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Introduction

The Republic of South Korea is a country with a unique history and culture. Located on the southern half of the Korean Peninsula, South Korea has a population of over 51 million people and is one of the world's most technologically advanced nations. It is known for its rapid economic growth, which has made itone of the «Four Asian Tigers». In recent years, South Korea has also become a leader in the field of technology and innovation, with a thriving tech industry that includes companies like Samsung and LG. The country has invested heavily in research and development, with a particular focus on artificial intelligence and renewable energy.

However, South Korea also faces significant security challenges due to its proximity to North Korea, which has been a long-standing adversary. The Korean Peninsula has been a hotspot for tensions and military buildup for many years. The Korean arms industry has a long and varied history, with roots dating back to the Korean War. In the post-war era, the South Korean government began investing in the development of its domestic arms industry, with the goal of achieving self-sufficiency in defense production. Moreover, South Korea has made significant contributions to the international community. It is a member of the United Nations and the G-20, and it has been actively involved in international peacekeeping efforts. Its troops have played an important role in supporting peace and security in conflict zones around the world, and the country's continued participation in these efforts underscores its dedication to the international community.

South Korean arms export has become a topic of significant interest and debate in recent years for several reasons. First, the nation has a unique security situation due to its proximity to North Korea and the long-standing tension between the two countries. As a result, South Korea has placed a strong emphasis on developing its own military capabilities and has actively pursued international defense cooperation with many partners to strengthen its own military power. South Korea has ambitious national goals to strengthen its national military forces, modernize its defense and security equipment tools, and bolster the development of the domestic companies in the national defense industry to ensure self-reliance and capability in defense. Second, with a strong economy and growing wealth, South Korea is one of the biggest arms importers in the world and has the resources to invest in modernizing its defense and security equipment. Third, South Korea is a major player in the global defense industry, with a number of successful companies producing advanced weapons and technology. This has allowed South

Korea to become a major arms exporter, with customers around the world. In tandem with these factors, the rapid expansion of the South Korean arms industry and its increasing involvement in global arms trade, many questions have arisen regarding the implications of this trend.

This thesis aims to explore various aspects of Korean arms export, including the historical development of the Korean arms industry, the factors driving the growth of Korean arms exports, the impact of Korean arms exports on global security and regional stability, and the challenges facing the Korean arms industry in the future.

The goal of this master thesis is to find out main trends driving the growth of South Korean arms exports with a focus on the government's policies and forecast of its tendencies. Through a comprehensive analysis of these issues, this thesis seeks to provide a deeper understanding of the complex dynamics of South Korean arms export and its implications for the international community. As a result, this master's thesis will primarily focus on practical aspects rather than theoretical ones.

To achieve the goal, it is necessary to complete following **sub-tasks**:

1) To identify the fundamental theoretical concepts of the defense industry and arms export;
2) To determine the developmental process of the South Korean military-industrial complex as the foundation for arms export policies;
3) To examine the current trends and main challenges of South Korean arms export policies;
4) To identify the direction of governmental policies and future developments in South Korean arms export.

The **object** of the dissertation research is South Korean defense industry, current policies and the features and trends of its development.

The **subject** of the study is South Korean arms export.

Relevance of the research topic. The problems of institutionalization and instrumentalization of military-technical cooperation (MTC), the influence of structures related to the export of weapons, military technologies, and services in the conditions of instability of the modern world system is extremely relevant for domestic science and practical policy of any country.

Firstly, this is due to the increasing role of the military factor in the development of the system of international relations. In the context of increased competition and even confrontation in various spheres and regions, the trade in arms and military equipment (IWT) is a clear indicator of the strategic situation in the world, since it has not only a serious economic effect, but - most importantly - allows exporting states to maintain and/or strengthen their influence in various regions and significantly influence the geopolitical climate.

Despite the fact that the leaders of the global arms market are still the United States and Russia, the South Korean defense industrial complex has achieved great success, according to the U.S. Congressional Research Service (CRS)[1], last year South Korea has become the nineth largest supplier of weapons to the international market in the world, having concluded contracts totaling one and a half billion dollars.[2] At the same time, experts note a sharp increase in the volume of supplies of American and South Korean weapons. Seoul has been starting to feel confident in the arms market of various countries in recent years, concentrating on supplies to developing countries. At the same time, South Koreans were pleased to note that in 2011, for the first time, arms exports exceeded imports. In many ways, this was the result of the state program for the development of its own defense industry and the bid for the purchase of weapons from its manufacturers.

Secondly, the relevance of the research topic is associated with the increasing and sometimes even decisive role of both means of protecting national security and the availability of promising technological developments in the country that can determine its presence in the arms market for many years to come, and therefore have serious influence in shaping the global agenda. Thus, in modern conditions, the trade in arms and special equipment is one of the most important instruments of political influence both in individual countries and in the international arena as a whole.

Thirdly, until now, research related to export growth in South Korean defense industry has been vast. However, although many qualitative studies have been conducted, such as institutional supplementation and case review of other countries, quantitative studies through regression analysis are relatively insufficient. In addition, quantitative studies have used methods to identify the determinants of arms trading in the global defense market or to infer export

[1] Dick K. Nanto, Mark E. Manyin. Crs Report for Congress: The Kaesong North-South Korean Industrial Complex // Congressional Research Service the Libr, 03.11.2013.
[2] SIPRI Year Book 2022 // SIPRI, 2023.

strategies through cases from other countries rather than paying attention to the Korean defense industry itself. Additionally, reseaerches of South Korean arms export are mostly conducted in Korean language, and quite insufficient in English. That`s why the major part of this research work is based on the academic works undertaken in Korean.

It is essential to also notice that supporters of political realism have always paid special attention to the role of «military force» in foreign policy, which is not only a product of military production as an integral part of the country's economy, but also an important area of its foreign policy. In modern conditions, as a sector of the economy, military production is regulated by the laws of the market, but the main consumer of military products remains the national state. It turns out that military production is determined not only by the size and requirements of the international market of defense products, but above all by the state defense order. Because of this, military production is subject to a strict system of state regulation aimed at ensuring the interests of state security and achieving foreign policy goals and objectives. In other words, the military force realized in the process of trade in military hardware with foreign states becomes a significant tool of foreign policy, helping the state to ensure its geopolitical and geostrategic interests.

Additionally, the success of a particular country's military-technical cooperation depends on the effectiveness and the competitiveness of its economy, the level of development of science, technology and innovative technologies, the presence of a certain tradition in the creation and maintenance of the defense complex and a developed military-technical, organizational and managerial infrastructure. Arms exports are the engine of development of all important spheres of the modern state, capable of giving a powerful impetus to the national economy, scientific and social sphere. Therefore, the analysis of South Korea's military-technical cooperation, the identification of its problem areas and the identification of political risks seems very timely. The creation of a competitive military-industrial complex (MIC), providing military power, is impossible without the help and investments from the state. Given the geopolitical and strategic position of South Korea, on the one hand, the defense industry cannot develop successfully without a state. But on the other hand, the domestic defense industry serves not only as a reliable protection of the country's security, but also as a conductor of its interests, an instrument of its influence abroad.

Thus, the designated research topic seems to be extremely relevant both from the point of view of the relationship between raise of arms export and economic growth of the country, and

from the point of view of understanding the importance of arms trade as an instrument of South Korea's political influence in the international arena and securing of its national interests.

Also the factors affecting the export of the defense industry will be identified using **time series data**. Discriptive analisis will be implemented to point out main features of arms export policies and find outits limitations. An empirical analysis will be conducted in terms of supply and demand, and implications for the government and defense industry will be presented separately. Since the defense industry is a special market with limited suppliers and consumers, the government and defense companies must work together to achieve practical growth. Therefore, it was judged that it would be meaningful if research was conducted to confirm the consciousness and direction of the problem each should have.

There are various sources that this research relies on to achieve its objectives and accomplish the subtasks for the research. **The primary sources** consist of official South Korean government documents and websites, statistical information from open sources, as well as news resources on event reports. Meanwhile, the **secondary sources** comprise of existing literature from South Korean and international scholars, as well as news resources that contain analysis and opinions.

In order to find tendencies of South Korea’s defense exports, this study will deal with South Korea’s competitive defense export strategy in the global market by examining institutional devices that the government could support in relation to the business, industry-academic research, and export destination countries.

Concerning collection of **empirical data**, defense export-related data were obtained from related research of the Korea Institute for Defense Analyses (KIDA), and Korea Research Institute for Defense Technology Planning and Advancement (KRIT), and various data provided by the Internet and intranet were also used. By examining all currently available **legislative documents** related to arms export in South Korea in the contemporary context, the author can provide sufficient data to track the policy's evolution and rationalization and accomplish the research objective. The export of arms and military equipment from South Korea is governed by several legislative documents, including laws, regulations, and guidelines. South Korea has established a legal framework for its arms export industry, which is primarily governed by the country's Act on the Control of Export, Import, and Transfer of Strategic Goods and

Technologies.[3] This law regulates the export of strategic goods, including military items, and implements the country's international obligations related to nonproliferation and arms control. In addition to this overarching law, there are several other legislative documents related to arms exports in South Korea. These include regulations, guidelines, and procedural manuals that provide more detailed guidance on specific aspects of the export control process. One such document is the «Guidelines for Export of Defense Articles, Serveries, and Technical Data»[4] issued by the Defense Acquisition Program Administration (DAPA), which is responsible for managing South Korea's defense procurement and export activities. These guidelines provide criteria for assessing the suitability of potential recipients and end-users of South Korean defense articles, as well as the procedures for obtaining export licenses and ensuring compliance with applicable regulations. Another important document is the «Defense Export Overall Guide Book»[5] published by the Korea Trade-Investment Promotion Agency (KOTRA), which sets out the step-by-step procedures for reviewing and approving applications for strategic goods exports. This manual includes detailed instructions for conducting end-use checks and verifying the bona fides of potential buyers and recipients, as well as guidance on handling exceptions and appeals. In addition, South Korea is a signatory to several international treaties and agreements related to arms control and nonproliferation, including the Wassenaar Arrangement, the Australia Group, and the Missile Technology Control Regime. These agreements provide additional guidance and requirements for South Korea's arms export activities, and the country is committed to implementing them in accordance with its international obligations.[6]

Overall, the legislative framework for South Korean arms exports is designed to ensure that the export of military equipment is conducted in a responsible manner, in accordance with international norms and South Korea's national security interests. The guidelines and regulations in place aim to prevent the proliferation of conventional and strategic weapons while allowing legitimate exports to support South Korea's defense industry and enhance its defense capabilities.

[3] Act on the Control of Export, Import, and Transfer of Strategic Goods and Technologies // Official website of Ministry of Trade, Industry, and Energy (MOTIE). 02.12.2021. URL: https://www.motie.go.kr/motie/ne/policy/policy02/bbs/bbsView.do?bbs_seq_n=447&bbs_cd_n=2 (access date: 26.03.2023).

[4] Guidelines for Export of Defense Articles, Services, and Technical Data // Official Website of Defense Acquisition Program Administration (DAPA). 17.03.2008. URL: https://www.dapa.go.kr/eng/board.do?menuNo=200037&cmd=Retrieve&board_id=eng_notice&lang_cd=en&pageIndex=2&status_yn=Y&seq=1359 (access date: 26.03.2023).

[5] Defense Export Overall Guidebook // Korea Trade-Investment Promotion Agency (KOTRA), 19-007. 06.2021.

[6] International Treaties and Agreements // Ministry of Foreign Affairs, Republic of Korea URL: https://www.mofa.go.kr/eng/brd/m_5673/view.do?seq=319439&srchFr=&srchTo=&srchWord=&srchTp=&multi_itm_seq=0&itm_seq_1=0&itm_seq_2=0&company_cd=&company_nm=& (access date: 20.03.2023).

By examining **official government websites**, it is possible to gain valuable insights into the views and policies of the government regarding procurement and military technical cooperation. These websites provide access to a range of primary sources, including statements, event reports, and press releases. These primary sources provide valuable insights into the official government's views and the chronological development of national policies.

Additionally, due to the confidentiality surrounding military procurement, the lack of transparency from the government may hinder public access to information. As a result, this study relies on **open-source data** from the Stockholm International Peace Research Institute (SIPRI) for statistics. However, it is important to note that there are limitations to using open-source data. For instance, SIPRI's data only includes the import percentage from the total arms provider and does not provide a comparison with domestic providers. Furthermore, SIPRI's data only covers South Korea's arms transfers related to aircraft exports, as opposed to shipbuilding or land systems, due to differences in production methods. The United Nations Comrade Database also provides information on international trade in goods, including military equipment. Researchers can use this database to track South Korea's exports of military equipment to specific countries, as well as the value and volume of these exports. However, it`s data may be incomplete or inaccurate, particularly in cases where countries do not report all of their arms exports, detailed information on the types of weapons and military equipment the end-users of South Korea's arms exports usually are not provided. Moreover, there is The Korea Trade-Investment Promotion Agency (KOTRA) that provides data on South Korea's exports of goods and services, including military equipment, but it may not provide a complete picture of South Korea's arms exports. This is because KOTRA's data only includes exports that are officially reported and recorded, and it may not capture exports that are made through unofficial channels or that are not reported to the authorities. As a result, KOTRA's data may underestimate the true extent of South Korea's arms exports. Nevertheless, by combining this data with information from other sources, such as open-source news outlets and media reports, researchers can gain a more comprehensive understanding of chronological statistics, types of weapons, and foreign partners involved in South Korean arms exports.

Additionally, **news platforms** can be presented as a supplementary source of information since they often provide reports and updates on specific events, but without offering analysis. This is due to the lengthy and secretive nature of military procurement, which involves extensive negotiations and a significant amount of time before delivery. Frequently, discussions occur

without any official statements being made, leading to uncertainty around the final decisions of these procurement processes. As a result, relying solely on news platforms can provide indicators and shed light on the development of certain military procurement and arms deals in South Korea, but should not be relied upon as the primary source of information.

Literature about South Koreans national defense industry exists in the national discourse, but it is predominantly produced by the government as consultants and not always publicly available. However, **academic papers and literature** on the defense industry began to be conducted in the 1990s and were mainly focusing on the development of national defense industry. Since then, as the domestic weapons system, which began to be developed in the 1990s, began to be mass-produced in earnest, research on arms export began to be activated in the early 2000s. In particular, with the inauguration of the Lee Myung Bakn government in 2008, research was expanded to re-examine the value and importance of defense exports in Korea and link the defense industry to the promotion of national interests.

Looking at existing studies on the revitalization of defense exports, Yu Soon Gil (2003) analyzed the export obstacles of domestic defense producers and suggested activation measures to overcome them. Three obstacles to domestic defense exports were suggested: lack of price and technological competitiveness in the international market, production of weapons systems centered on technology transfer and imitation production, and lack of marketing ability of the government and companies.[7] Using the Analytical Hierarchy Process (AHP) methodology, Han Ki Hoon (2005) conducted a study by dividing the factors to be considered first in establishing a defense export revitalization policy into four categories: price, product, sales promotion, institutional improvement, and supplementation.[8] Lim Chi Gyu (2010) also classified defense industry development policies and related variables into four categories: system improvement, R&D activation, management condition improvement, and defense export support, and quantitatively evaluated the correlation affecting the management performance of defense companies.[9] Additionally, Kim Si Kwon (2012) quantitatively evaluated and presented variables

[7] Yu Soon Gil. An Analysis of the Export Obstacles of the Domestic Defense Producers and the Activation Measures to Overcome Them // Master's thesis, Korean National Defense University, Seoul. 2003. PP. 63-89. 유순길. 방산물자의 수출 장애요인 분석 및 활성화 방안 연구// 국방대학교 석사학위논문. 2003.

[8] Han Ki Hoon. Study on ways to boost exports of defense materials: focusing on policy improvement using AHP // Master's thesis, Korean National Defense University, Seoul. 2005. 한기훈. 방산물자 수출활성화 방안 연구: AHP 를 이용한 정책 개선을 중심으로 // 국방대학 교 석사학위논문. 2005.

[9] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support

that affect the improvement of export competitiveness of defense products and four government support factors, such as opening and competition inducement, support for core technology development, and fostering supplier-centered markets.[10] Two years before Kim Yong Nam (2010) conducted similar research, but regarding the direction of defense export strategy, the paradigm shift of defense science and technology research, and the improvement of government-level policies and support systems necessary to enhance domestic defense export competitiveness. It was suggested that export strategies based on capability, competitive product development strategies, open defense R&D activation strategies, and defense R&D system advancement strategies should be established to enhance domestic arms export. In addition, in terms of improving the government-level policy and support system, eight items were presented, including a shift in national awareness to improve defense export conditions, an expansion of the function of the defense export organization, and a revitalization of the government's defense export consultative body.[11]

Since 2011, Korea Institute for Industrial Economics and Trade (KIET)[12], a national policy research institute that analyzes domestic and foreign industries and establishes strategies for strengthening global competitiveness, has released research focused on fostering defense industries and boosting defense exports. Kim Kyung Min (2010) proposed government-level policies and institutional development measures necessary to revitalize defense exports by examining export support systems of major defense advanced countries such as the United States, Greate Britain, France, and Israel and comparing them with domestic defense export support systems.[13] Ahn Young Soo and others (2012) conducted SWOT analysis on the domestic defense industry and suggested policy support to establish market-oriented defense policies and systems, expand private participation through R&D reform, strengthen global capabilities of defense

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Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

[10] Kim Si Kwon. A Study on the Determinants of Export Competitiveness of Korean Defense Companies // Doctoral thesis, Kyung Hee University Graduate School, Seoul. 2012. 김시권. 한국 방위산업체의 수출경쟁력 결정요인에 관한 연구 // 경희대학교 대학원 박사 학위논문. 2012.

[11] Kim Yeon Nam. A Study on the Policy and Support System for Revitalizing the Defense Export // Korean Journal of Defense Analysis. – 2010. № 22(2). P. 97-126. 김연남. 국방수출 활성화를 위한 정책 및 지원체계 연구 // 한국국방연구원. – 2010. № 22(2). P. 97-126.

[12] About KIET // Korea Institute for Industrial Economics & Trade (KIET) URL: http://www.kiet.re.kr/kiet_en/about/about.do (access date: 10.03.2023).

[13] Kim Kyung Min. Future Development Direction of the The Korea Defense Industry Trade Support Center// Seoul: Hanyang University, Industry-Academic Cooperation Group Research Report. – 2010. 김경민. 산물자교역지원센터 향후 발전방향 // 서울: 한양대학교 산학협력단 연구보고서. – 2010.

companies, establish a company-oriented production system, and upgrade the export-led industrial structure.[14]

In the 2000s, the size of South Korea's defense exports has gradually increased, and accordingly, research has been actively conducted to revitalize defense exports. Except for studies dealing with specific topics in one or two fields, many studies have covered only problems related to defense export organization, defense export financial support, support system to secure price competitiveness of defense products, R&D expenses, cost reduction measures, and trade-off. The summary of these research results are as follows.

The Korea Institute of Industrial Policy (Yun Cheol Lee, 2007) summarized the actual conditions and tasks of the domestic defense industry, studied the defense export policies and support systems of major countries according to the SER-M model, and argued for the justification for the establishment of a defense export organization. Industrial-related analysis, production inducement effect, value-added inducement, and employment inducement were presented in specific figures, and the impact these actions on other industries was analyzed. Additionally, the expected effect of establishing a defense export organization was studied based on the Israeli case. As a result, the necessity and expected effect of defense exports, and the justification for establishing an organization dedicated to defense exports were emphasized, but limitations in that specific establishment measures were not presented.[15]

The Korea Institute of Defense (Jo Nam Hoon, 2007) analyzed Korea's export performance of defense products and presented defense export strategies by region. As a policy support plan to revitalize defense exports he proposed: establishment of arms export support organization; establishment of a pan-national defense export cooperation network; improvement of the arms export financial support system. In particular, the plan to establish a defense export support organization analyzed similar cases in major developed countries, such as development of SIBAT in Israel. Accordingly, it proposed establishment new domestic organization on the

[14] Ahn Young Soo, Jang Won Joon and Kim Jung Ho. An analysis and implications of export support systems in major defense exporting countries // KIET Industrial Economy, 2012. - pp. 19-29. 장원준·안영수·김정호. 주요 방산수출국가의 수출지원제도 분석과 시사점 // KIET 산업경제, 2012. - pp. 19-29.

