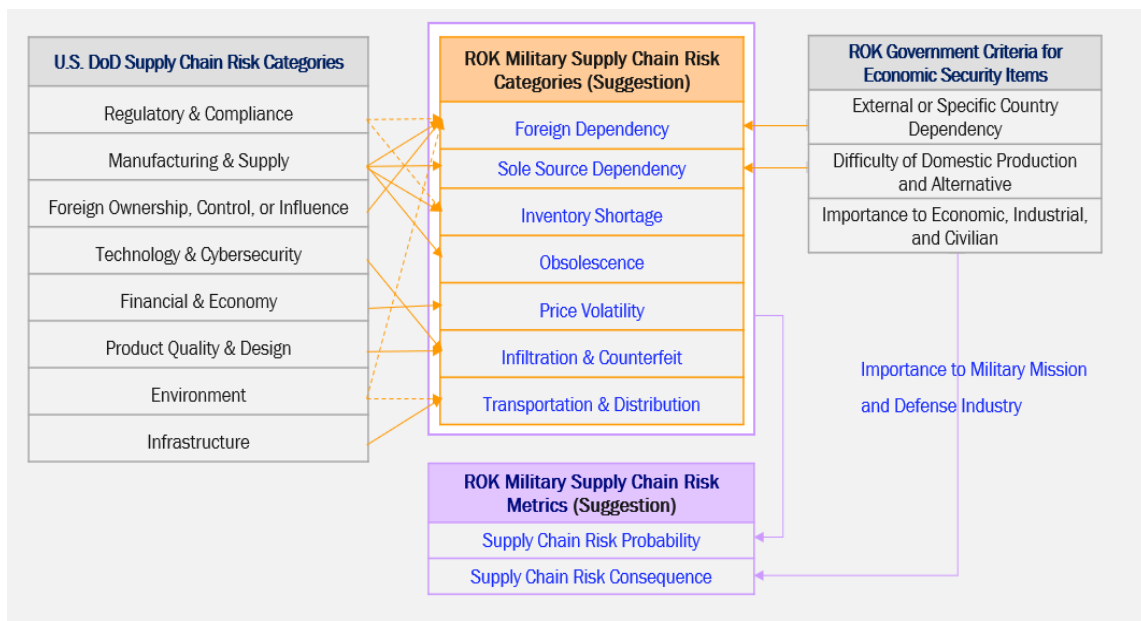
*Phase 2. Develop risk mitigation measures*

As supply chain risks are identified, the countermeasures should be developed for mitigation. Primary areas for consideration include supporting domestic production and redundancy of suppliers, expanding inventory categories, international cooperation for contingency supply, eliminating the threat of foreign influence, protecting supply facilities and cybersecurity, and encouraging supply participation by consistent demand. Detailed countermeasures are required for each of these. For instance, encouraging supply participation by consistent demand requires differentiated approaches by lifecycle stage. When determining requirements, it is advised to avoid setting performance specifications that deviate significantly from market standards. After acquisition decisions have been made, it is required to establish standard specifications that reflect commercial sectors and international partners and to identify common demand. During operation and maintenance, it is expected to consistently plan procurement volumes to provide stable demand signals.

*Phase 3. Assess risks and plan responses*

In order to assess supply chain risks for critical items and companies, detailed categories are required. Figure 4 was designed based on the supply chain risk categories of U.S. DoD and the criteria for ROK's economic security items. In order to conduct risk assessments, the military has to obtain relevant information from OEM and may also consider utilizing the government's supply chain early warning system.

<Figure 4> Categories and Metrics for Supply Chain Risk Assessment



*Phase 4. Implement response actions*

It is important to prioritize responses and monitoring focused on critical supply chain risks. During this process, risks should be re-evaluated and mitigated; once mitigated, they can be excluded from the management scope. As supply chains involve various business management organizations, supply chain risk management requires a different mindset and approach to conventional methods. Furthermore, a development of methodology is required for supply chain information and shared management, as well as for analysis and evaluation.

\* This article is an abridged and translated version of the “A Proposed Strategy to Strengthen Resilience of ROK Defense Supply Chain” published in *Defense Review*, September 22, 2025. It is the author’s opinion and does not represent the official position of the Korea Institute for Defense Analyses.