[15] Lee Yoon Chul. A Study on the Development of Defense Export Support Policy and Establishment of a Dedicated Organization: Focusing on Expected Effects // Seoul: Industrial Policy Research Institute, 2007. - pp. 125-158. 이윤철. 방산수출지원 정책발굴 및 전담조직 설립방안 연구 : 기대효과를 중심으로 // 서울 : 산업정책연구원, 2007. - pp. 125-158.

base of the Defense Acquisition Program Administration.[16] In terms of the export financial support system, the necessity of government-level financial support and guarantees, and measures to improve the system for deferred financial exports (direct government support measures and guarantees for private financial institutions) were also suggested. Moreover, he argued the necessity of introducing a deposit insurance system implemented by the Korea Deposit Insurance Corporation to finance private defense institutions.[17]

Kim Ki Joong (2008) used McCarthy's 4P strategic elements as an analysis framework to review the defense industry export environment of major countries and South Korea's defense export environment in terms of products, prices, places, and promotion. As for product strategies, he insisted on fostering products in line with future war patterns, developing civilian-military combined technology, and strengthening defense R&D; as price strategies, he suggested exempting technology fees and expanding defense R&D investment costs; proposed as a place strategy - expanding international cooperation and approaching emerging markets; and insisted on improving defense conditions and establishing an organization dedicated to defense exports as a promotion strategy.[18]

Roh Soo Hoon (2007) analyzed the defense export policy of advanced countries and derived the current status and problems of South Korea's defense exports and suggested three ways to increase Korea's defense exports: 1. strengthening defense export base; 2. supporting securing competitiveness in defense export prices; 3. strengthening arms export support activities. In particular, the government should establish a government-level support organization to strengthen defense export work with Defense Acquisition Program Administration, so it was proposed to establish a defense export network under the supervision of the prime minister.[19]

Yoon Ki Kwon (2006) proposed ways to improve the deferred export financial system, arguing for the expansion of the defense industry development fun the Defense Industry Promotion Fund and the expansion of the scale of Export Import-Bank of Korea's own deferred

[16] Cho Nam Hoon. Market Research Analysis and Export Strategy Establishment for Revitalizing Defense Exports // Seoul: Korea Defense Research Institute, 2007. - pp. 121-136. 조남훈. 방산수출 활성화를 위한 시장조사분석 및 수출전략 수립 // 서울 : 한국 국방연구원, 2007. - pp. 121-136.
[17] Ibid, pp. 131-135.
[18] Kim Ki Joong. A Study on the Export Strategy of Korea's Defense Industry // Master's thesis, Korea National Defense University, Seoul. 2008. – pp.9-11. 김기중. 한국의 방위산업 수출전략에 관한 연구 // 국방대학교 석사 학위논문. 2008.
[19] Roh Soo Hoon. Study on ways to increase exports of defense products // Seoul: National Defense University, Security Paper, 2007. - pp. 39-40. 노수훈. 방산물자 수출증대 방안 연구 // 국방대학교 안보논문, 2007. - pp. 39-40.

export financial support. In addition, it was stated that loans for the Defense Industry Promotion Fund should be expanded the support rate can be increased.[20] Kwon Seung Taek (2005) compared and analyzed major countries' defense export support policies and suggested: to secure a budget for export finance through separate national accounts; to expand the Defense Industry Promotion Fund and preferential support for export finance; to establish a risk acceptance system; to improve export insurance system.[21]

While presenting South Korea's defense industry environment and development strategy, Han Nam Sung (2008) pointed out that "supply capacity, lower supply base, and excessive dependence on domestic demand" are vulnerabilities of the Korean defense industry and discussed its overall planning and management.[22] As for defense industry development strategy, he pointed out: strategic selection and planning system of defense industry capabilities; acquisition of weapons system and creation of business opportunities in defense industry; securing stable financial resources for defense R&D investment; project extension: harmonizing of reasonable competition method and defense-based policy; expansion of defense exports and international cooperation.

Considering the theoretical analysis conducted above it is possible to conclude, that in order to supplement the weak technology of the domestic defense industry and enhance arms exports, further governmental measures are required: securing export markets through initial cooperation in acquisition; strengthening joint export marketing and export support organizations; attracting foreign direct investment and expanding international defense cooperation. In addition, many domestic scholars and researchers have suggested institutional development measures to revitalize and increase arms exports. Most of the studies similarly analyze the cases of major developed countries, and it can be seen that the situation of the defense industry in South Korea

[20] Yoon Ki Kwon. Development of export financial system to boost overseas exports of Korean defense industrial products // Seoul: Defense University Security Research Institute, 2006. - pp.88-92. 윤기관. 한국방위산업제품의 해외수출활성화를 위한 수출금융제도 발전방안 //안보학술논 집, 제 17 집, 제 2 호/ 서울 : 국방대학교 안보문제연구소, 2006. - pp. 88-92.

[21] Kwon Seung Taek. A Study on the Improvement of the Export Financial Support System to Increase the Export of Defense Materials // Master's thesis, Korean National Defense University, Seoul. 2005. - pp. 73-87. 권승택. 방산물자 수출증대를 위한 수출금융지원제도 개선방안 연구 // 석사학위논문, 국방대학 교, 2005. - pp. 73-87.

[22] Han Nam Sung, Kang In Ho, Park Joon Soo, Yang Young Cheol. The current environment and development strategy of the Korean defense industry // Seoul: Journal of Defense Research Institute, - 2008. Vol. 24, № 4. P. 223-238. 한남성·강인호·박준수·양영철. 한국방위산업의 당면환경과 발전전략 // 서울 : 국방연구원, 「국방정책연구」 제 24 권 제 4 호, 2008 년 겨울. p.223-238.

is also developing in the same way. Most of the studies covered establishing an organization dedicated to arms exports, financial support for defense exports such as deferred payment, export finance, support system to secure price competitiveness of defense products, R&D expenses, technology fee exemption, activation of defense exports through trade-off, re-installing the Defense Industry Promotion Fund, expanding R&D support, and reducing taxes.

However, deferred export financial aid for arms exports has been supported only in a limited part, and the budget for arms export support has not been secured in the case of secondary conservation projects following the abolition of the Defense Industry Promotion Fund. In addition, secondary conservation projects have only been implemented for about two years, making it difficult to analyze performance, and research on this has not yet been conducted. It is necessary to emphasize that the government's systematic analysis and follow-up research on secondary conservation projects should promote its willingness to actively promote policies to revitalize defense exports.

Under this research it was considered to analyze mainly South Korean academic works related to domestic arms export because of the lack of secrecy of such researches in English and Russian languages. All the translations of original terms in Korean were made by the author.

In order to achieve the research goal and accomplish the sub-tasks, the study is divided into four chapters. The first chapter is aimed to provide an overview of basic concepts of the defense industry and arms export. It sets the context for the subsequent chapters and highlights the key characteristics that will be explored in more detail further on the South Korean case. The second chapter traces the evolution of South Korea's defense industry, focusing on the formation of national policies and examining the current status and trends. It provides a historical perspective and evaluates the development of national defense policies. The third chapter delves into contemporary development of South Korea's arms export policies, with a particular emphasis on governmental arms export revetalization policies, legislative system and research and development significance for further growth. It explores the background of South Korean Arms export and its achievements nowadays. It also addresses the challenges related to supporting defense exports, such as organizational capacity, export financing restrictions, and marketing support. The main focus of the fourth chapter is to identify South Korea's arms export strategies and measures government undertakes to face the challenges. It examines the paradigm shifts in defense science and technology, highlighting the current research and development vision and objectives.

Chapter 1. Understanding the Defense Industry and Arms Export: Key Concepts And Characteristics

The defense industry is a crucial part of the economy of many countries. It comprises a range of activities that involve the production of weapons, military vehicles, and other defense-related equipment. The importance of the defense industry lies not only in the development and production of weapons and equipment but also in its contribution to national security and the protection of the country's sovereignty. Defense exports, on the other hand, are the sale of defense-related goods and services to foreign countries.

The defense industry and arms export have always been a topic of significant interest for governments, militaries, and scholars alike. Understanding the key concepts and characteristics of the defense industry and arms export is crucial to comprehend the dynamics of South Korean arms export policies.

In this chapter, author will delve into the fundamental principles of the defense industry and arms export, including the role of government regulation, the nature of competition between arms manufacturers, and the motivations behind arms sales. Understanding the characteristics of the defense industry and arms export will shed light on the key drivers of South Korean arms exports in the next chapters, including the impact of domestic politics and its objectives.

1.1. The Basics of Defense Industry: Definition and Key Characteristics

Before examining the development of South Korean arms export, looking at the general characteristics of defense industry and defense export[23] will provide a basis for understanding the importance of development of effective revitalizing defense export policies and the need to advance defense industry for a country.

The defense industry usually includes all the industrial activities and actors that research, develop, produce, and supply materials required in the military's production and mercenary processes under the goal of a national strategy to ensure its own safety and protect national

[23] Ji Il Yong, Jang Won Jun. Characteristics and Policy Implications of Exporting Defense Products // Report. Sejong: Korea Institute for Industrial Economics and Trade, July 11, - 07.2013.지일용·장원준. 방산제품 수출의 특성과 정책적 시사점 // 산업연구원, - 07.2013.

territory.[24] Among academic works in English language such terms as weapons industry, arms industry, war industry, and munitions industry are used as similar ones to defense industry, including not only weapons, ammunition, but also general materials such as clothing.[25] Defense products, such as weaponsary systems essential for the construction of military forces, can be procured not only through domestic defense companies but also by foreign ones, but no country can currently be self-sufficient in priduction of all the parts of any weapons systems.

Generally, the defense industry is a highly specialized sector that requires advanced technology and expertise. The industry invests heavily in research and development to stay at the forefront of technology. According to a report by Deloitte, defense companies allocate an average of 4.7% of their revenue to research and development, significantly higher than the average of 1.4% for companies in other sectors.[26] Advanced technology is not just limited to hardware and software systems used in defense. The industry is an early adopter of cutting-edge technology such as artificial intelligence, robotics, and autonomous systems. These technologies are increasingly integrated into defense systems, enabling better decision-making and creating more precise and efficient systems.

The production of defense-related equipment requires significant investments in machinery, research, and development, and human capital. As a result, the defense industry is characterized by high capital intensity. The industry requires large amounts of capital to develop and produce weapons and equipment. According to SIPRI, the top 25 defense companies in the world had a total revenue of $361 billion in 2019.[27] Defense companies are some of the largest in the world, and they often require significant investment to get started. This high capital intensity can create a challenge for smaller companies that aspire to enter the market. The barriers to entry can be so high that the smaller companies may not be able to compete, which can lead to a lack of innovation and competition in the sector.

The barriers to entry include high research and development costs, complex government regulations, and the need for specialized knowledge and expertise. According to a report by the US Government Accountability Office, the barriers to entry in the defense industry can limit

[24] Kim Chul Hwan. The Theory and Practice of the Defense Industry // Seoul: Defense Research Institute, - 2003. P.7-8. 김철환. 방위산업의 이론과 실제 // 국방대학교, - 2003. P.7-8.
[25] Ibid, p.8.
[26] 2021 Global Aerospace and Defense Industry Outlook // Deloitte. URL: https://www2.deloitte.com/ch/en/pages/manufacturing/articles/aerospace-and-defense-industry-outlook-2021.html
[27] SIPRI Arms Industry Database // Stockholm International Peace Research Institute. URL: https://www.sipri.org/databases/armsindustry.

competition and lead to higher costs for the government.[28] The high barriers to entry can create a situation where a small number of companies dominate the market, limiting competition and innovation. To address this issue, some governments have taken steps to encourage competition in the sector. For example, the US Defense Department has created initiatives to encourage small and medium-sized enterprises to enter the market.

The development of defense-related equipment can take many years and requires significant investment before the equipment can be brought to the market. The long development cycles are due to the complexity and high standards required for the production of defense-related equipment. According to a report by the US Government Accountability Office, the development of a major defense acquisition program can take up to 18 years. The long development cycles are a significant challenge for the defense industry. [29] However, the countries with developed economies this oeriod takes much less time. Consequently the more developed country is, faster it is to develop defense awuisition program.

The defense industry contributes significantly to a country's economy and national security. The industry creates jobs, stimulates economic growth, and drives innovation. Defense spending can also have a multiplier effect on the economy, as companies that receive defense contracts often invest in research and development, which can lead to new products and services. According to a report by the Aerospace Industries Association, the defense industry supported 2.7 million jobs in the United States in 2019.[30] The report also found that every dollar spent by the government on defense generated $2.15 in economic activity. Similarly, a report by the Centre for Economics and Business Research found that the defense industry contributed £11.5 billion to the UK economy in 2018, supporting over 196,000 jobs.[31]

Moreover, the defense industry is an important security asset that guarantees the independence of national actions in case of emergency because it can be free from the risk of prohibition of foreign arms exports in the circumstamcies of an international dispute if it maintains a domestic industrial base that can produce essential weapons systems and military

[28] Defense Acquisitions: Assessments of Selected Weapon Programs // US Government Accountability Office., 2016.
[29] Ibid.
[30] The Economic Impact of the US Aerospace and Defense Industry // Aerospace Industries Association, 2020.
[31] The Economic Contribution of the UK Defense Industry // Centre for Economics and Business Research., 2018.

products. The Nuclear Non-Proliferation Treaty (NPT)[32] and The Wassenaar[33] are representative examples. As such, defense exports are usually a type of transaction made under strong regulations not only domestically but also internationally.

In the case of Republic of Korea, Article 3(8) of the Defense Industry Development Act[34] defines 'defense industry as an industry that produces or researches and develops defense industry goods'. In addition, in Article 2, Paragraph 7 of the same Act, defense industry goods are defined as «materials designated under Article 34 among military goods».[35] The Defense White Paper explains, «Defense industry is an industry engaged in research, development, or production of military materials for the purpose of national defense».[36] Professor of Seoul National Defense University, Kim Cheol Hwan, defined the defense industry as «an industry engaged in researching and developing or producing arms as direct weapons, and an industry engaged in researching and developing or producing materials that can be used in the military indirectly according to the military's demand to realize self-defense».[37]

The defense industry in this study will be defined as the sphere of development and production of military materials, goods, and technology for national defense, and as a generic term for industries that develop and produce guns, explosives, ships, aircraft, vehicles, electronic and communication equipment, and missiles. In addition, the term will refer to any company that produces defense products and has been designated as a defense industry by meeting facility standards and security requirements prescribed by law.

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[32] The Nuclear Non-Proliferation Treaty (NPT) was adopted by the United Nations General Assembly on 12 June 1969 as a treaty prohibiting new non-nuclear states from possessing nuclear weapons and non-nuclear states from transferring nuclear weapons to non-nuclear states. South Korea became an official ratification country on April 23, 1975.

[33] The Wassenaar Convention, also known as the Basenar System, is officially defined as The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies. The agreement refers to a multilateral strategic material export control system designed to enhance transparency in transactions between countries of traditional weapons and strategic materials and technologies, prevent risks that threaten world peace and safety by imposing export responsibilities, and reinforce the existing anti-proliferation regime. South Korea joined in April 1996.

[34] The existing Act on Special Measures for the Defense Industry (방위산업에 관한 특별조치법) was amended to the Defense Industry Development Act (방위사업 법) on September 11, 2006 by the Korea Customs Service Notice No. 2006-37.

[35] Ryu Hyung Gon. Results of Review of the Basic Plan for the Promotion of Defense Industry // A statement from the National Assembly Legislative Research Office's Expert Meeting, 12.09.2020. 유형곤. 방위산업육성기본계획 점검회의 검토 결과 // 국회입법조사처 전문가 간담회 발표문, 12.09.2020.

[36] Defense White Paper // Seoul, Ministry of National Defense, 2006, p.155. 국방백서 // 서울, 국방부, 2006 p.155

[37] Kim Chul Hwan. The Theory and Practice of the Defense Industry // Seoul: Defense Research Institute, - 2003. P.7-8. 김철환. 방위산업의 이론과 실제 // 국방대학교, - 2003. P.7-8.

The defense industry has various characteristics distinguished from the general civil service industry. First, in terms of demand, unlike the private sector market, the defense industry is limited in marketability as the government usually is the only consumer. That`s why the main suppliers are usually either financed by government or monopoly/olygopoly structure. In other words, relatively accurate demand can be predicted based on the government's plan.[38]

Second, in terms of supply, it is an industry that takes the form of a supply-exclusive market in which a specific company monopolizes supply of an exact product and has higher barriers to market entry than other industries.[39]

Third, in the private sector industry, price is an important factor in purchasing as there is a large number of consumers for a large number of supplies, but in the defense industry, the reliability and performance of equipment acts as a more important factor than price in the mutual monopoly and oligopoly position. Fourth, defense companies are required to expand production capacity in case of emergency, so the need of maintaining previously invested fixed assets is high. [40]

Fifth, due to the importance of R&D, high-level security is required. If the technology or production information used are leaked to an enemy or competitive country, it can cause a fatal blow to national security and economy. Therefore, when domestic defense companies try to enter overseas markets or make domestic investments, mergers, and joint ventures by overseas defense companies, they are bound to be sensitive to various regulations and security.[41]

On the other hand, Republic of Korea's defense industry, first of all characterized as comprehensive security industry that guarantees independence (independent defense) of state actions, enhancing physical and psychological stability to the state and people, and ensuring stable economic activities. Second, it is a high-value-added intensive industry in which high-tech technology is fused. Third, it is a multi-variety small-volume production system industry that requires investment and maintenance of large-scale facilities. Profitability in the sector is bound

[38] Hwang In Bong. Market Analysis of the Defense Industry and Support Measures for Revitalizing Defense Export // a master's thesis at Sungkyunkwan University, Seoul. 2009. – P. 23-25. 황인봉. 방위산업 시장분석과 방산수출 활성화 지원방안 // 성균관 대학교 석사학위 논문. 2009. – P. 23-25.
[39] Ibid. – P. 27-30.
[40] Song Young Il, Woo Je Wan. An Empirical Study on the Factors Influencing Management Performance of the Defense Industry // Seoul: Defense Policy Research Vol. 24, No. 2, Summer 2008. - p.196. 송영일, 우제완. 방위산업의 경영성과 영향요인에 대한 실증연구 // 서울 : 국방연구원 「국방정책 연구」 제 24 권 제 2 호, 2008 년 여름. - p. 196.
[41] Ibid. – pp. 197-200.

to decrease compared to general manufacturing industries. Fourth, it forms a bilateral monopoly market structure with limited suppliers and consumers.[42]

According to this we can conclude that in South Korea defense industry is a national security asset and a power source that contributes to the development of the national industry. The capacity of the defense industry can function as a deterrent to war by supplying the equipment and technology required for military construction and serves as a basis for ensuring the independence of state actions. In addition, the equipment and technology supplied by the defense industry are related to all civilian industries such as machinery, electronics, communication, chemistry, and shipbuilding, so the development of the defense industry is linked to the development of the national industry as a whole. In particular, if the equipment or materials needed by South Korean military sector are procured through the domestic defense industry without purchasing them from foreign countries. As such defense budget spendings are incorporated into the flow of the national economy, creating jobs, and contributing to national growth.[43]

Last important characteristic of the defense industry is restrictions on market entry by late developing countries. In the case of general goods, substitution and new products are developed relatively quickly and the market itself changes dynamically according to consumer preferences, while defense materials have a relatively long-life cycle and are relatively stable in terms of supply and demand. The stability and low volatility of the defense export market may result in difficulty for latecomers to enter it. Major developed countries that entered the defense export market first have a long-standing technological advantage due to the nature of defense products, making it difficult for latecomers to enter the market as well. In order to break high entry barriers, technological innovation through research and development is necessary, and a huge amount of funds must be invested to develop technologies with a comparative advantage without causing intellectual property problems. In addition, various domestic and foreign regulations to protect

[42] Defense Acquisition Program Administration / Defense Industry Competitiveness Enhancement Policy // Seoul: Defense Acquisition Program Administration, 2010, p. 3. 방사청 / 방위산업 경쟁력 강화 정책 // 서울 : 방위사업청, 2010, p.3.

[43] Han Nam Sung, Kang In Ho, Park Joon Soo, Yang Young Cheol. The current environment and development strategy of the Korean defense industry // Seoul: Journal of Defense Research Institute, - 2008. Vol. 24, № 4. P. 210. 한남성·강인호·박준수·양영철. 한국방위산업의 당면환경과 발전전략 // 서울 : 국방연구원, 「국방 정책연구」 제 24 권 제 4 호, 2008 년 겨울. p.210.

key defense technologies are also acting as a kind of barrier to latecomers from entering the market.[44]

Additionally, the defense industry faces several challenges, including changing international security environment, declining defense budgets, and increasing competition. Changing geopolitical landscapes can impact the demand for defense-related products and services. For example, a shift in focus from traditional warfare to cyber warfare can require new investments in technology and expertise. Declining defense budgets can also impact the industry's ability to invest in research and development and develop new products and services. According to a report by Deloitte, global defense spending declined by 1.5% in 2020 due to the COVID-19 pandemic.[45] Increasing competition from emerging countries and non-traditional defense companies can also impact the industry. According to a report by PwC, the emergence of new technologies, such as artificial intelligence and robotics, is changing the defense industry's competitive landscape.[46]

That`s why today's defense industry is significant as a "comprehensive national security industry"[47] that contributes not only to national security but also to a country's science, technology, and economic development through the need to foster the defense industry. Therefore, each country's defense industry characteristics depend on the government's defense policy, domestic demand, ratio of defense to GDP, ratio of R&D expenses to defense expenditures, overseas exports of defense materials, government support for defense companies, and similar civil technologies.

1.2. The Significance and Main Features of Defense Export

The defense industry is engaged in the production and development of military materials for national defense. A wide range of defense products can be exported by countries engaged in the defense industry. Some common examples of defense products that are often exported

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[44] Song Young Il, Woo Je Wan. An Empirical Study on the Factors Influencing Management Performance of the Defense Industry // Seoul: Defense Policy Research Vol. 24, No. 2, Summer 2008. - p.196. 송영일, 우제완. 방위산업의 경영성과 영향요인에 대한 실증연구 // 서울 : 국방연구원 「국방정책 연구」 제 24 권 제 2 호, 2008 년 여름. - p.196.

[45] 2021 Global Aerospace and Defense Industry Outlook // Deloitte. URL: https://www2.deloitte.com/ch/en/pages/manufacturing/articles/aerospace-and-defense-industry-outlook-2021.html (access date: 26.09.2022)

[46] Global Defense Perspectives 2018 // PwC. URL:https://www.pwc.com/ee/et/publications/pub/global-defense-perspectives.pdf (access date: 30.09.2022)

[47] Ibid (access date: 30.09.2022)

include: Small Arms and Ammunition: Handguns, rifles, machine guns, and associated ammunition are frequently exported defense products; Military Vehicles: This includes armored vehicles, tanks, trucks, amphibious vehicles, and specialized vehicles used for transportation and combat purposes; Aircraft and Aerospace Systems: Military aircraft, helicopters, unmanned aerial vehicles (UAVs), and related aerospace systems are significant defense exports; Naval Vessels and Submarines: This category includes warships, patrol boats, submarines, and auxiliary vessels designed for naval operations; Missiles and Missile Defense Systems: Ballistic missiles, guided missiles, anti-aircraft missiles, anti-ship missiles, and missile defense systems are in demand for defense purposes; Communication and Surveillance Systems: Advanced communication systems, radar systems, electronic warfare systems, and surveillance equipment are essential for modern defense operations; Military Equipment and Gear: This encompasses body armor, helmets, protective gear, night vision devices, firearms accessories, and other military equipment used by armed forces; Training and Simulation Systems: Defense industries also export training and simulation systems, including virtual reality-based simulators, flight simulators, and tactical training systems.[48] Trade of items permitted to be exported by national and international regulations, including arms control agreements, export control laws, and licensing requirements is called arms export.[49] Countries typically have specific guidelines and procedures in place to ensure responsible and lawful defense exports

In general, exports of defense products bring enormous economic benefits to the exporting country. Defense exports can have significant strategic importance for both the exporting country and the importing country. For the exporting country, defense exports can help to build strategic alliances and partnerships. According to a report by the US Defense Department, defense exports can «support broader foreign policy objectives, enhance interoperability with allies and partners, and promote regional stability». For the exporting country, arms trade can contribute to its national security and sovereignty as the country can become less dependent from the other countries` arms. For this reason, countries are constantly trying to put efforts to strengthen the trade of defense goods, except in special cases where arms

[48] Won Joon Jang, Jae Pil Song, Mi Jung Kim. Climbing the Export Ladder: Government Support for Korean Defense Exports and the Path to Becoming a Big Four Exporter // Korea Institute for Industrial Economics and Trade Research Paper, No. 23/IER/28-01/04 KIET Industrial Economic Review Vol. 28, No. 1. – 11.04.2023. P. 41-54.

[49] Defense Export Overall Guide Book // Korea Trade-Investment Promotion Agency (KOTRA) [in Korean] 19-007. 2019, p.7

sales are prohibited like it was in Japan until 2014 or designated as a terrorist country by the international community.[50]

Expanding arms exports offers several advantages, including the potential to replace costly imports of weapons systems with domestic production and enhance equipment operation efficiency by enabling the procurement of repair parts within the country. In addition, many costs for the development of defense products can be reduced through exports. [51] It happens, because the increase in the quantity of production due to export demand leads to a decrease in unit production costs, which directly contributes to the reduction of the defense budget.[52]

In addition, exports of military products enhance the country's influence over the target country. Countries that import weapons systems rely on military support as well as related military procedures from exporting countries. As a result, active exchange and cooperation are achieved between the two countries, and in the process, the exporting country can exert the influence over the importing country.[53]

If defense export is achieved through defense diplomacy, it is necessary to contribute to the national interest by creating a virtuous cycle in which defense exchange cooperation can be further expanded and deepened. The characteristics of defense exports are clearly distinguished from exports of general items in terms of the nature of target customers and items. First, in the case of general items, when exported, companies and citizens from other countries consume them. In this case, free market principles determine demand, supply, and price of exported products. As previously mentioned, foreign governments are the primary customers in the case of arms exports. Consequently, there are numerous international restrictions in place that govern direct negotiations between exporters and the government of the importing country. These restrictions serve as a framework to ensure responsible and regulated arms trade practices globally. Also, foreign governments do not import just by market logic. Certain factors, such as

[50] Han Nam Sung, Kang In Ho, Park Joon Soo, Yang Young Cheol. The current environment and development strategy of the Korean defense industry // Seoul: Journal of Defense Research Institute, - 2008. Vol. 24, № 4. P. 216-217. 한남성·강인호·박준수·양영철. 한국방위산업의 당면환경과 발전전략 // 서울 : 국방연구원, 국방정책연구, 제 24 권 제 4 호, 2008 년 겨울. p.216-217.

[51] Defense Trade Report // US Defense Department, 2020.

[52] Oh Won Yong. Practical intelligence/defense information collection and defense export improvement measures // Ministry of Defense, Research Service Project, 2006. P 16. 오원용. 실질적인 첩보/방산정보 수집과 방산수출 향상 방안//국방부 연구용역 과제, 2006. P. 16.

[53]Oh Won Yong. Practical intelligence/defense information collection and defense export improvement measures // Ministry of Defense, Research Service Project, 2006. P. 17-18. 오원용. 실질적인 첩보/방산정보 수집과 방산수출 향상 방안//국방부 연구용역 과제, 2006. P.17-18.

political ties between exporting and importing countries and regulations of exporting and importing countries, can act as dominant decision-making factors.[54]

Second, the process of defense exports is typically more complex and time-consuming compared to general items. Unlike regular commercial products, defense exports involve significant considerations related to national security, strategic interests, and international regulations. As a result, the timeline from product planning to export can be quite lengthy. One of the reasons for this extended timeframe is that importing countries usually have mid- to long-term military power construction plans in place. These plans dictate their defense requirements and guide their procurement decisions. Therefore, defense exports need to align with these plans, and the exporting company must ensure that their products meet the specific needs and specifications of the importing country. This often involves extensive negotiations, discussions, and adjustments to ensure compatibility and effectiveness.[55]

Moreover, defense exports typically require government intervention and approval. Governments play a crucial role in overseeing and regulating arms trade to ensure compliance with international obligations, security concerns, and foreign policy considerations. The involvement of governments adds additional layers of scrutiny, documentation, and bureaucratic processes, which contribute to the lengthier export timeline. While there may be some exceptional cases where defense exports proceed relatively quickly, they are not the norm. The intricate nature of defense trade and the involvement of multiple stakeholders, including governments, make it challenging for any company to manage the entire process independently. Cooperation and coordination between the exporting company and relevant government authorities are vital to navigate the complexities of defense exports and ensure compliance with all applicable regulations and security protocols.[56]

Third, when it comes to arms exports, the involvement of the government is crucial due to the sensitive nature of defense products and the potential impact on national security. Unlike general items, where manufacturing for export can proceed independently based on market

[54] Han Nam Sung, Kang In Ho, Park Joon Soo, Yang Young Cheol. The current environment and development strategy of the Korean defense industry // Seoul: Journal of Defense Research Institute, - 2008. Vol. 24, № 4. P. 210. 한남성·강인호·박준수·양영철. 한국방위산업의 당면환경과 발전전략 // 서울 : 국방연구원, 국방 정책연구, 제 24 권 제 4 호, 2008 년 겨울. p.210.

[55] Cho Sung Mi and Choi Seok Cheol. Improvement of the export support system to revitalize defense exports // Journal of the Korean Society of Defense Management Analysis, Vol.39, №1. - 2013. P. 59-72. 조성미, 최석철. 산수출 활성화를 위한 수출지원제도 개선방안 // 한국국방경영분석학회지, Vol.39, №1. - 2013. P. 59-72.

[56] Ibid. - P. 70-72.

demand, arms exports are closely linked to the domestic acquisition system. The government plays a significant role in setting standards and regulations for arms production, ensuring that the manufacturing process adheres to stringent quality control measures and meets specific technical specifications. This is essential to maintain the integrity and effectiveness of defense products and to ensure that they comply with international norms and standards. Additionally, the government's involvement in arms exports helps safeguard national interests and strategic priorities. It allows the government to assess the potential risks and benefits associated with each export transaction, ensuring that the export of sensitive technologies, equipment, or weapons systems does not compromise national security or undermine regional stability.[57]

Moreover, the government's oversight is important for legal compliance. Arms exports are subject to various international treaties, agreements, and export control regimes designed to prevent the proliferation of weapons and technologies to unauthorized or high-risk entities. The government establishes and enforces export control laws and regulations to ensure that arms exports are conducted in accordance with international obligations and in line with national security interests. In the shipbuilding industry, as an example, the recognition of proven technology by the government is significant for arms exports. This recognition serves as an assurance to foreign customers that the manufactured ships meet high-quality standards and possess the required capabilities. The government's involvement in certifying the technology and ensuring compliance with applicable regulations adds credibility and enhances the competitiveness of the exported products in the international market. However, in order to reduce the risks associated with imports of defense products, the government of the importing country still has to verify its performance. In addition, to enhance price competitiveness, it is necessary to have domestic demand to expect a decrease in unit production-unit prices due to mass production. Therefore, it is almost impossible for any company to develop and export products that do not require their domestic own military needs.[58]

For the above reasons, the government is directly or indirectly involved in the development of military products in any country and manages the R&D projects of defense materials or supports R&D expenses. The government is also closely involved in the production

[57] Keith Hartley. The Arms Industry, Procurement and Industrial Policies // Handbook of Defense Economics, Vol.2, №.1, 2007.

[58] Jeong Yeon Bong. National Defense Diplomacy Promotion Plan to Revitalize Defense Export // Seoul: Korea Defense Research Institute 's Defense Policy Study Journal, Summer. – 2010. P. 51. 정연봉. 방산수출 활성화를 위한 국방외교 추진방안 // 서울 : 국방연구원, 국방정책연구. – 2010. P. 51.

and export plan of arms products, and in charge of the government's quality assurance for export. As such, defense exports require joint efforts and cooperation between the government, the national military sector, and arms production companies.

Moreover, there is a direct connection between national security concept of a country and arms export policies as a country's national security concept shapes its decision-making processes for arms exports. A country's national security concept outlines the principles, goals, and strategies it uses to address potential security challenges. It also guides its defense procurement and manufacturing policies, including arms exports. Countries with a strong sense of national security may have more stringent arms export policies to prevent their weapons from being used against them. For example, the United States has strict arms export policies because it considers the proliferation of weapons to be a significant threat to its national security.[59]

On the other hand, some countries may have more relaxed arms export policies to generate revenue or establish alliances. In some cases, arms exports can be used as a tool of foreign policy to influence other countries' behavior. For example, China has been suspected of using arms exports to gain influence in Africa and Latin America.[60] In contrast, Germany has adopted a more restrictive approach to arms exports, which has been influenced by its history and commitment to human rights. In 2019, Germany announced that it would halt arms exports to Saudi Arabia, citing concerns over the country's role in the Yemen conflict.[61]

Another example is the United States, which has a national security concept that emphasizes the protection of American interests, both at home and abroad. This concept has driven the country's arms export policies, which have been used as a tool of foreign policy to build relationships with other nations and support US allies around the world. The US government has been careful to ensure that its arms exports do not harm national security, but at the same time, the country has used arms exports as a way to promote its strategic interests and support its allies.[62]

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[59] Bjerregaard, L. The Relationship between National Security Concepts and Arms Export Policies // Oxford University Press: International Studies Quarterly 50, №. 2. – 2006. P. 267-289.
[60] Schreer, B. Arms Export Policies and National Security // The Diplomat. 08.02.2019. URL: https://thediplomat.com/2019/02/arms-export-policies-and-national-security/.
[61] Germany to halt arms exports to Saudi Arabia // BBC News. 21.02.2019. URL: https://www.bbc.com/news/world-europe-47310267 (access date: 05.12.2022).
[62] Bjerregaard, L. The Relationship between National Security Concepts and Arms Export Policies // Oxford University Press: International Studies Quarterly 50, №. 2. – 2006. P. 267-289.

South Korea is not an exception. It`s national security concept is based on the «three pillars» of security: national defense, diplomacy, and economic power.[63] As such South Korea's arms export policies are closely tied to its national security concept, driven by both economic and strategic considerations. The country seeks to export advanced defense technologies that are comparable to those of its allies, such as the United States. This approach is driven by the desire to establish South Korea as a major player in the global defense industry and to enhance the country's reputation as a reliable partner in the region.[64] At the same time, South Korea's self-reliance policy means that the country is cautious about exporting technologies that could be used against its own interests or those of its allies. As a result, South Korea places strict controls on the export of sensitive defense technologies, such as missile defense systems and advanced fighter jets.[65] More precisely it is going to be discussed in the third chapter.

Nevertheless, today, most countries are actively supporting arms exports of domestic companies, strengthening international cooperation, and taking measures to revitalize defense exports at the government level.[66] In the analyses above we observed that the defense industry contributes to the national economy in various ways, and exports of defense products account for the largest proportion in terms of visibility in it. Overseas exports of military products not only maintain the foundation of the defense industry domestically, but also use it as an important means of expanding its influence politically, economically, militarily, and diplomatically as well as developing its defense industry through international cooperation abroad.[67]

As such, arms exports play a very important role in maintaining the foundation of the domestic defense industry. Due to the nature of the industry, domestic demand and overseas exports must be considered together to improve economic feasibility. Therefore, the R&D cost and facility investment cost of the weapon system should be recovered by increasing the export

[63] National Security Strategy// Ministry of National Defense, Government of the Republic of Korea. 2017.
[64] Defense Industry Export Strategy // Ministry of Trade, Industry and Energy, Government of the Republic of Korea. 2016.
[65] Ibid.
[66] Richard Hooke. The Defense Industry in the 21st Century // PricewaterhouseCoopers. – 2005. P. 5.
[67] Hong Sung Pyo. Measures to enhance Korea's competitiveness in defense exports // Seoul: Korea Institute for Defense Analyses. – 2007. P.15 홍성표. 한국의 방산수출 경쟁력 제고 방안 // 서울 : 국방대. – 2007. P.15.

of military products, and the management base of defense companies can be strengthened by increasing the utilization rate of the industry.[68]

In this way, according to Yoo Byung Tae, the activation of arms exports greatly helps to form a 'circular structure' of the defense industry. In addition, arms exports are related to the localization of the weapon system. First, it can directly contribute to the localization of weapons by cultivating the ability to acquire technology and procure parts by directly participating in the construction of trade-off or foreign weapons systems.[69]

Second, in order to effectively compete in the global arms market, it is imperative to develop high-quality military products with exceptional performance. This often necessitates collaborative efforts and joint research and development (R&D) initiatives involving defense companies, research institutions, and government entities. Joint R&D projects offer several advantages in the development of military products. They allow for the pooling of expertise, resources, and technological capabilities from multiple stakeholders, resulting in the creation of cutting-edge defense technologies and innovative solutions. By sharing knowledge and collaborating on R&D, participating organizations can leverage their respective strengths and overcome technical challenges more efficiently. Furthermore, joint R&D initiatives enable access to a broader knowledge base and foster technological advancements. They facilitate the exchange of ideas, best practices, and lessons learned among participating entities, which can lead to breakthrough innovations and improved product performance. By working together, defense companies can tap into specialized expertise and leverage the collective experience of industry leaders and research institutions, ensuring the development of competitive military products that meet the evolving needs of the market.[70]

Collaborative R&D efforts also promote cost-sharing and risk reduction. Developing military products often entails substantial investment, extensive testing, and compliance with rigorous standards and regulations. Through joint initiatives, the financial burden can be

[68] Yoo Byung Tae. Research on the Improvement of the Defense Material Import and Export System. / Research on Defense Industry Current Policy // Seoul, Korea Defense Industry Association. – 1998. P.261. 유병태. 방산물자 수출입 업무체계 개선연구 / 방위산업현안정책연구 // 서울 한국 방위산업 진흥회. – 1998. P. 261.

[69] Yoo Byung Tae. Strategic Directions for Promotion of Export of Defense Materials / 99 Defense Policy Symposium: Policy Issues for the Development of the Defense Industry in the 21st Century // Seoul Defense Association. – 1999. P.11. 유병태. 방산물자 수출 촉진을 위한 전략방향 / 99 방산 정책 심포지엄 : 21 세기 방위산업 육 성을 위한 정책과제 // 서울 한국방위산업진흥회. – 1999. P. 11.

[70] Keith Hartley. The Arms Industry, Procurement and Industrial Policies // Handbook of Defense Economics, Vol.2, №.1, 2007.

distributed among the participating organizations, making R&D projects more economically viable. Additionally, sharing the risks associated with product development mitigates individual entities' exposure and enhances the overall success rate of the projects. Moreover, joint R&D initiatives have the potential to strengthen international partnerships and foster defense cooperation. By collaborating on the development of military products, countries can establish closer ties, build trust, and enhance their capabilities for joint operations and interoperability.[71] These partnerships can extend beyond R&D to encompass areas such as joint production, technology transfer, and long-term defense cooperation agreements, creating mutually beneficial relationships in the global arms market. Therefore, efforts to develop core technologies for weapons systems and efforts to localize parts should be premised.

Third, since arms exports can contribute to the localization of the weapon system, it can become a condition that easily promote arms exports. In terms of diplomatic and military cooperation, it is necessary for the government agency in charge of defense projects to take the lead in contracting and managing. That`s why fostering of the arms export can`t be enabled without strong promotion of local defense industry under the official governmental policies.[72]

Considering the overview of the export trends conducted above it is possible to conclude, that in order to supplement the necessary technology of the domestic defense industry and enhance arms exports, further governmental measures are required: securing export markets through initial cooperation in acquisition; strengthening joint export marketing and export support organizations; attracting foreign direct investment and expanding international defense cooperation. In addition, many foreign scholars and researchers have suggested institutional development measures to revitalize and increase arms exports. Moreover, the main concept of national security plays vital role in shaping any country`s policies related to defense industry and arms export. Most of the studies covered importance of establishing an organization dedicated to arms exports, financial support for defense exports such as deferred payment, export finance, support system to secure price competitiveness of defense products, R&D expenses, technology

[71] Measures to boost and support R&D investment by defense companies // Defense Industry Promotion Association, 2011.방산업체 자체 R&D 투자 활성화 및 지원방안 // 방위사업청/한국방위산업진흥회, 2011.
[72] Stephanie G. Neuman. Power, Influence, And Hierarchy: Defense Industries In A Unipolar World // Defense and Peace Economics, Taylor & Francis Journals, ISSN 1024-2694. – 2010. Vol. 21. P. 105-134.

fee exemption, activation of defense exports through trade-off, re-installing the defense industry development fund, expanding R&D support, and reducing taxes.[73]

[73] Johannes Blum. Arms production, national defense spending and arms trade: Examining supply and demand // European Journal of Political Economy, Elsevier. – 2019. Vol. 60(C).

Chapter 2. The Evolution of South Korea's Defense Industry: formation of National Policies and its current status

The defense industry of South Korea has undergone significant transformations over the years, with the formulation of national policies and the emergence of new technologies. As it was analyzed in the previous chapter fostering of the arms export can`t be enabled without strong promotion of local defense industry under the official governmental policies. To understand how South Korean government has emerged its export policies it is necessary to overview it`s developmental process.

This chapter explores the evolution of South Korea's defense industry, from its early stages to its current status, and analyzes the policies that have shaped it. Additionally, it examines the current state of the industry, including the challenges it faces and the opportunities for future growth.

2.1. The Development of National Defense Policies

Development of South Korean defense industry policy started already after the establishment of the government in 1945, under the leadership of the government, which recognized the need for independent weapon production and R&D. Consequently in 1948 defense strategy of «joint defense» was chosen.[74]

South Korea succeeded in signing Mutual Defense Treaty with the U.S. in 1953, laying the groundwork for a new defense strategy. The Korea-U.S. Mutual Defense Treaty was officially signed on October 1, 1953, and the treaty officially came into effect on November 18, 1954. Therefore, despite of the fact, that the Rhee Syngman government's combined defense strategy failed to prolong peace due to the outbreak of the Korean War, it was able to lay the foundation for solid future defense industry by establishing a new Korea-U.S. alliance system called the Korea-U.S. Mutual Defense Treaty. Based on the treaty, the alliance has become the

[74] Ko Hee Jae, Lee Yong Jun. Establishment of the concept of defense industry security in connection with national security // Journal of the Korean Society of Industry and Technology, Vol. 20, №12. - 2019. P. 265-270. 고희재,이용준. 국가 안보와 연계한 방위산업 보안 개념 정립 // 한국산학기술학회논문지, Vol.20, №12. - 2019. P. 265-270

basis of national security and defense strategies that successfully accelerate South Korea's industrial modernization.[75]

However, the systematic implementation of the nation's integrated defense policy was not established until the mid-1960s, and the basic defense policy was first represented only in 1966. When President Park Chung Hee launched the Third Republic in 1963, he focused on «modernizing the country and building a foundation for an independent economy» and «strengthening security, export-oriented economic development by the means of Korea-U.S. alliance».[76] The defense policy was concentrated on the promotion of military cooperation with the U.S., strengthening of the diployment policy in 1964 at the request of the U.S., modernization of the South Korean military industry, strengthening of the defense systems against North Korea's espionage and provocations. [77] Additionally, during this period in 1962 the Korea Trade-Investment Promotion Agency (KOTRA) was established. Subsequently it will become a government agency that plays a crucial role in promoting trade and investment activities, including arms exports.

Moreover, President Park Chung Hee promoted the dispatch of troops to Vietnam in 1964 and was using this as an opportunity to promote the current South Korean military development with the support of the United States. However, following attack on the Blue House on January 12, 1968, the hijacking of the U.S. intelligence warship Pueblo on November 2, shooting down of the U.S. BC-121 aircraft on April 15, 1969, and the withdrawal of U.S. troops from South Korea, the policy of self-reliant defense was emerged to promote national security. Accordingly, President Park Chung Hee emphasized the urgent need to foster the defense industry and development of research and technology and ordered the Ministry of National Defense to establish a department dedicated to the defense industry on February 2nd. Under Presidential Decree No. 5267 the Defense Science Research Institute was established in December 1972, and the construction of the M-16 rifle factory was completed. [78]

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[75] Kim Dong Gyu, Shin Yong Do. National Economy and Defense Industry // Seoul: National Defense University, 2001. - pp. 235-238. 김동규, 신용도. 국가경제와 방위산업 // 서울: 국방대학교, 2001. - pp. 235-238.

[76] National Defense 1950, 6 - 1961, 5 // Ministry of National Defense, 1982. - P. 81. 국방사 1950, 6 - 1961, 5 // 국방부, 1982. - P. 81.

[77] 국방군사연구소,1995, p. 128. Defense Military Research Institute,1995, p. 128.

[78] Seo Woo Deok, Shin In Ho, Jang Sam Yeol. 40 years of Korean defense industry, history of endless challenges // Korean Defense Industry Association (Planet Media), 2015. - p. 30. 서우덕, 신인호, 장삼열. 한국 방위산업 40 년, 끝없는 도전의 역사 // 한국방 위산업학회 (플래닛미디어), 2015. - p. 30.

Since then, in the 1970s, a full-fledged defense industry promotion policy was established to cope with rapid changes in the security environment due to the U.S. President Nixon's declaration of Guam, including the defeat of Vietnam. The government established the Agency for Defense Development (ADD) in 1968 to implement new policies to protect and foster the domestic arms production and enacted the Defense Industry Special Measures Act in 1973. In addition, the Defense Tax was enforced in 1975 to lay the financial foundation necessary for fostering the defense companies.[79]

The domestic defense industry promotion policy, which was emerged in the early 1970s, mainly began with the assembly and license production stage of American weapons parts due to Korean weak domestic defense capability and defense technology level. During this period the nation`s defense industry was centered on developing of weapons production technology, training professional personnel, establishment of the industrial base to produce weapon components, and raisin a sufficient defense budget. Also, the four major directions were chosen: casting ship factories, special steel factories, heavy machinery factories, and shipyards. Through many trials and errors to solve fundamental production problems, President Park Chung Hee established a «Simultaneous Development Strategy for Defense, Heavy and Chemical Industries» and appointed Cheong Wa Dae to create a so-called Control Center to directly manage this. On November 9, 1971, the government ordered the Agency for Defense Development to promote Lightning Project[80] as a special measure to foster the defense industry and the heavy and chemical industry, and asked Cheong Wa Dae to create a second economic secretariat. On November 10, 1971, Vice Minister Oh Won Chul was appointed as the chief of the second secretary's office for economy and was in charge of the defense industry and heavy chemical industry construction.[81]

It was Oh Won Chul who proposed a strategy for simultaneous development of the defense, the heavy and chemical industries. Oh Won Chol decided that the individual parts

[79] Ko Hee Jae, Lee Yong Jun. Establishment of the concept of defense industry security in connection with national security // Journal of the Korean Society of Industry and Technology, Vol. 20, №12. - 2019. P. 265-270. 고희재,이용준. 국가 안보와 연계한 방위산업 보안 개념 정립 // 한국산학기술학회논문지, Vol.20, №12. - 2019. P. 265-270.

[80] Lightning projects were carried out twice in the 1970s and 2010s. In the 1970s, the lightning project was a two-time operation in 71 and 72 and mainly targeted infantry basic weapons such as M2 carbines, M1 rifles, 60mm mortars, 3.5-inch missiles, grenades, and anti-tank mines.

[81] Ra Mi Kyung. A Critical Review of the Korean Defense Industry // Korea Northeast Asian Society, Vol. 20, №4. - 2015. P. 223-230. 라미경. 한국 방위산업에 대한 비판적 고찰 // 한국동북아학회, Vol.20, №4. - 2015. P. 223-230.

would be manufactured and developed by a competent private company for the production of heavy and chemical products, and then assembled by a specially designated company to complete the weapons construction. Under this policy, President Park Chung Hee's first task in the Siro Economic Office was to prepare a basic policy for lightning projects and weapons development with the cooperation with the Ministry of National Defense and the Defense Research Institute.[82]

According to the «Basic Policy for Weapon Development» issued by the Blue House Economic Secretary's Office, «The military sector maintained 630,000 troops, similar to the amount during the ceasefire until 1973, and as a result of the reinforcement of the defense industry, arms industry produced 105mm Howitzer M3, M1 8-inch Howitzer, 175mm Self-Propelled Gun M107».[83] Consequently, the South had 760 tanks compared to 1,680 tanks in the North, and 2,530 artillery pieces in the field compared to 4,156 in the North. Furthermore, in addition to excited 67 combat ships since 1964, 16 high-speed ships were deployed in 1973, and the Air Force achieved a breakthrough power increase from F-86 fighter jets to F-4, F-5, and so on. However, until 1973, the South Korean military's strength was inferior in quantity and quality by about 2 to 1 compared to the North Korean military forces, and as a result of the evaluation of the North Korean military's power index.[84]

In addition, the Eight-Year Defense Plan (1974-1981), named Yulgok Project in 1974, began to localize inorganic production for the first time in connection with the government's third economic development plan.[85] As a result of the government's aggressive policy to foster the defense industry, defense research institutes and defense companies focused on weapons development, localization of basic weapons such as rifles, mortar, ammunition and supplies were achieved in the late 1970s.

The Yulgok project enabled the achievement of modernization of the Korean military sector. President Park Chung Hee's Five-Year Modernization Plan (1971-1975), created for the

[82] Ra Mi Kyung. A Critical Review of the Korean Defense Industry // Korea Northeast Asian Society, Vol. 20, №4. - 2015. P. 242. 라미경. 한국 방위산업에 대한 비판적 고찰 // 한국동북아학회, Vol.20, №4. - 2015. P. 242.
[83] Kim Chul Hwan. Theory and Practice of Defense Industry // Seoul: National Defense University. – 2002. P. 27-30. 김철환. 방위산업 의 이론과실제 // 서울: 국방대학교. – 2002. P. 27-30.
[84] Ra Mi Kyung. A Critical Review of the Korean Defense Industry // Korea Northeast Asian Society, Vol. 20, №4. - 2015. P. 223-242. 라미경. 한국 방위산업에 대한 비판적 고찰 // 한국동북아학회, Vol.20, №4. - 2015. P. 223-242.
[85] Won Cheol Oh. Korean Economic Construction: Engineering Approach // Kia Economic Research Institute. 1996. - p. 38, p. 141. 오원철. 한국형 경제건설: 엔지니어링어프로치 // 기아경제연구소, 1996, - p. 38, p. 141.

purpose of reduction of U.S. troops in South Korea, allowed a breakthrough increase in military power, but the U.S. promised free aid ($1.596 billion) turned into a FMS loan debt accounted as more than $988 million.[86] In January 1973, President Park Chung Hee declared heavy and chemical industrialization, and at the same time, prepared a breakthrough for the modernization of military equipment and the development of the defense industry.

The Yulgok project continued until 1992 and consisted of main three stages. The first one lasted from 1974 to 1981 and was concentrated on securing defense capabilities against North Korea. At that time country produced M-16, launched high-speed ships, UH-1H and 500-MD helicopters construction and purchased F4 fighter jets. At the period of 1982-1986 the government worked mainly on the improving of the quality of the products. F-5 fighter jets technology production was introduced, field artillery and armored vehicle tank development and frigate and patrol ships construction were launched. Since 1987 till 1992 there was a policy aimed to respond nuclear threats from North Korea. Mass-production of armored vehicles, KDX and Submarine patrol ships was launched, and F-16 was introduced.[87]

During this time The Export-Import Bank of Korea (ExImbank) was also established in 1976, operating under the Export-Import Bank of Korea Act, which was enacted in 1969. The primary objective of its establishment was to provide long-term loans to import and export companies at favorable interest rates. Since 1987, ExImbank has been the primary source of financial support for foreign economic cooperation funds, and since 1991, it has played a crucial role in funding inter-Korean economic cooperation projects. Since its establishment till nowadays it plays one of the major roles in supporting South Korean arms export related companies.[88]

However, with the launch of the Fifth Republic under Chun Doo Hwan administration in the 1980s, the defense industry policy changed from domestic R&D-oriented to overseas technology production and advanced overseas arms acquisition policies. As the government

[86] Won Cheol Oh. Korean Economic Construction: Engineering Approach // Kia Economic Research Institute. 1996. - p. 142. 오원철. 한국형 경제건설: 엔지니어링어프로치 // 기아경제연구소, 1996, - p. 38, p. 142.
[87] Jeong Soon Mok. The role of local governments in fostering the defense industry // Korea Institute of Defense, Vol. 30, №3. - 2015. P. 165-198. 정순목. 방위산업 육성을 위한 지방정부의 역할 // 한국국방연구원, Vol.30, №3. - 2014. P. 165-198.
[88] History of establishment and current functions of export import bank // official website of KITA 17.05.2023. 수출수입은행 설립 연혁 및 현재 기능 // 공식 웹사이트 KITA 17.05.2023. URL:https://www.kita.net/asocGuidance/notice/noticeDetail.do;JSESSIONID_KITA=54307425DA8CA26A2BC1C792CB1A056B.Hyper?nIndex=1833385 (access date: 26.03.2023).

focused on introducing foreign technologies and joint production, the tax and financial support for defense companies and defense R&D expenses essential for mid- to long-term defense industry development were reduced. Therefore, the Memorandum of Understanding on Defense Technology Cooperation was signed in 1988 to actively introduce or co-produce advanced weapons development technologies possessed by allies such as the United States while avoiding development risks and high costs associated with domestic R&D. According to history professor of Seoul National University, Kim Kwang Yeol, Chun Doo Hwan administration's actions can be explained due to the U.S. pressure to stop the successful development of white bear missiles (Nike Hercules Korea-1) in 1978. In fact, the development of Korean missiles resumed shortly after the Burmese Aung San Terror incident and the government succeeded in launching a basalt missile in 1985.[89]

Furthermore, Dr. Kim Dong Soo succeeded in launching of K9 self-propelled artillery development and exports. Since 1994, he has played a decisive role in developing the world's best self-propelled artillery with a range of 40 kilometers by successfully solving key challenges such as range, firing speed, mobility, viability, and ammunition stockpile. In addition, while exporting K9 self-propelled guns to Turkey, he served as the head of the technology evaluation team and contributed to signing an export contract worth $1 billion. [90]

In addition to localizing of the equipment and weapons, specialization and seriesization systems were implemented in 1983 to lay the foundation for defense protection and development. Based on the experience and know-how of localizing basic weapons in the 1970s, the results of defense cooperation and joint R&D between the two countries showed that 155mm self-propelled artillery, K-1 tanks, K-200 armored vehicles, F5E/F fighter jets, 500MD helicopters, and combat ships were produced in earnest. In addition, there was an important policy change because the compromise trade system was first introduced and implemented in 1982 to provide core technologies, parts exports, and maintenance equipment in return for overseas weapons purchases. At that time, the South Korean military's power index against North Korea improved

[89] Won Cheol Oh. Korean Economic Construction: Engineering Approach // Kia Economic Research Institute. 1996. - p. 278. 오원철. 한국형 경제건설: 엔지니어링어프로치 // 기아경제연구소, 1996, - p. 278.

[90] Moon Jong Yeol. Defense Industry Financial Expenditure Performance and Challenges: Intensifying Defense Industry Crisis and Core Military Dependency // Budget Analysis, No. 20. – 09.2008. P. 15. 문종열. 방위산업 재정지출 성과와 과제:방 위산업 위기와 핵심군사력 해의존도 심화 // 예산현안 분석, 제 20 호. -2008 년 9 월. P. 15.

significantly from 60.4% at the end of 1986 to 71% as of the end of 1992, but it was found that much supplementation was still needed to expand its independent deterrence power. [91]

In the 1990s, as the heavy and chemical industry became competitive in international market, external technology cooperation and joint production were emerged based on country`s accumulated defense technology and weapons system capabilities. At that time, the defense industry's weapons production capacity was improved to a level that could meet military requirements in artillery, and production of tanks and armored vehicles was improved to a level that could be independently developed and produced except in the country for some core parts. At that time, the government's defense policy recognized the importance of state-of-the-art weapons such as guided electronic weapons in modern warfare through the Gulf War, focusing on diversification of the arms purchase market, high-tech transfer with advanced countries, and joint R&D.[92]

Therefore, as a result of focusing on precision-guided minition, submarines, and aviation, which are relatively inferior to North Korea and neighboring countries, surface-to-air missiles and KDX destroyers have been developed and produced, and 209 class submarines, K1A1 tanks, and F-16C/D fighters have been assembled. In addition, the fact that the Civil and Military Combined Use Technology Project Promotion Act was enacted in 1998 and an institutional foundation for civil and military combined technology and spin-off/on was established has important policy implications.[93]

By expressing its national security interests on the global stage, South Korea demonstrated its commitment to international non-proliferation efforts by becoming an early participant in the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies in 1996.[94] The country's normative approach to nonproliferation, along with established manufacturing capabilities and implementation of necessary export

[91] Kim Chul Hwan. Theory and Practice of Defense Industry // Seoul: National Defense University. – 2002. P. 30-33. 김철환. 방위산업 의 이론과실제 // 서울: 국방대학교. – 2002. P. 30-33.
[92] Jeong Soon Mok. The role of local governments in fostering the defense industry // Korea Institute of Defense, Vol. 30, №3. - 2015. P. 165-198. 정순목. 방위산업 육성을 위한 지방정부의 역할 // 한국국방연구원, Vol.30, №3. - 2014. P. 165-198.
[93] Moon Jong Yeol. Defense Industry Financial Expenditure Performance and Challenges: Intensifying Defense Industry Crisis and Core Military Dependency // Budget Analysis, No. 20. – 09.2008. P. 16-20. 문종열. 방위산업 재정지출 성과와 과제:방 위산업 위기와 핵심군사력 해의존도 심화 // 예산현안 분석, 제 20 호. -2008 년 9 월. P. 16-20.
[94] Anthony, I., Bauer, S. Transfer controls / SIPRI Yearbook 2006: Armaments, Disarmament and International Security // Oxford University Press: Oxford, 2006.

control legislation, enabled it to participate in the Wassenaar Arrangement.[95] In addition to the Wassenaar Arrangement, South Korea also became a member of other important multilateral export control regimes. It joined the Nuclear Suppliers Group (NSG) in 1995, the Australia Group in 1996, and the Missile Technology Control Regime (MTCR) in 2001. These memberships further underscored South Korea's commitment to promoting global non-proliferation efforts. The development of South Korea's export controls was further stimulated by the adoption of UN Security Council Resolution 1540 in 2004. This resolution mandates all UN member states to establish measures aimed at controlling the risk of proliferation of weapons of mass destruction (WMD) and their means of delivery. South Korea's adherence to this resolution helped strengthen its export control framework and enhance its contribution to global non-proliferation efforts.[96]

2.2 The Current Status and Policy Trends

In the 2000s, the domestic defense industry faced a period of further development. In particular, with the establishment of the Defense Acquisition Program Administration (DAPA) in 2006 and enacted Defense Project Act, the defense industry policy and arms acquisition fields scattered in the Ministry of National Defense, such as Army, Navy, Air Force Headquarters, and Procurement Headquarters started to be integrated. The government has established a new agency, the Defense Export Promotion Center (DEPC) to promote defense exports and support South Korean defense companies in their efforts to enter new markets. Based on South Korea's remarkable economic growth and the world's highest industrial base such as IT, machinery, and automobiles, its defense industry has become the world's 10th largest defense budget and the world's 5th largest arms buyer except for major advanced countries such as the U.S., China, Russia, and the U.K by 2008. In addition, through continuous technological cooperation with R&D and advanced countries and enhancing joint R&D capabilities, military demand for major weapon systems and parts were met, and overseas exports of some weapon systems such as tanks and armored vehicles showed visible growth.[97]

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[95] Guidelines & procedures, including the Initial Elements // Wassenaar Arrangement, 12. 2011. URL: http://www.wassenaar.org/guidelines/, Appendix 4.

[96] Jeong Soon Mok. The role of local governments in fostering the defense industry // Korea Institute of Defense, Vol. 30, №3. - 2015. P. 165-198. 정순목. 방위산업 육성을 위한 지방정부의 역할 // 한국국방연구원, Vol.30, №3. - 2014. P. 165-198.

[97] Choi Seok Cheol, Yang Mi Ho. Research on Export Promotion of Defense Products / Korean Journal of Defense Industry // Seoul: Korea Defense Industry Association. – 2002. P.74. 최석철, 양미호. 방산물자 수출촉진방안 연구 / 한국방위산업학회지 // 서울: 한국방위산업학회. – 2002. P.74.

On the other hand, according to Roh Soo Hoon, South Korean military's development of the conventional weapons-oriented defense industry since 1994 has been smoothly promoted, and a lot of equipment of the Army, Navy, and Air Force supported by the US military in the past has been completely replaced with localized K-series (series produced by South Korea) ones. Since the 2000s, it has focused on improving the qualitative defense capabilities centered on the high-precision weapon system and establishing a real-time combat performance system for «monitoring, reconnaissance, determination, and strike» that enables joint combat performance of modern warfare and NCW (Network Centric Warfare).[98]

South Korea has made significant strides in exporting various conventional weapons to countries around the world. These exports encompass a range of military equipment, showcasing South Korea's capabilities and technological advancements in the defense industry. One notable export is the K-9 self-propelled artillery system and K-2 tanks, which have been sold to Turkey. These advanced armored vehicles provide Turkey with enhanced firepower and mobility for its defense forces. Another successful export is the KT-1 basic trainer aircraft, which has been supplied to Peru. The KT-1 serves as a reliable platform for pilot training, enabling Peru to strengthen its aviation capabilities and develop skilled pilots. South Korea has also exported the FA-50 light attack aircraft and 209 submarines to countries such as Indonesia, the Philippines, and Iraq. The FA-50 offers a versatile and cost-effective solution for aerial combat, while the 209 submarines provide underwater capabilities for maritime defense and surveillance. Furthermore, South Korea has supplied fleet guided missiles and launchers to Colombia, contributing to the country's naval defense capabilities. Additionally, naval support ships have been exported to Britain, assisting in their maritime operations, and strengthening their naval forces.[99]

According to experts, the growth of Korea's defense industry was a miracle in the defense sector, which had been developing with the Korean economic miracle that began in the 1960s and had grown into the world's 10th largest arms exporter in about 40 years. However, the defense industry in South Korea encountered crisis due to the asymmetric strategic threat posed

[98] Ra Mi Kyung. A Critical Review of the Korean Defense Industry // Korea Northeast Asian Society, Vol. 20, №4. - 2015. P. 223-242. 라미경. 한국 방위산업에 대한 비판적 고찰 // 한국동북아학회, Vol.20, №4. - 2015. P. 223-242.

[99] Seo Woo Duk, Shin In Ho, Jang Sam Ryeol. Korea Defense Industry 40 years, history of endless challenges // Korean Defense Industry Association, 2015. 서우덕, 신인호, 장삼렬. 대한민국 방위산업 40 년, 끝없는 도전의 역사 // 한국방위산업학회, 2015.

by North Korea. The North's focus on nuclear weapons and missile development created a significant challenge for South Korea's defense strategies and choices regarding strategic weaponry.[100] During the whole period of possessing nuclear weapons by DPRK two countries tried to negotiate the situation of tension escalation prevention.

However, by 2017, South Korea found itself in the midst of a nuclear weapons crisis, when the population and government started seriously considering nuclear weapons deployment on the territory of the country. The crisis unfolded in the early months of the year when North Korea conducted a series of missile and nuclear tests. These tests demonstrated their growing ability to launch ballistic missiles beyond their immediate region, indicating a faster-than-expected development of their nuclear weapons program, as assessed by U.S. intelligence sources. The situation was exacerbated by a joint military exercise conducted by the United States and South Korea in August, which was perceived as provocative by North Korea. The crisis reached a critical point in September when North Korea conducted its sixth nuclear test. This test heightened international tensions not only in the region but also globally. Concerns and fears grew regarding the possibility of a nuclear conflict between the two nations.[101]

This situation escalated the risk of a potential nuclear war on the Korean Peninsula to unprecedented levels. Consequently, South Korea faced one of the most significant crises of potential national devastation since its establishment in 1948. The emergence of North Korea as a nuclear-armed state and its advancements in missile technology presented a complex and urgent threat to South Korea's national security. The defense industry had to adapt swiftly to address this evolving threat landscape and develop appropriate strategies and countermeasures.[102]

The gravity of the situation demanded a comprehensive response from South Korea, involving diplomatic efforts, international cooperation, and the bolstering of its own defense capabilities. It required a multidimensional approach encompassing defense systems, intelligence

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[100] Roh Soo Hoon. Study on ways to increase exports of defense products // Seoul: National Defense University, Security Paper, 2007. - pp. 12-15. 노수훈. 방산물자 수출증대 방안 연구 // 국방대학교 안보논문, 2007. - pp. 12-15.

[101] North Korea now making missile-ready nuclear weapons, U.S. analysts say // The Washington Post. Archived from the original on 08.08.2017. URL: https://www.washingtonpost.com/world/national-security/north-korea-now-making-missile-ready-nuclear-weapons-us-analysts-say/2017/08/08/e14b882a-7b6b-11e7-9d08-b79f191668ed_story.html (access date: 10.01.2023).

[102] Seo Woo Duk, Shin In Ho, Jang Sam Ryeol. Korea Defense Industry 40 years, history of endless challenges // Korean Defense Industry Association, 2015. 서우덕, 신인호, 장삼렬. 대한민국 방위산업 40 년, 끝없는 도전의 역사 // 한국방위산업학회, 2015.

gathering, deterrence measures, and diplomatic negotiations to mitigate the risk of a nuclear conflict and ensure the safety and security of the Korean Peninsula. This crisis compelled South Korea to reassess its defense industry's priorities and allocate resources effectively to address the new challenges posed by North Korea's nuclear weapons program. The threat of nuclear war underscored the critical importance of maintaining a robust and advanced defense industry capable of countering evolving threats and protecting the nation's interests. South Korea's response to the nuclear weapons crisis demonstrated its determination to safeguard its national security and stability. It necessitated a coordinated and integrated approach across the government, defense industry, and international partners to effectively address the challenges and work towards a peaceful resolution on the Korean Peninsula.[103]

Moreover, one of the key initiatives was the establishment of the acquisition office in January 1999. This office was formed by consolidating various departments responsible for the introduction of weapons into a single entity, based on the evaluation results of the Yulgok project. The objective was to streamline and centralize the procurement process, ensuring more efficient and effective decision-making regarding the acquisition of military equipment and technologies. However, the defense acquisition system faced challenges due to corruption scandals associated with the introduction and development of weapons. Recognizing the need for further improvements, President Roh Moo Hyun's government-initiated efforts to reform the arms procurement system. In late December 2003 and late January of the following year, President Roh Moo Hyun issued orders for the improvement of defense acquisition projects. In early March 2004, the Prime Minister's Office established the Defense Acquisition System Improvement Committee to oversee and drive the necessary changes. This committee played a crucial role in identifying areas of improvement and formulating strategies to enhance the defense acquisition process. To facilitate the implementation of these improvements, a preparatory committee was formed in early August 2005. This committee was tasked with developing plans and strategies to enhance the defense acquisition system.[104]

As a result of their efforts, the Defense Acquisition Program Administration (DAPA) was established. On January 1, 2006, DAPA officially commenced its operations after undergoing organizational restructuring, legal enactment, and securing the necessary human resources. The

[103] Taewoo Kim. South Korea's Missile Dilemmas // University of California Press, Asian Survey, Vol. 39, № 3. – 1999. P. 486-503.
[104] ABOUT DAPA // Defense Acquisition Program Administration official website URL: http://www.dapa.go.kr/%20dapa_en/sub.do?menuId=412 (access date: 12.04.2023).

establishment of DAPA marked a significant milestone in the reform of South Korea's defense acquisition system. With a dedicated agency in place, the country was better equipped to effectively manage and oversee the acquisition, procurement, and development of military weapons and technologies. This restructured framework aimed to ensure transparency, accountability, and efficiency in the defense acquisition process, reducing the likelihood of corruption and ensuring that national security interests were prioritized. Another significant reform was the introduction of Defense Export Promotion Center in 2018, and the Act on Defense Industry Development and Support.[105] This act aims to promote the development of the defense industry by providing financial support to companies engaged in research and development, as well as by encouraging collaboration between the government and the private sector. More detailed analyses of these two agencies will be presented in the next chapter. [106]

Since 2010 government ministries, including the Blue House Future Planning Committee, the National Science and Technology Committee, the Ministry of Defense and the Defense Acquisition Program Administration (DAPA) have been stepping up policy development for a new leap in the domestic defense industry. Based on the environmental changes in the global defense market in October 2010 and the accumulated domestic defense capabilities, the government was striving to boost the defense industry's new economic growth by offering $4 billion in global defense exports and 50,000 jobs by 2020. Recently, because of this the defense industry started to play a pivotal role as a nation's future growth engine industry as full-fledged export strategies to the global defense market, including T-50 advanced trainer jets, K-2 tanks, K-9 self-propelled artillery, and 209 submarines have been actively promoted at the pan-government level.[107]

For years, South Korea has consistently allocated over 2% of its GDP to its defense budget, even during times of economic crisis. In 2022, a record-breaking $49.6 billion was allocated to defense spending, a 3.4% increase from the previous year. Democratic Party-led administrations in the past have increased defense spending to reduce military dependencies and

[105] DEFENSE INDUSTRY DEVELOPMENT AND SUPPORT ACT, Act No. 16929, Feb. 4, 2020, Amended by Act No. 17163, Mar. 31, 2020

[106] Defense Acquisition Program Administration (DAPA) introduction // Republic of Korea Ministry of National Defense, 2019, URL:http://www.dapa.go.kr/eng/web/index.do?menuId=95 (access date: 29.09.2022).

[107] Under the government's aggressive "new growth engine" policy, defense exports grew sharply from $250 million in 2006 to $1.2 billion in 2011, and the domestic defense industry was preparing for a new leap forward. See Defense Acquisition Program Administration. Future Planning, 2010 // Chosun Ilbo, 2011.방위사업청. 미래위, 2010 // 조선일보, 2011.

enhance South Korea's defense capabilities. Despite differences in policies, both liberal and conservative governments have maintained consistent defense reforms and increased funding for defense policies.[108]

In recent years, South Korea's defense spending has seen a significant trend towards allocating a larger proportion of its budget to force enhancement plans, which includes research and development (R&D) efforts. Out of the total defense spending in 2022, KRW 16.7 trillion ($15.1 billion, 30.6 percent) was directed towards force enhancement, including defense R&D aimed at preparing for future warfare.[109] To ensure the development of advanced weapon systems domestically, the defense R&D budget required to secure core technologies essential for weapon system development has risen by 11.5 percent compared to the previous year.[110]

South Korea also has consistently increased its focus on force enhancement expenses, with the percentage of defense spending allocated to such expenses rising from 30.2 percent in 2017 to 33.3 percent in 2020. In 2021, the Ministry of National Defense (MND) announced plans to further expand the force enhancement budget by 8.3 percent. This reflects South Korea's ongoing commitment to strengthening its military capabilities through advanced technologies.[111] The MND is currently prioritizing the development of cutting-edge technologies like stealth detection radar, hypersonic missiles, and military autonomous robots. The country is also investing in the research and development of micro-satellite systems, satellite navigation systems, and UAVs to bolster surveillance and reconnaissance forces, as well as long-range surface-to-air missiles and Korean-style iron domes for missile defense, and high-power, long-range guided weapons.[112] R&D expenditure is expected to increase to 8.9% of total defense spending in 2023 and 10% in 2033, with a focus on core technology R&D. The budget for research and development of advanced weapons systems will be expanded to KRW 3.44 trillion ($3.1 billion) in 2026, and the defense technology development budget will be increased to KRW 2.63 trillion

[108] Defense Budget Plan // Ministry of National Defense, Seoul, 2016, p. 12. 국방예산안 // 국방부, 서울, 2016, p. 12.
[109] Summary of Budget for FY 2022 // Ministry of Economy and Finance, Sejong, 2022. 2022 회계연도 예산 요약 // 기획재정부, 세종, 2022.
[110] Mid-term Defense Plan 2022-2026 // Ministry of National Defense, Press Release, 01.09. 2021. URL: https://www.kida.re.kr/cmm/viewBoardImageFile.do?idx=32670 (access date: 06.05.2023).
[111] Defense Reform 2.0 // Ministry of National Defense, Seoul, 2019, URL: https://www.mnd.go.kr/mbshome/mbs/reform/ (access date: 17.04.2023).
[112] Summary of Budget for FY 2022 // Ministry of Economy and Finance, Sejong, 2022. 2022 회계연도 예산 요약 // 기획재정부, 세종, 2022.

($2.3 billion) in the same year.[113] South Korea will also concentrate on eight high-tech fields to adapt to the defense market of the future and boost domestic technology in areas such as ultra-highspeed and high-power precision strikes, manned and unmanned hybrid combat execution, and other cutting-edge technologies.

In terms of industrial organization, it is possible to divided them into the government's Barriers to Entry policy for fostering the defense industry, tax reduction and subsidy support policy. Lee Cheol Beom in his research on Military Crisis Management points out the importance of the Barriers to Entry policy. The representative basis of South Korea's defense industry promotion policy was to foster two to three monopoly defense companies in each field of weapon systems and parts based on stable domestic military demand. In this regard, the government implemented the «Designation System for Defense Products and Companies» in 1973, and similarly, from 1983, the «Professional Specialization and Affiliation System» was introduced to guarantee companies the right to have the official financial support. The introduction of this system was meaningful as it helped to achieve economies of scale early by efficiently concentrating limited defense resources, accumulate technological capabilities to meet military demand, and correct market failures in the defense industry. It was an indispensable choice at the time of being a latecomer country in the global arms market.[114]

The Korean government has implemented the Designation System for Defense Products and Companies and the Professional Specialization and Affiliation System to address issues of overlapping investment in defense products and promote technology development based on stable domestic demand. These initiatives have played a crucial role in enhancing the competitiveness of the arms industry. However, in recent times, disputes have arisen regarding preferential treatment in the selection of companies of governmental support and the high barriers to entry for smaller companies concentrated on the production of weapons directly not financed by South Korean government. Consequently, this has led to missed opportunities for defense exports and reduced incentives for cost reduction. Moreover, unintended consequences

[113] Ministry of National Defense. Mid-term Defense Plan 2022-2026 // Press Release, 01.10.2021.URL:https://www.mnd.go.kr/user/boardList.action?command=view&page=1&boardId=O_47261&boardSeq=O_283459&titleId=null&siteId=mndEN&id=mnd EN_020100000000&column=null&search=null (access date: 15.02.2023).

[114] Lee Cheol Beom. A Study on the Properties of the Military Crisis Management System / Social Convergence Research // Defense Security Research Institute, Daegu National University of Science. – 2019. Vol. 3, №.1, P. 21-30. 이철범. 군 위기 관리체계 속성에 관한 연구 / 사회융합연구 // 대구과학대학교 국방안보연구소. – 2019. Vol.3, №.1, P. 21-30.

have emerged, such as limiting opportunities for latecomers with exceptional technology to participate in defense projects. These challenges have prompted the abolition of the professional affiliation system in 2009, recognizing the need for change. However, the material and business designation system still remains.[115]

Addressing these problems is crucial to ensure a fair and competitive environment in the defense industry. It is necessary to strike a balance between preventing overlapping investments and fostering innovation while also promoting a level playing field for companies to participate in defense projects. By addressing these issues, the Korean arms industry can further enhance its competitiveness and seize defense export opportunities while promoting technological advancements. Another significant policy was related to tax relief and subsidies. According to the professor of economics in Korea Institute for Defense Analyses, in order to secure practical resources for the defense industry promotion policy, South Korea has established a «defense tax» since 1973 and used it as the Defense Industry Promotion Fund. In addition, while stably designating and managing defense producers and companies, the production companies have been guaranteed to produce and procure defense products for a certain period, and various incentives such as development funds and other support have been implemented at the same time.[116]

In addition, since 1978, «Defense Resources Calculation Standard Regulations» have been implemented to alleviate the management burden of companies due to the initial large-scale investment, excessive facility maintenance, and high R&D investment risks arising from the characteristics of the defense industry that were described in the first chapter. This system can be said to be a kind of production subsidy policy (defense cost allocation) that guarantees a certain percentage of profit in the production cost of defense companies. This government's active

[115] Lee Cheol Beom. A Study on the Properties of the Military Crisis Management System / Social Convergence Research // Defense Security Research Institute, Daegu National University of Science. – 2019. Vol. 3, №.1, P. 30-38. 이철범. 군 위기 관리체계 속성에 관한 연구 / 사회융합연구 // 대구과학대학교 국방안보연구소. – 2019. Vol.3, №.1, P. 30-37.

[116] Lee Yoon Chul. A Study on the Development of Defense Export Support Policy and Establishment of a Dedicated Organization: Focusing on Expected Effects // Seoul: Industrial Policy Research Institute, 2007. - pp. 125-158. 이윤철. 방산수출지원 정책발굴 및 전담조직 설립방안 연구 : 기대효과를 중심으로 // 서울 : 산업정책연구원, 2007. - pp. 125-158.

support policy was an incentive to strengthen defense companies' self-sustainability and enhance advanced arms technology capabilities in a relatively short period of time.[117]

The government's tax reduction and subsidy policy to foster the defense industry was implemented to consider the specificity of the defense industry and to ensure incentives for development of production. However, such policy is difficult to achieve effectiveness due to the problems of avoiding technology development and regulating the entry of new defense companies. Unlike the purpose of introducing the positive system, the so-called defense cost system is pointed out as a major reason for making it difficult to enter the overseas defense market due to the weakening competitiveness of defense companies due to loss of cost reduction incentives.[118]

DAPA closely cooperates with KOTRA. Nowadays, while KOTRA's primary focus is on supporting general trade and investment across various sectors, it also assists in facilitating arms exports by providing market intelligence, trade promotion, and business matching services to defense companies. KOTRA serves as a bridge between South Korean defense manufacturers and potential international buyers by organizing trade missions, participating in defense exhibitions and conferences, and conducting market research on defense industry trends and opportunities. Through its global network of offices, KOTRA actively promotes South Korean defense products and helps establish business connections with foreign defense agencies, military procurement authorities, and industry players.[119]

There was also defense industry clustering program conducted. It refers to the creation of geographic concentrations of defense-related companies, research institutions, and other organizations within a specific region. The clustering of defense-related activities is intended to promote collaboration, innovation, and knowledge sharing among companies and institutions within the same industry. In South Korea, the government has been actively promoting the clustering of defense-related companies since the early 2000s. The clustering initiative is part of a broader effort to strengthen the country's defense industry and enhance its competitiveness on the global stage. The government has established several defense industry clusters throughout the

[117] Kim Dong Gyu, Shin Yong Do. National Economy and Defense Industry // Seoul: National Defense University, 2001. - pp. 235-238. 김동규, 신용도. 국가경제와 방위산업 // 서울: 국방대학교, 2001. - pp. 235-238.
[118] Kim Sang Ho. 06 Defense Budget Analysis, Evaluation // Seoul: Korea Institute for Defense Analyses, 2006. - p. 75. 김상호. 06 국방예 산분석 · 평가 및 '07 전망 // 서울: 한국국방연구원, 2006. - p. 75.
[119] History of KOTRA // KOTRA official website URL: https://www.kotra.or.kr/english/subList/20000006771 (access date: 26.03.2022).

country, including the Daejeon Defense Industry Cluster, the Busan Aerospace Industry Cluster, and the Changwon Defense Industry Cluster. These clusters bring together companies and institutions specializing in various aspects of the defense industry, such as aerospace, shipbuilding, and electronics.[120]

One of the key benefits of defense industry clustering is the ability to promote collaboration and knowledge sharing among companies and institutions within the same industry. Clusters provide opportunities for companies to collaborate on research and development projects, share resources, and develop new products and services together. This can lead to the development of more innovative and competitive products and services. In addition, defense industry clusters can also help to improve the efficiency of the industry by creating economies of scale. Companies within the same cluster can share common resources, such as infrastructure, supply chains, and logistics, which can help to reduce costs and increase efficiency.[121]

Furthermore, the South Korean government has also implemented a range of measures aimed at supporting the country's defense industry export system. One of the most significant measures was the establishment of the Defense Export Promotion Center (DEPC) in 2014.[122] DEPC was created to promote defense exports by providing support to South Korean defense companies, including assistance with market research, promotion, and export financing. In addition to DEPC, the South Korean government has also provided financial support to defense companies engaged in export activities. This support has included low-interest loans and tax incentives to encourage companies to invest in research and development and to expand their export capabilities. In the next chapter analyses of these two reforms will be more elaborated.

One of the most recent changes was Defense Reform 2.0, which was launched during the early stages of the Moon Jae-in administration, aims to transform the Republic of Korea (ROK) Armed Forces into a more agile and lethal force, with a strong emphasis on preparing for future challenges. This marks a departure from previous reforms that were more narrowly focused on defending and deterring threats from North Korea. The ROK's close alliance with the United

[120] Shin D.H. and Hassink R. Cluster life cycles: the case of the shipbuilding industry cluster in South Korea // Regional Studies 45(10):1387-1402, 11.2011.
[121] Choi Seok Cheol, Yang Mi Ho. Research on Export Promotion of Defense Products / Korean Journal of Defense Industry // Seoul: Korea Defense Industry Association. – 2002. P.74. 최석철, 양미호. 방산물자 수출촉진방안 연구 / 한국방위산업학회지 // 서울: 한국방위산업학회. – 2002. P.74.
[122] Defense Export Promotion Agency (DEPA) // Republic of Korea Ministry of National Defense, 2019, URL:http://www.depa.or.kr/eng/index.do (access date: 16.03.2023).

States serves as an additional impetus for reform, as Seoul aspires to take over the lead of joint ROK-US operations under a Future Combined Command. However, the wartime operational control of joint forces remains with the United States.

The force enhancement programs under Defense Reform 2.0 focus on bolstering South Korea's capabilities to deter and respond to threats posed by weapons of mass destruction by reinforcing situational awareness and ensuring the Armed Forces can conduct rapid and decisive joint operations across all operational domains. South Korea is committed to institutionalizing these reforms to achieve its long-term defense vision, which includes transforming its Armed Forces into a military structure that leverages advanced science and technology, such as artificial intelligence-based surveillance and reconnaissance, hyper-connected intelligent command and control, stealth-based platforms, and combined manned and unmanned combat systems.[123]

A lot of researchers also highlight as important measure an arm R&D policy. Highly specialized R&D personnel, equipment, and facilities are essential for the development of advanced weapons systems. Therefore, as mentioned above, the government established the Defense Science Research Institute in 1968 to promote active support policies for the development of advanced defense technologies and weapons systems. As such, ADD-led core technology and component R&D policies have continued to correct market failures in the R&D sector for weapons development, production of specific kinds of public goods, through active market intervention by the government. It is true that the ADD-led defense R&D policy contributed significantly to the development of the national defense industry in the 1970s, including the localization of basic weapons through rifle and firearm reverse design, the independent development of tanks, armored vehicles, and the recent export of T-50s.[124]

However, recent innovative development of domestic industries such as IT has accelerated, and domestic companies, including arms production ones, have limited R&D manpower advancement and capital accumulation by ADD-led government-led development policies. In particular, problems such as the quality of the Korean affiliated weapons systems, IPT technical support and defense company technology management-oriented work, lack of

[123] Jina Kim, Elisabeth I-Mi Su. Country Report: South Korea Defense Reform and Force Enhancement Plans // German Council on Foreign Relations DGAP REPORT, 2022.
[124] Jeon Jong Ho. A Study on the Policy Network on Defense Export Support Policy: T-50 Indonesia Export Success Cases // Technology Management Economic Association, Vol. 24. - 2016. P. 113-143. 전종호. 방산수출 지원정책에 관한 정책네트워크 연구: T-50 인도네시아 수출 성공사례를 중심으로 // 기술경영경제학회, Vol.24. - 2016. P. 113-143.

activation of intellectual property rights developed by defense R&D investment were identified, and restrictions on activation of R&D by companies were also marked as urgent tasks.[125]

There was the Defense Technology Strategy 2020 implemented also, a comprehensive plan developed by the South Korean government to promote the development of key technologies and capabilities in the defense industry. The plan was launched in 2015 and has been updated periodically since then to reflect changes in the security environment and advances in technology. The Defense Technology Strategy 2020 aims to enhance South Korea's defense capabilities in several key areas, including cyberspace, space, unmanned systems, and stealth technology. The plan is based on three main pillars: innovation, integration, and international cooperation. Under the innovation pillar, the government aims to promote the development of new technologies and capabilities through increased investment in research and development.[126]

This includes the establishment of the Korea Research Institute for Defense Technology Planning and Advancement (KRIT) to conduct research in key areas such as artificial intelligence, robotics, and materials science. The integration pillar focuses on the development of integrated defense systems that can operate across multiple domains, such as air, sea, and land. This includes the development of a new multi-domain command and control system that can coordinate and synchronize operations across different military branches and domains. The international cooperation pillar aims to strengthen South Korea's partnerships with other countries in the defense industry. This includes increasing collaboration with countries such as the United States, Japan, and Australia on joint research and development projects, as well as increasing defense exports to other countries. Some of the key initiatives under the Defense Technology Strategy 2020 include the development of a new stealth fighter jet, the KF-X, the acquisition of advanced unmanned aerial vehicles and submarines, and the establishment of a cyber defense command to protect South Korea's critical infrastructure from cyber threats.[127]

Moreover, in the 20th century there were other policies implemented. In addition to the entry regulations, subsidies, and tax reduction policies for protecting and fostering the domestic defense industry, the component localization policy, trade policy for advanced technology

[125] 2010-2024 Defense Science and Technology Promotion Policy // Ministry of National Defense, 2007, p. 14-15. 2010-2024 년국방과학기술진흥정책서 // 국방부, 2007, p. 14-15.
[126] DAPA Statistical Yearbook / DAPA // SEOUL: DAPA, 2022. 방위사업청 통계연보 / 방위사업청 // 서울: 방위사업청, 2022.
[127] History of KRIT // Korea Research Institute for Defense Technology Planning and Advancement official website URL: https://www.krit.re.kr/eng/contents.do?gotoMenuNo=01020000 (access date: 29.06.2022).

transfer, and civil and military technology development policy have been carried out to foster and enhance arms export capabilities. However, problems such as lack of link between core technology development and weapon system development, ambiguity in component localization rate calculation, negative perception of trade performance, and formal civil and military technology transfer policy are important tasks to be solved in order to enhance domestic defense industry competitiveness.[128]

In addition, its status in the global defense export market does not meet the level of overall exports of the country. The root cause can be found in the following vulnerabilities in the defense industry structure. One of the most often mention weaknesses according to different researches is supply capacity that does not meet the level of military demand. As mentioned above, 72% of the military equipment ROK acquired was introduced overseas for 25 years until 2002, and South Korean defense science and technology capabilities evaluated by the Defense Research Institute are 68% on average compared to advanced countries. Marine weapons (79%), ground weapons (92%), intelligence and electronic warfare (83%), precision strikes (82%), and command and control (70%) exceed the average level, but technology levels in aviation (48%), new special forces (40%), and surveillance (49%) are less than half compared to advanced countries.[129]

The military administration aims to acquire the world's leading-edge weapon systems to strengthen national security, but South Korean defense industry does not meet those requirements properly. Unless there are measures to dramatically improve the supply capacity of the defense industry, the gap between the military's demand level and defense supply capacity is expected to grow in the future. In particular, there is struggle of finding the ways to strengthen the defense industry's base while harmonizing military demand with insufficient domestic supply capacity for advanced weapons such as command control, surveillance reconnaissance, precision strikes, and information and electronic warfare, which are expected to increase in the future.[130]

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[128] Revitalizing and supporting R&D investment by defense companies // Defense Acquisition Program Administration / Korea Defense, Industrial Promotion Association, 2011. – P. 34-52. 방산업체 자체 R&D 투자 활성화 및 지원방 // 방위사업청/한국방위, 산업진흥회, 2011. – P. 34-52.

[129] Ibid. – P. 56-60.

[130] Chae In Take. K-9 to Cheongung-II, International Politics of Exporting Korean Weapons Systems // Economist, 05.02. 2022. 채인택. K-9 부터 천궁-II까지, 한국 무기체계 수출의 국제정치학 // 이코노 미스트, 05.02.2022 URL: https://economist.co.kr/article/view/ecn202202050036 (access date: 09.10.2022).

Kim Sang Ho also points out the weakness in the supply chain. In order for the defense industry to achieve continuous technological innovation and growth, supply chains must be firmly established. So far, South Korean government has been pushing for a policy to foster the defense industry, focusing on a small number of designated system companies and primary suppliers that produce major components since the beginning of the construction of the defense industry. In addition, in order to procure equipment required by the military within a short period of time, it has grown into a defense industry centered on system companies and major parts producing companies rather than sub-parts suppliers (small and medium-sized enterprises). Due to the implementation of these policies, the Defense Science Research Institute, which has led the development of domestic weapons systems and technologies so far, has also promoted localization with some designated companies at the top of the defense industry supply chain as major partners. As a result, the production capacity of major parts producing component companies, including system composition, has improved significantly, but the technology and production base of sub-component suppliers (small and medium-sized enterprises) are still weak. In particular, the more advanced weapon systems are, the more serious the vulnerability of the lower supply capability is. The advanced trainer (T-50) project clearly shows this problem. The T-50 is the top weapon system developed in Korea so far, and only less than 10 companies have participated in production since it was jointly developed by KAI and Lockheed Martin.[131]

Moreover, The South Korean government is facing a challenge due to the declining population, as it is becoming increasingly urgent to reduce the size of the country's standing forces while also maximizing their combat efficiency. To achieve this goal, the Armed Forces are focusing on bringing in and training more skilled personnel to operate high-tech weapons. In addition, professional civilians will replace staff in non-combat areas such as maintenance, distribution, administration, and education. However, the declining population is outpacing the Armed Forces' plans for force restructuring and introducing new weapons systems. For example, the number of men reaching the age of 20 in South Korea is expected to decrease from 330,000 in 2020 to 250,000 in 2023 and 230,000 in 2025, which will add further strain to the government's efforts to establish cutting-edge forces and implement national defense reform.[132]

[131] Kim Sang Ho. 06 Defense Budget Analysis, Evaluation // Seoul: Korea Institute for Defense Analyses, 2006. - p. 78. 김상호. 06 국방예 산분석 · 평가 및 '07 전망 // 서울: 한국국방연구원, 2006. - p. 78.

[132] Population Projection // Korean Statistical Information Service. URL: https://kosis.kr/search/search.do?query=%tEC%9D%B8%EA%B5%AC (access date: 06.03.2022).

South Korean government is also focused on strengthening the global competitiveness of the defense industry, which is linked to the country's economic viability. To achieve this, the government is making funds available for developing defense industry systems, including those designed for overseas markets, as well as defense venture companies and innovation clusters, and the protection of defense technology. The defense industry will continue to be a focus of government investment, and the introduction of advanced technology into the sector, such as drones, robots, and space-based assets, will also continue.[133]

According to Kim Sang-ho, economic professor of Korea Institute for Defense Analyses, there is also the problem of excessive dependence on domestic demand. In recent years, exports of systematic equipment and technology have shown the possibility of expanding the ROK defense exports. However, the proportion of defense exports in South Korean defense sales is still very low, around 4% except in 2004 and 2007. In the case of global defense industry powerhouses, exports account for 70% of defense sales in Israel, 20% in the United States, and 30% to 40% in Britain and France. In particular, in the case of Israel for example on 2007, defense costs were about half of ROK and defense sales were about 60% of ROK.[134] In addition, investment and international cooperation targeting foreign defense markets are weak too. International cooperation and globalization are expanding in the development, production, and marketing of defense products worldwide, and companies that do not have the ability to participate are being kicked out or subject to mergers and acquisitions by large companies. However, in case of South Korea, according to Chae In Taek, it was hard to even find an attempt to enter the global defense market to discover new business opportunities until the Uranian crisis in 2021. Domestic defense companies only passively responded to foreign companies' cooperation demands for the domestic market, and there was little effort to secure a long-term market through investment in host countries and industrial cooperation.

South Korea has a long history of developing its defense industry, starting from the establishment of the government in 1945. The government recognized the need for independent weapon production and R&D, and through various policies and plans, it succeeded in localizing

[133] Defense Project Management Regulations // Defense Acquisition Program Administration, 2019. 방위사업관리규정 // 방위사업청, 2019.

[134] Han Nam Sung. A Study on the Direction of Power Policy through Case Analysis of Israeli Defense Research and Development // Seoul: Korea University, 2007. - pp. 117-118. 한남성. 이스라엘국방연구개발 사례분석을 통한 전력정책방향 연구 // 서울 : 고려대학교 대학원, 2007. - pp. 117-118.

inorganic production and achieving modernization of the Korean military sector. The Yulgok Project, which began in 1974, played a significant role in this development and enabled South Korea to achieve self-sufficiency in basic weapons production. However, the defense industry policy changed in the 1980s, with a shift towards overseas technology production and advanced overseas arms acquisition policies. While this approach allowed South Korea to acquire advanced technologies and weapons, it also reduced tax and financial support for domestic defense companies and R&D expenses essential for mid- to long-term defense industry development.

Within a decade of launching its defense industry, it was able to satisfy most of its basic weapons needs, thanks to the joint efforts of the government and industry in developing aerospace, maritime, and ground platforms. South Korea boasts strong commercial companies in shipbuilding, motors, and electronics, and its government's policy has spurred the industry to increase its exports. Despite its dependence on foreign high-technology, South Korea is shifting from the stage of imitation and assembly to that of creative imitation and indigenization and is likely to compete with major arms-supplying countries in the world. Its high technology in both commercial and defense industries and its ability to learn quickly will enable South Korea to catch up with leading defense industrial countries in the near future.

Moreover, it can be seen that development of the defense industry in country directly depends on export as domestic economics and economic growth are still export-oriented. That`s why it was essential to analyze the historical process and current status of defense industry, by doing this, it was possible to trace the trend on expansion of defense export. In can also be seen from the last reforms, that it is also concentrated on export as South Korea is seeking to expand it. The country is working to establish itself as a global leader in defense technology, with the goal of becoming one of the world's top five defense exporters by 2025. To achieve its goal, South Korea has been investing in the development of advanced defense technologies, as well as expanding its production capacity and improving its marketing and sales efforts. The country has also been participating in major international defense exhibitions and conferences to showcase its products and build relationships with potential customers. In the next chapter policies directly related to arms export, such as establishment the Defense Export Promotion Center (DEPC) will be discussed more comprehensively to understand the current trends in South Korean policies and its future tendencies.

Chapter 3. South Korea's Arms Export Policies: Formation and Current Status

In accordance with the research conducted in the previous chapters, it can be noted that the export of arms in South Korea has become one of the driving factors of its defense industry development. The state's policy in the field of economic development was initially built on heavy industry, which subsequently gave impetus to the growth of exports. It became the main economic engine in the country and continues to be so to this day. Defense industry was not an exception in this process.

In recent years, South Korea has made significant progress in the expansion of its arms industry, developing, and producing advanced defense products for both country itself and export. As a result, the South Korean government has been actively pursuing arms export policies to expand the country's global presence in international the defense market. However, the development of such policies has been met with various challenges. In the previous chapter some of the challenges that the government met through the history of establishment defense industry were pointed out but without particular accent in the arms export policies in 21st century. This chapter provides an overview of the South Korean arms exports policies, research and development efforts, regulations and decision-making processes for arms export procurement and military-technical cooperation as well as identifies main features of its arms export contemporary development and challenges.

3.1. Key characteristics of South Korean Arms export in 21st century

As it was mentioned on the previous chapter by the end of the 1960s, South Korea had relied on U.S. military aid for more than half of its defense spending. In the early 1970s, government established the Defense Science Research Institute and started to localize basic weapons. It was almost reckless to challenge the construction of an independent military force through the development of defense science and technology at a time when even maintaining the military was difficult. Nevertheless, due to the process of maintenance and reconstruction of American military equipment, it became possible to adopt many technologies for the production of their own military equipment and details for them.

Defense science and technology have been widely recognized as the foundation for building military strength, a point emphasized by numerous researchers. In addition, the parallel economic policy of nurturing the heavy and chemical industry, which had strong ties to the

defense sector, further contributed to this synergy. [135] Notably, a significant portion of defense spending, averaging around 3.2% annually during the late 1970s, was allocated specifically to research and development endeavors.[136]

At that time, the country aimed to reduce its reliance on foreign suppliers and enhance its national security by producing essential defense items domestically. During this period, South Korea focused primarily on developing and manufacturing defense products for its own armed forces. The government invested in research and development, technology acquisition, and production facilities to build a strong defense industrial base. The main achievement of South Korean Arms export was made in 1975, when Pungsan Metal exported M1 rifle ammunition to the Philippines, becoming the first exporter of defense products in South Korea.[137]

As South Korea's defense capabilities improved, it started to explore the potential for arms exports. The country realized that its advanced defense technologies and quality products could be of interest to other nations facing similar security challenges. In the 1980s, South Korea made significant breakthroughs in arms exports. One notable success was the export of its K-55 self-propelled howitzer to Turkey. The success of the K-55 howitzer paved the way for further expansion in the arms export sector. South Korea's defense industry gained confidence and began actively seeking opportunities to export its defense products to other countries. Moreover, in the 1980s, defense exports exceeded about $100 million annually. In 1983, it reached $300 million. The utilization rate of defense companies also seemed to be about 60-70%, However, the proportion of the budget spent on R&D among defense expenditures fell to an average of 2.3% per year.[138]

Throughout the 1990s, South Korea's arms exports grew steadily. The country expanded its export portfolio to include various military equipment, such as armored vehicles, naval vessels, and aircraft. It established partnerships with several countries, particularly in Southeast Asia, which became significant customers for South Korean defense products. Despite this,

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[135] Kim Dong Gyu, Shin Yong Do. National Economy and Defense Industry // Seoul: National Defense University, 2001. - pp. 235-238. 김동규, 신용도. 국가경제와 방위산업 // 서울: 국방대학교, 2001. - pp. 235-238.

[136] Nam Deok Hyun. Taekwondo diplomatic strategy to revitalize exports of the Korean defense industry // Kukkiwon, Vol. 6. - 2015. P. 97-113. 남덕현. 한국 방위산업수출 활성화를 위한 태권도 외교 전략 // 국기원, Vol.6. - 2015. P. 97-113.

[137] Seo Woo Deok, Shin In Ho, Jang Sam Yeol. 40 years of Korean defense industry, history of endless challenges // Korean Defense Industry Association (Planet Media), 2015. - p. 30. 서우덕, 신인호, 장삼열. 한국 방위산업 40 년, 끝없는 도전의 역사 // 한국방 위산업학회 (플래닛미디어), 2015. - p. 30.

[138] Ibid. - p. 54.

defense exports plunged to an annual average of 70 million dollars, and the utilization rate of defense companies also fell to about 50%. The main reason that led to such numbers was 1997 Asian financial crisis when the whole economic sector was under the constant pressure. The only positive side was the fact that the proportion of R&D budgets in defense spending has gradually increased to about 3-4% annually due to the North Korean nuclear threat. However, the degree was weak to lead to results, and it took time[139].

South Korea has taken significant measures to strengthen its export regulations and ensure compliance with international standards. The Ministry of Trade, Industry and Energy (MOTIE) has played a crucial role in supporting companies to enhance the country's competitiveness in the global market while adhering to strict export controls. Recognizing the growing demand for tighter export controls, MOTIE has assisted exporters in preparing for these requirements. To bolster the effectiveness of export controls, the Foreign Trade Act underwent revisions in September 2003. One notable development was the establishment of Yestrade, an online system designed for the management of strategic items. This digital platform streamlined and facilitated the process of managing and monitoring strategic items, enabling greater efficiency and transparency in export control procedures. [140]

In 2007, another revision to the Foreign Trade Act further strengthened export controls on strategic items. The primary objective was to enhance the overall effectiveness of export controls and ensure strict adherence to international regulations. As part of these efforts, the Korea Institute for Strategic Trade (KOSTI) was established. KOSTI plays a crucial role in supporting the implementation of export controls, providing various services including identification services to accurately classify strategic items and facilitate compliance.[141]

The early 2000s it already witnessed a notable increase in South Korea's arms exports. In the 2000s, defense exports averaged $100 million to $200 million per year, and the utilization rate of defense companies was about 50%. It was hard to say that it was a full-fledged recovery. Fortunately, the defense reform launched in 2006 provided a driving force for the defense

[139] Nam Deok Hyun. Taekwondo diplomatic strategy to revitalize exports of the Korean defense industry // Kukkiwon, Vol. 6. - 2015. P. 97-113. 남덕현. 한국 방위산업수출 활성화를 위한 태권도 외교 전략 // 국기원, Vol.6. - 2015. P. 97-113.

[140] Shim Sae Jeong. A study on the efficient implementation system of Korean export control // PhD dissertation, Sungkyunkwan University. 2010. – P. 160-162. 심새정. 한국 수출통제의 효율적인 이행체계에 관한 연구 // 박사학위논문, 성균관대학교. 2010. – P. 160-162.

[141] Korea Strategic Trade Institute (KOSTI) // Annual report, Seoul: KOSTI, 2008, p. 5. 한국전략무역연구원 (KOSTI) // 연보, 서울: KOSTI, 2008, p. 5.

industry and defense exports. In particular, it was decisive to specify in the basic plan for defense reform that the proportion of R&D budgets to defense expenditures would be gradually increased to about 10% which is the level of advanced countries. In the late 2000s, R&D budgets accounted for about 5% of defense spending.[142]

During this period the country's defense industry showcased its capabilities by successfully exporting advanced defense systems like the K-9 Thunder self-propelled howitzer and the T-50 Golden Eagle advanced trainer aircraft. These exports were made to countries such as Turkey, Greece, Indonesia, and Iraq. Pungsan Group that was mentioned earlier surpassed $100 million in defense exports in 2008 and was the number one exporter of South Korea's defense industry from 2006 to 2011. Since then, 111 K200 armored vehicles have been supplied to Malaysia, and advanced weapon exports have begun in earnest. The target weapons system has varied in the defense export market, from tanks and self-propelled guns to ships and planes, and the region has expanded from Southeast Asia to the Middle East, Europe, and South America. In the 2000s, it was difficult to find domestic companies in the world's top 100 defense companies, but in the 2010s, major domestic defense companies such as Korea Aerospace Industries, LIG Nex1, and Hanwha Techwin ranked among the top 100 companies in the world.[143]

The 2010s marked a period of emerging growth potential in the defense industry and defense exports. During this time, defense exports surpassed the milestone of $1 billion for the first time. However, the subsequent growth trajectory exhibited fluctuations, fluctuating between $1 billion and $3 billion. While defense companies maintained a utilization rate of approximately 60-70%, which was in line with the manufacturing average, the concern arose from their lower profitability, amounting to only half of the manufacturing average. Encouragingly, there was a notable increase in the share of the R&D budget within defense spending, reaching approximately 6-7%. This provided a valuable source of momentum for a significant leap forward in the industry.[144]

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[142] Moon Joo Young, Kwon Heon Cheol, and Kim Dae Yeon. A Study on the Defense Industry Promotion Plan through the Estimation of Defense Industry Export Function // Korean Defense Industry Association, Vol. 26. - 201p. P. 67-80. 문주영, 권헌철, 김대연. 방위산업 수출함수 추정을 통한 방위산업 진흥방안 연구 // 한국방위산업학회, Vol.26. - 201p. P. 67-80.

[143] Lee Jun Gu. Korea's Military Strategy and Defense Industry // Journal of Korean political and diplomatic history. – 2012. P. 318-327. 이준구. 한국의 군사전략과 방위산업 // 한국정치외교사논총. – 2012. P. 318-327.

[144] Bang Jeong Kwon. In the 1990s, when defense companies were in the dark...It was a retribution of trial and error 10 years ago [Focus Inside] // Special report of Korea Defense Research Institute for The Joong Ang, 07.09.2022.

South Korea's share of total arms sales by companies as shown in Figure 1[145][146] was ranked 11th in the world, despite the fact that from 2017-2021 it steadily holds the 8th place. In addition, for five years from 2017, South Korea's exports increased by 177% from 2012 to 2016, ranking first in growth. Global defense spending, the size of the defense industry market, reached $2.113 trillion last year, up 7% from 2020.[147]

Furthermore, South Korea's success in defense exports extended to the field of missile systems. The country's development and export of fleet midrange surface-to-air missiles to UAE demonstrated its ability to provide sophisticated and reliable missile defense solutions to partner nations. The export of these advanced defense systems not only bolstered South Korea's economy but also contributed to enhancing the defense capabilities of recipient countries. South Korea's reputation as a reliable supplier of high-quality defense products grew, attracting further interest from potential buyers worldwide.[148]

Since 2010 the government's active defense industry promotion policy and investment in industry, academia, research institute, and defense companies were expanded and contributed greatly to revitalizing the national economy by creating new jobs and expanding arms exports. Moreover, according to this year's SIPRI statistics, South Korea ranked eighth in the world in defense exports between 2017 and 2021, up one notch from the previous year's statistics.[149]

Furthermore, South Korea actively sought partnerships and collaborations with other countries in defense industry projects. By engaging in joint research and development efforts, technology transfers, and co-production agreements, South Korean defense companies were able to leverage the expertise and resources of their international partners, resulting in mutually beneficial outcomes. As South Korea's defense industry continued to flourish, the country's defense exports expanded beyond traditional markets. South Korean defense companies actively explored opportunities in emerging markets, fostering diplomatic ties and building long-term relationships with nations seeking to enhance their defense capabilities.

방종관. 방산업체 암흑기였던 90 년대…10 년 전 시행착오의 보복이었다 [Focus 인사이드] // 한국국방연구원 중앙특보. 07.09.2022. URL: https://www.joongang.co.kr/article/25100503#home (access date: 26.02.2023).

[145] Figure 1 // Annex.

[146] Share of Total Arms Sales Of Companies In The SIPRI Top 100 For 2021, By Country, 2021 // SIPRI Arms Industry database, 2022.

[147] Ibid.

[148] Brian Kim. South Korea inks largest arms export deal with UAE for missile interceptor // The DefenseNews, 18.01.2022 URL: https://www.defensenews.com/industry/2022/01/18/south-korea-inks-largest-arms-export-deal-with-uae-for-missile-interceptor/ (access date: 26.02.2023).

[149] The SIPRI Top 100 Arms-producing and Military Services Companies, 2021 // SIPRI Fact Sheet, 2022.

Table 1[150][151] shows the main target countries for South Korean arms exports. Turkey, Indonesia and the United States, have traditionally served as the main areas of South Korean defense export market. Aircraft engine parts and small-caliber bullets were mainly exported to the United States through trade-off negotiations, and K-9 self-propelled gun parts and KT-1 were exported to Turkey. Indonesia also exported large landing ships and submarine maintenance, including the KT-1. In addition, through active market development activities and dispatch of defense cooperators, efforts have been made to secure defense export markets to the Middle East (Saudi Arabia, Kuwait, UAE, Oman, etc.) and South America (Chile, Colombia, Peru, Mexico, etc.).

Regarding arms exports countries from 2020, South Korea's major export destinations include Iraq, Turkey, Indonesia, Peru, Colombia, the Philippines, Poland and Jordan.[152] This shows that South Korea's arms export market is expanding beyond the Asia-Pacific region to various regions, and this fact can be said to be a positive achievement of ROK's defense exports.

Despite the strong performance of defense exports, several phenomena are also implied behind the performance data. With a 2.8% proportion of the total global export of armaments, South Korea ranked eight during the period 2017–21. Its shipments of weapons increased by 177% from 2012 to 2016. 63% of South Korean arms export was directed to Southeast Asia and Oceania and 24% of it to Europe between 2017 and 21. Also, South Korea strengthened its ties with other countries, particularly in the Middle East, in terms of exporting weapons. For instance, in 2021, for significant military procurement projects, Egypt chose artillery, and the UAE chose air defense systems from South Korea.[153] Countries that have consistently remained in priorities of government are the United States, Turkey, Indonesia and Malaysia.

However, considering the proportion of countries that can demand defense exports using the intergovernmental sales system, it is difficult to expect immediate increase in the nearest future. This happens because defense exports to these countries account for a low proportion of absolute or total gains. The background of this phenomenon is attributed to the lack of internal

[150] Siemon Wezman. Ranking major importer of South Korean weapons during the 2016-2020 period // SIPRI, 2021.
[151] Table 1 // Annex.
[152] South Korea exported 16 T-50 supersonic aircraft to Indonesia and also signed an export contract with Iraq for 24. It also exported K-9 self-propelled artillery to Turkey and Poland.
[153] Pieter D. Wezeman, Alexandra Kuimova, Siemon T. Wezeman. TRENDS IN INTERNATIONAL ARMS TRANSFERS, 2021 // SIPRI Fact Sheet. March 2022.

and external environment in which these countries can create urgent defense demand.[154] Moreover, taking into account the current trend of South Korea's defense export performance, and that the number of target countries is gradually increasing, it can be evaluated that the market development stage is still in progress. At this point many experts point out that it is important to seize the opportunity to enter markets that the country have not yet pioneered.[155]

3.2. The role of Governmental Support Policies and R&D in Arms Export Promotion and Technological Advancements

The Korean government has demonstrated a strong commitment to supporting and promoting defense exports throughout its history. Despite changes in government, the defense development and competitiveness promotion support policy has remained consistent since its initial implementation in the 1970s. Before the establishment of DAPA[156], the focus of defense development policies was primarily on meeting the power enhancement needs of the Korean military using domestic defense technologies, with defense exports being a secondary consideration. However, with the launch of DAPA, strengthening international defense competitiveness became a primary objective of defense R&D and improvement projects.

A significant milestone in this regard was the amendment of the Defense Industry Development Act in 2021. As it was described in the second chapter this act provided a legal foundation for boosting the growth engine of defense companies by expanding defense export support policies and strengthening support for parts development. It started to consolidate defense export support policies that were previously carried out by multiple institutions, ensuring their organic integration and continuity at a pan-government level.[157] The Defense Industry Development Act is particularly significant as it facilitates the establishment of defense export networks, collaboration with defense companies, and financial support, all coordinated by various defense-related ministries and agencies.[158] It guarantees the seamless implementation of defense export support policies and strengthens the role of DAPA as a central entity for defense

[154] Lee Cheol Beom. A Study on the Properties of the Military Crisis Management System // Social Convergence Research, 3(1). – 2019. P. 30 - 37. 이철범. 군 위기 관리체계 속성에 관한 연구 // 사회융합연구, 3(1). – 2019. P. 30 - 37.
[155] Byeon Hee Won. Disclosure officer. [Focus Inside] The target of moving is secretly chasing and destroying... // The JoongAng Ilbo. 22.08.2022. 방종관. [Focus 인사이드] 이동표적 은밀히 쫓아가 파괴... 우크라군이 띄운 '괴물 자폭드론' // 중앙일보 변희원. 22.08.2022. URL: https://www.joongang.co.kr/article/25116045 (access date: 07.04.2023).
[156] The history of agency establishment was overviewed in the second chapter.
[157] The Export-Import Bank of Korea. Defense Industry Characteristics and Export Strategies 2022 // Issue Report, 2022. p.15. 한국수출입은행. 방위산업의 특성 및 수출전략 2022 // 이슈보고서, 2022. p.15
[158] Ibid. - p. 16.

industry development. Additional support systems such as the Defense Export Promotion Center (DEPC) under DAPA play key roles in addressing various challenges and expediting solutions. These systems will enhance coordination and cooperation among ministries and agencies involved in defense exports, enabling efficient problem-solving and further development of the defense industry.[159]

Moreover, The Defense Science and Technology Innovation Promotion Act (Act No. 17163) was enacted on March 31, 2021, and came into effect on April 1, 2021. This act aims to address the delegated matters and necessary enforcement measures related to defense science and technology innovation.[160] Firstly, it focuses on the preparation of systematic defense research and development (R&D) planning. This involves the creation of a defense technology plan to promote R&D of core technologies and future-oriented defense technologies. It also establishes procedures for analyzing R&D results and specifies the necessary processes for research and development of the power support system and support work of the Defense Technology Quality Agency.[161] Additionally, the act outlines the requirements for R&D performance analysis and reporting procedures for the power support system. Furthermore, the act addresses the selection of R&D organizations or R&D participating organizations to carry out defense R&D. It specifies the necessary matters for this selection process. The act also emphasizes the support for industry-academia-research institute collaboration in R&D. It mandates technical support to revitalize R&D activities conducted by industry, academia, and research institutes. This support utilizes the development results held by the Defense Research Institute and the Defense Technology Quality Institute.[162]

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[159] Son Woo Jae. Opens Defense Export Promotion Center... Expectation to create conditions for revitalizing defense exports // MT News, 19.11.2018. 손우재. 방산수출진흥센터 개소… 방산수출 활성화 여건 조성 기대 // MT News, 19.11.2018 URL: http://www.mtnews.net/m/view.php?idx=4772 (access date: 19.04.2023).

[160] Defense Science and Technology Innovation Promotion Act (abbreviated as Defense Science and Technology Innovation Act) [Enforcement April 1, 2021] [Act No. 17163, March 31, 2020, Enacted] Ministry of National Defense (Establishment of Power Policy Division-General, Basic Plan for Defense Science and Technology Innovation), 02-748-6198. 국방과학기술혁신 촉진법 (약칭: 국방과학기술혁신법) [시행 2021. 4. 1.] [법률 제 17163 호, 2020. 3. 31., 제정] 국방부(전력정책과-총괄, 국방과학기술혁신 기본계획 등의 수립), 02-748-6198.

[161] Yoo Hyeong Gon. Issues and Improvement Measures of the Defense Science and Technology Innovation Promotion Act // National Assembly Legislative Research Office, Vol.11, №.2. - 2019. P. 209-244. 유형곤. 국방과학기술혁신 촉진법안의 쟁점사항과 개선 방안 // 국회입법조사처, Vol.11, №.2. - 2019. P. 209-244.

[162] Defense Science and Technology Innovation Promotion Act (abbreviation: Defense Science and Technology Innovation Act) [Act No. 17163, 2020. 3. 31, Enacted] Ministry of National Defense (Establishment of Power Policy Division-General, Basic Plan for Defense Science and Technology Innovation), 02-748-6198. 국방과학기술혁신 촉진법 (약칭: 국방과학기술혁신법) [시행 2021. 4. 1.] [법률 제 17163 호, 2020. 3. 31., 제정] 국방부(전력정책과-총괄, 국방과학기술혁신 기본계획 등의 수립), 02-748-6198.

Efficient management of research facilities and equipment in the defense sector is another aspect covered by the act. It establishes the basis for collecting, managing, and providing information on these facilities and equipment. Stakeholders, including institutions, organizations, and individuals, have the opportunity to submit their opinions on this legislation. They can provide their feedback through the National Participation Legislation Center's online platform or directly to the Minister of National Defense. It is encouraged that opinions clearly state the stance on the notice, provide reasons for opposition or support, and include the name, address, phone number, and any additional relevant information.[163]

In the past, there was a prevailing belief that defense companies were the primary drivers of defense exports, with the government playing a passive role as a supporter. This perception stemmed from a limited understanding of the international defense market and persisted even after the establishment of the Defense Acquisition Program Administration. However, as knowledge and understanding of the international defense market grew, drawing lessons from advanced defense export countries like Israel, France, and the United Kingdom, the role of the government, including the Defense Acquisition Program Administration, underwent a transformation.[164] A significant shift occurred with the implementation of the Defense Industry Development Act in 2021. This legislation enabled the active participation of the Defense Acquisition Program Administration and other related ministries and agencies such as the Ministry of Defense, Defense Science Research Institute, and the Ministry of Industry in defense export negotiations. In essence, the government assumed an active role as a key player in defense exports.[165]

The change in perception and government's evolving role in defense exports was a result of a deeper understanding of the unique characteristics of the international defense market. By studying and benchmarking support systems in leading defense export countries, South Korea's government and defense industry stakeholders recognized the importance of an active and coordinated approach to secure defense export contracts. As a result, the Defense Acquisition

[163] Yoo Hyeong Gon. Issues and Improvement Measures of the Defense Science and Technology Innovation Promotion Act // National Assembly Legislative Research Office, Vol.11, №.2. - 2019. P. 209-244. 유형곤. 국방과학기술혁신 촉진법안의 쟁점사항과 개선 방안 // 국회입법조사처, Vol.11, №.2. - 2019. P. 209-244.

[164] Ryu Chang Soo, Jung Seung Hwan, and Choi Kang Hwa. Relationship between partnership components and SCM performance between the Defense Acquisition Program Administration and defense companies // Korea SCM Society, Vol.12, №.2. - 2012. P. 87-98. 류창수, 정승환, 최강화. 방위사업청과 방위산업체간의 파트너십 구성요소와 SCM 성과간의 관계 // 한국 SCM 학회, Vol.12, №.2. - 2012. P. 87-98.

[165] Jeon Jae Kook. The direction of reorganization of the defense acquisition system: Beyond the structural characteristics of division // Sejong Institute, Vol.28, №.2. - 2022. P. 147-171. 전제국. 국방획득시스템 재정비 방향: 분할 구조적 특성을 넘어 // 세종연구소, Vol.28, №.2. - 2022. P. 147-171.

Program Administration and other government entities have become more proactive and engaged in defense export activities. They actively participate in negotiations, contribute to market development efforts, and leverage their expertise and resources to facilitate successful defense export deals.

In the early stages of defense exports, the South Korean government primarily focused on the successful sale of weapons systems, with limited consideration for long-term defense cooperation strategies. However, in recent years, there has been a shift in the government's approach towards a more strategic and mutually beneficial defense cooperation structure with allied countries. The government now recognizes that defense exports go beyond simple trade deals and play a crucial role in guaranteeing security and peace between nations. This perspective has led to the adoption of a win-win defense cooperation strategy, which encompasses various aspects such as localization production, technology transfer, self-maintenance capabilities, performance improvement, and ongoing military support.[166]

By actively pursuing a win-win defense cooperation strategy, the South Korean government aims to meet the specific needs and desires of defense partners. This includes offering capabilities in areas such as maintenance, technical support, and localized production, which are highly valued by partner countries. By differentiating itself from other advanced defense exporters, South Korea increases its competitive advantage and the likelihood of winning defense cooperation contracts. For partner countries, engaging in defense cooperation with South Korea brings significant advantages. They can benefit from substantial maintenance and technical capabilities, as well as the opportunity to establish their own production facilities in a relatively short period of time. This mutually beneficial approach makes defense cooperation with South Korea an attractive proposition for partner countries. Furthermore, the win-win defense cooperation strategy not only increases the possibility of winning orders from South Korea's perspective but also offers substantial industrial advantages. It helps prevent overinvestment and ensures continuous cooperation, extending beyond weapons systems to encompass technological collaboration and other areas of mutual interest.[167]

[166] Jung Ho Take, Lee Jae Hwa. A Study on the Network Effect of Defense Industry Exports // Korea Trade Information Society, Vol. 25. - 2023. P. 109-128. 정호택, 이재화. 방위산업 수출에 있어 네트워크 효과에 관한 연구 // 한국통상정보학회, Vol.25. - 2023. P. 109-128.

[167] Jang Sang Guk. K-Bangsan Export Innovation Plan from the perspective of Trinity // Humanities Society 21, Vol.13. - 2022. P. 783-794. 장상국 . 삼위일체관점에서 K-방산 수출혁신 방안 // 인문사회 21, Vol.13. - 2022. P. 783-794.

At the same time developing advanced and innovative defense products is crucial for expanding export markets and staying competitive in the global defense industry. That`s why along with the changes in the defense industry, there have been significant developments in achieving international competitiveness through the integration of technology developing defense companies and M&A. South Korea has made significant investments in R&D to develop cutting-edge defense technologies, and this has played a key role in the country's success in defense exports. The government has encouraged collaboration between the private sector and universities to foster innovation and has also established a number of research institutes and centers dedicated to developing defense technologies. As a result, the production of advanced South Korean fighter jets, combat ships, mobile equipment, tactical strategic missiles, tactical communication systems, and surveillance and reconnaissance equipment for export was launched.[168]

In April 2014, the Defense Administration Support Center under DAPA was established as an organization affiliated with the Korea Research Institute for Defense Technology Planning and Advancement (KRIT) to provide technical support to the Defense Acquisition Program Administration and the military for the armaments and strengthen the research capabilities of defense companies.[169] The Defense Administration Support Center provided technical support for artillery development, core technology development under production, research, and artillery technology management. In addition, the Defense Acquisition Program Administration and KRIT promoted open defense R&D policies such as expanding civil-military technology cooperation projects and developing international joint R&D.

Moreover, the allocation of the Korean defense R&D budget has seen a consistent increase in both the proportion of defense expenditures and the national R&D budgets. There has been a notable shift in the focus of defense R&D towards core technologies, with a growing emphasis on open innovation and collaboration between the civilian and military sectors. One significant development is the transfer of R&D budget allocation from the Agency for Defense Development (ADD) to the Industry/Academic/Research collaboration supercenter under DAPA.

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[168] Jung Ho Taek and Lee Jae Hwa. A Study on the Network Effect of Defense Industry Exports // Korea Trade Information Society, Vol. 25. - 2023. P. 109-128. 정호택, 이재화. 방위산업 수출에 있어 네트워크 효과에 관한 연구 // 한국통상정보학회, Vol.25. - 2023. P. 109-128.

[169] Administrative Support Management Act [Enforcement January 17, 2015] [Ministry of National Defense Regulations No. 490, January 17, 2015, Partial Revision] Department of Defense (Operational Support Division), 02-748-5008. 행정지원관리예규 [시행 2015. 1. 17.] [국방부예규 제 490 호, 2015. 1. 17., 일부개정] 국방부(운영지원과), 02-748-5008.

Moreover, the R&D budget for developing future technologies has witnessed a substantial increase, doubling every year since 2019. In terms of overall R&D expenditure, Korea's investment in R&D as a percentage of GDP stands at 4.81% as of 2020, according to data from the Korea Institute of Science and Technology Evaluation and Planning. Over the past five years, Korea has consistently ranked second in terms of R&D expenditure to GDP, indicating a strong commitment to research and development activities.[170]

These developments highlight South Korea's dedication to fostering cutting-edge technologies and innovation in the defense sector. The increased investment in defense R&D, particularly in core technologies and collaborative research, reflects a proactive approach to developing game-changing capabilities and maintaining technological superiority.

Subsequently, for example, large destroyers were fully developed, and basic trainer 'KT-1/KA-1' with pure South Korean technology was developed and exported. With KT-1 technology and technical support from LM in the U.S., the supersonic advanced trainer 'T-50/FA-50' was also developed and achieved great export results overseas, and the South Korean mobile helicopter 'Surion' was developed to power it. A subsequent light combat helicopter and various unmanned aerial vehicles were also being developed.[171]

In land equipment, K-9 self-propelled guns and K-2 tanks were developed and exported overseas, and K-21 infantry fighting armored vehicles and K-11 combined rifles were also developed as joint projects with different advanced countries. In addition, South Korea became a rising global IT powerhouse, and consequently a tactical military communication system and a civilian-military satellite communication system were developed to secure defense R&D capabilities at the level of advanced countries. These research results led to an increase in defense exports, growing from $253.3 billion in 2006 to $3.51 billion in 2015.[172]

Moreover, it is judged that the mobility and firepower field has exceeded 80%, reaching a level that can be developed with domestic independent technology. In the command and

[170] Kim Han Ul. Status of R&D investment in Korea and major countries in 2020 / KISTEP Statistical Brief 2021 No. 19 // KISTEP, 2021. 김한울. 2020 년 한국과 주요국의 연구개발 투자 현황 / KISTEP 통계브리프 2021 년 제 19 호 // KISTEP, 2021.

[171] Korea Institute of Science and Technology Planning and Evaluation, 442, 10.03.2017. URL: https://www.iitp.kr/kr/1/knowledge/statisticsList.it?page=77&pageSize=10&currentPage=9 (access date: 12.03.2023).

[172] Defense Acquisition Program Administration, Annual report 2016 //방위사업청, 2016 년 연례보고서 URL: http://www.dapa.go.kr/dapa/na/ntt/selectNttInfo.do?bbsId=326&nttSn=40173&menuId=678 (access date: 12.03.2023).

control/communication field, some information and communication infrastructure technologies such as C4I Power are at the level of advanced countries, but system integration technologies such as the establishment of a combat system are still trying to secure the foundation. In the field of surveillance and reconnaissance, core technologies such as detectors for electronic optical sensors are still insufficient, and despite the fact that component technologies for radar are available, active phase array radar development technologies are still somewhat insufficient. In addition, in the field of guidance and air defense, the system composition and guidance/control technology of precision strike fighters are secured, but the development of major technologies such as supersonic engines, fiber-optic sensors, stealth shape structures, and active control/autonomous induction are underway.[173]

Nevertheless, major core technologies such as active sensors and stealth technologies are being developed. As already mentioned earlier, the Korean government has selected 'New Economic Growth Motivation of the Defense Industry' as one of the national tasks.[174] Active promotion of fostering the defense industry is expected by reflecting the defense industry sector in policy priorities. The Ministry of National Defense and the Defense Acquisition Program Administration were pushing to become the world's seventh-largest defense advanced country by achieving $3 billion in defense exports by 2012 by strengthening competitiveness in the defense industry.[175] Moreover, The Defense Technology Promotion Institute has been publishing the Global Defense Market Yearbook every year to establish defense export strategies and strengthen export competitiveness in new markets for 12 years since 2011 and plans to continue publishing contents that help boost defense exports by expanding internal and external cooperation.[176]

In particular, the Defense Acquisition Program Administration proposed an advanced defense development plan: 1. to expand investment in defense R&D; 2. to secure science and technology by promoting open defense R&D; 3. To develop and support small and medium-sized enterprises; 4. to enhance defense financial support; to foster defense cost reduction. In

[173] Siemon Wezman. Ranking major importer of South Korean weapons during the 2016-2020 period // SIPRI, 2021.
[174] Defense Reform 2.0 // Ministry of National Defense, Seoul, 2019, URL: https://www.mnd.go.kr/mbshome/mbs/reform/ (access date: 12.03.2023).
[175] Lee Myung Bak. Defense Acquisition Program Administration, government fosters the defense industry as a new economic growth engine // Korea Policy Portal, 13.03.2008. 방위사업청. 이명박 정부, 방위산업을 신경제 성장 동력으로 육성 // 한민국 정책 포털 13.03.2008. URL: www.korea.kr (access date: 14.03.2023).
[176] Defense Reform 2.0 // Ministry of National Defense, Seoul, 2019, URL: https://www.mnd.go.kr/mbshome/mbs/reform/ (access date: 14.03.2023).

order to enter the world's seven largest defense exporters by 2012, comprehensive defense export strategies and action plans was established and implemented, including: 1. Diversifying customized export strategies by region; 2. Forming a pan-government defense export consultative body organized by Cheong Wa Dae; 3. Establishing a contract system between governments, and 4. Promoting an integrated defense exhibition.[177]

Subsequently, according to Statistics Korea, there were 96 South Korean enterprises working in the military industry in 2012, with affiliates bringing the total to more than 400.[178] Among these firms, Samsung, Korea Aerospace Industries, and LIG Nex1 were selected in 2013 to the Stockholm International Peace Research Institute's Top 100 arms-producing and military services corporations in the world. South Korea was placed 10th in defense technology, along with Sweden, according to a 2013 assessment by South Korea's Defense Agency for Technology and Quality. According to the research, South Korean industries' defense technology had advanced to 80 percent of the level of the world's leading nations.

The Republic of Korea's arms exports have achieved remarkable results based on research and development, but the trade balance in the defense industry was still law by 2012, requiring continuous efforts by both the government and the private sector to localize weapons and revitalize arms exports. In particular, the introduction of weapons systems that require advanced technologies such as fighter jets and electronic warfare equipment without dependence on imports from abroad was in high demand. It was necessary to improve the trade balance through research and development related to core military technologies.

At the same time, the fact that much of South Korea's defense technology is based on the U.S. one is acting as a kind of restriction on increasing defense exports, so it is necessary for the government to prepare countermeasures. On the other hand, despite the growing importance of arms exports, South Korea's defense industry is only 12.8% of the total domestic defense industry output, indicating that the military industry is still focused on a domestic-based industrial structure rather than entering overseas markets. This is more evident compared to advanced countries in defense exports. In advanced countries in major defense projects such as the United States, the United Kingdom, and France, the proportion of exports to the total

[177] Lee Myung Bak. Defense Acquisition Program Administration, government fosters the defense industry as a new economic growth engine // Korea Policy Portal, 13.03.2008. 방위사업청. 이명박 정부, 방위산업을 신경제 성장 동력으로 육성 // 한민국 정책 포털 13.03.2008. URL: www.korea.kr (access date: 18.03.2023).

[178] Fluctuation in the size of domestic defense companies' number // Statistics Korea URL: http://www.index.go.kr/potal/main/EachDtlPageDetail.do?idx_cd=1702 (access date: 18.03.2023).

production of the defense industry is about 20%/30%, and in Israel, the security environment is similar to South Korea, but country is much more developed in the military export, so in-depth research on the export industrialization of the Korean defense industry should be conducted.[179]

Therefore, according to Kim Sang Bae, in order for South Korea's defense industry to play its role as a new arms export power, efforts are needed to expand the size and diversity of arms production line. As high-priced and high-performance equipment such as T-50 advanced trainer jets, 209-class submarines, K-21 infantry combat armored vehicles, and XK-11 new rifle, which are currently actively exporting, provide major profit in the international arms market, it is expected to accelerate the increase of arms exports in Republic of Korea.[180] However, the recent rapid growth of defense exports is due to the successful exports of some high-priced military products, and it is urgent to find strategic defense exports to maintain the scale of arms exports to some extent.

3.3. The System of Arms Export Legislation and Decision-Making Process

To guarantee that defense exports conform with international laws and regulations, the system of regulation and decision-making procedures in arms export procurement and military-technical cooperation is vital. A wide number of parties are involved, including government agencies, defense contractors, and the military. Most countries regulate arms exports through government bodies, frequently with the assistance of the military. These organizations are in charge of overseeing the export process, from license approval through monitoring compliance with international laws and regulations. A variety of elements, including geopolitical considerations, strategic alliances, and economic interests, are often considered during the decision-making process.

With a small handful of advanced defense countries monopolizing the global arms market, South Korea, a latecomer, is still in the early stages. [181] Previously, South Korea's defense exports followed a «commercial sales» model, with defense companies taking the lead in international marketing, negotiation, and contracting. The government's role was primarily to support exporters through the signing of agreements or memorandums of understanding with

[179] SIPRI Year Book 2022 // SIPRI, 2020.
[180] Kim Sang Bae. Fourth Industrial Revolution and Advanced Defense Industry Competition: Transformation of World Politics in Emerging Power Theory // International Political Consultative Conference, 60(2). – 2020. P. 88-89. 김상배. 4 차 산업혁명과 첨단 방위산업 경쟁 : 신흥권력론으로 본 세계정치의 변환 // 국 제정치논총, 60(2). – 2020. P.
[181] Han Nam Sung. The Environment and Development Strategy of the Defense Industry // Korea Defense Research Institute, Defense Policy Study, Volume 24, № 4. – 2008. P. 210-211.

partner countries. Additionally, an intergovernmental sales system was established, allowing the government to directly engage as a contractual party and leverage its resources to fulfill the purchasing countries' requirements. [182]

The implementation of the intergovernmental sales system has raised concerns about the potential shift towards a more government-led approach in defense exports, which raises questions about the diminishing role of local defense enterprises in enhancing their competitiveness. While defense companies are primarily responsible for actual defense exports, the extent of government influence in this process is a pertinent issue. South Korea's defense industry operates under a private company-owned-and-operated system, wherein the export of company-produced goods falls within the purview of the corporations themselves. Consequently, the benefits derived from exports directly accrue to the exporters. The government's efforts to revitalize arms exports are likely to be limited to providing support that can indirectly enhance their influence.[183] The intergovernmental sales system, encompassing areas beyond the scope of private organizations in defense exports, is appropriately managed by the government. This system serves as one of several mechanisms through which the government can mitigate the risk of potential loss of export opportunities when private organizations are unwilling to meet the conditions set by countries for procurement through commercial sales. By taking on this role, the government ensures that crucial conditions and requirements are fulfilled, safeguarding existing and future export prospects.[184]

The main governmental bodies in charge of South Korean arms export nowadays include: Defense Acquisition Program Administration (DAPA is responsible for planning, acquiring, and managing defense equipment and technology. It plays a crucial role in promoting defense exports and coordinating international defense cooperation); Ministry of National Defense (The MND oversees defense policies and strategies, including arms exports. It provides guidance and direction to support the development and promotion of defense exports); Ministry of Trade, Industry and Energy (MOTIE collaborates with defense agencies to facilitate arms exports, particularly in terms of export regulations, trade promotion, and market access); Korea Trade-

[182] Ahn Young Soo, Jang Won Joon and Kim Jung Ho. An analysis and implications of export support systems in major defense exporting countries // KIET Industrial Economy, 2012. - pp. 24. 장원준·안영수·김정호. 주요 방산수출국가의 수출지원제도 분석과 시사점 // KIET 산업경제, 2012. - pp. 24.
[183] Ibid. - pp. 25-28.
[184] Jeon Jae Kook. The direction of reorganization of the defense acquisition system: Beyond the structural characteristics of division // Sejong Institute, Vol.28, №.2. - 2022. P. 147-171. 전제국. 국방획득시스템 재정비 방향: 분할 구조적 특성을 넘어 // 세종연구소, Vol.28, №.2. - 2022. P. 147-171.

Investment Promotion Agency (facilities business matching, market research, and promotion activities for South Korean defense companies. It assists in connecting South Korean defense manufacturers with potential international partners, organizing trade missions and exhibitions, and providing market intelligence to support arms export initiatives); Defense Technology Agency for Quality (DTaQ evaluates and certifies the technical capabilities and performance of defense products); Korea Defense Industry Technology Services (KODITS conducts market research, facilitates business matching, provides export consultation, and implements promotional programs. KODITS also offers technical support and certification assistance, helping defense companies navigate international export requirements and standards).

The Director of Defense Acquisition Program Administration in South Korea authorizes the export of specific commodities, including defense goods, defense research and technology, and strategic goods (excluding industrial items). Military goods covered by Article 19 of the Foreign Trade Act (military among dual-use items)[185], and Article 34 of the Defense Industry Development Act are also eligible for export. [186] Other industries among dual-use products among strategic materials, on the other hand, require export clearance or circumstance permission from Strategic Material Management Agency of the Ministry of Trade, Industry and Energy.[187]

The multilateral international export control system may also restrict export licenses to preserve world peace and national security. WMD ownership and proliferation is one of the biggest global challenges. After the September 11, 2001 terrorist attacks, WMD export

[185] Foreign Trade Act, Law no. 11 873 as amended up to 7 June 2013, URL: http://www.law.go.kr/lsInfoP.do?lsiSeq=141071&efYd=20130701 (in Korean); Defense Acquisition Program Act, Law no. 11 713 as amended up to 23 Mar. 2013, URL: http://www.law.go.kr/lsInfoP.do?lsiSeq=137319&efYd=20130323 (in Korean); Nuclear Safety Act, Law no. 11 715 as amended up to 23 Mar. 2013, URL: http://www.law.go.kr/ lsInfoP.do?lsiSeq=137336&efYd=20130323 (in Korean); Act on the Control of the Manufacture,Export and Import of Specific Chemicals and Chemical Agents for the Prohibition of Chemical and Biological Weapons (Prohibition of Chemical and Biological Weapons Act), Law no. 11 690 as amended up to 23 Mar. 2013, URL: http://www.law.go.kr/lsInfoP.do?lsiSeq=137009&efYd=20130323 (access date: 22.03.2023),

[186] The Korea Strategic Trade Institute (KOSTI). [Enforcement April 28, 2023] [Ministry of Trade, Industry and Energy Notice No. 2023-74, April 24, 2023, partially amended]. Ministry of Trade, Industry and Energy (Trade and Security Policy Division), 044-203-4836. 전략물자 수출입고시. [시행 2023. 4. 28.] [산업통상자원부고시 제 2023-74 호, 2023. 4. 24., 일부개정]. 산업통상자원부(무역안보정책과), 044-203-4836 URL: https://www.law.go.kr/%ED%96%89%EC%A0%95%EA%B7%9C%EC%B9%99/%EC%A0%84%EB%9E%B5%EB%AC%BC%EC%9E%90%20%EC%88%98%EC%B6%9C%EC%9E%85%EA%B3%A0%EC%8B%9C (access date: 22.03.2023).

[187] Public Notice on Trade of Strategic Goods and Technologies, Ministry of Trade, Industry and Energy Notice no. 2013-39, Article 1.2. 31.03.2013, URL: http://law.go.kr/admRulInfoP.do?admRulSeq=2000000023976&chrClsCd=010201 (access date: 12.04.2023).

restrictions were tightened to protect global security.[188] Thus, export restriction has become a key criteria for international commercial order. Export control regulates strategic commodities to prevent their spread to terrorist groups. Private production companies often recognize «export control» as a trade barrier that limits exports.

Strategic materials can include industrial goods as well as weapons-related commodities. Thus, export items must be assessed for strategic materials because most have multiple uses, including general industrial and military goals. Such commodities are called dual-use items.[189]Moreover, given the sensitive nature of military products, limiting information exposure is a major difficulty, as indicated in the second chapter. Information about a country's current procurement status and plans is intimately tied to national security, making it difficult for international corporations to get important information. Furthermore, procurement methods or international purchase plans that are mandated or regulated by law are frequently not made public, and only domestic enterprises are permitted to access them, necessitating the use of local networks.[190]

Exporting defense materials is a complex process that requires adherence to multilateral export management systems and international treaties to maintain international peace and safety. South Korea has consistently adapted its export control provisions to align with evolving multilateral export control regimes. Recognizing the importance of striking a balance between export promotion and non-proliferation, the government has implemented increasingly sophisticated legal instruments to address these concerns.[191] Over the years, the Public Notice on Trade of Strategic Goods and Technologies, which outlines the items subject to export control, has undergone multiple revisions. Between 2004 and February 2013 alone, the notice was amended 15 times. Initially, updates to the list were irregular, but since 2009, it has been revised annually to reflect changes in the control lists of the multilateral export control regimes.[192] The amendments to the Public Notice primarily focus on incorporating the annual updates from the four regimes, which include additions, removals, or modifications to the control lists.

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[188] Alavi, Khamichonak. A European Dilemma: The EU Export Control Regime on Dual-Use Goods and Technologies // Law and Economics Review. – 2016.

[189] Koumoulos, Trompeta, Santos et al. Research and Development in Carbon Fibers and Advanced High-Performance Composites Supply Chain in Europe // A Roadmap for Challenges and the Industrial sector. -2019

[190] Ron Smith, Ali Cevat Tasiran. Random coefficients models of arms imports // Economic Modelling. - 2010

[191] Korea Strategic Trade Institute (KOSTI) // Annual report, Seoul: KOSTI, 2012. 한국전략무역연구원 (KOSTI) // 연보, 서울: KOSTI, 2012.

[192] Yestrade, [System overview] // Official website of Yestrade. 예스트레이드, [시스템 개요], URL: http://www.yestrade.go.kr/portl/html/sl/sposl100.jsp (access date: 12.03.2023).

Additionally, provisions for transit and trans-shipment as well as brokering licenses have been introduced to enhance the effectiveness of export controls. The government has also introduced exceptions to the «catch-all» clause, which requires exporters to obtain permits for items not explicitly mentioned in control lists but may have potential use in weapons of mass destruction programs. These exceptions provide clarity and flexibility in export control procedures.[193]

By diligently updating its export control provisions, South Korea demonstrates its commitment to international non-proliferation efforts while maintaining a supportive environment for legitimate trade. The government's proactive approach ensures that the country stays aligned with global standards and effectively addresses emerging challenges in export control.

South Korean Defense Acquisition Program Administration is obliged to grant export permission before defense materials can be exported. It is important to note that state-controlled exports, technology transactions, transfer, and handling are subject to strict regulations.

To export defense goods, specific procedures such as obtaining export permits, technical fee consultations, overseas export permits, and compromise trade obligations must be followed. The government provides support through organizations like the Defense Materials Trade Support Center (KODITS), the Defense Acquisition Program Administration, and the Defense Agency for Technology and Quality (DTaQ). KODITS serves as a comprehensive platform that assists defense companies in various aspects of export promotion. It provides valuable services such as market research, business matching, export consulting, and information dissemination. Through KODITS, defense companies can access crucial market intelligence, identify potential customers, and receive guidance on export-related regulations and procedures. The center also organizes trade missions, exhibitions, and seminars to enhance networking opportunities and showcase South Korean defense products to a global audience.[194]

The functions of DAPA were discussed in the second chapter in detail and DTaQ focuses on enhancing the technological capabilities and quality of South Korean defense products. It provides support and guidance to defense companies in areas such as research and development,

[193] Ryu Han Yeol, Kim Sang Ki. Theoretical Economic Analysis of National Strategic Commodity Export Regulation Policy: Focusing on Trade Conflicts between Korea and Japan // Korea International Economic Association, Vol.27, №.3. - 2021. P. 41-66. 류한열, 김상기. 국전략물자 수출규제정책에 대한 이론경제학적 분석: 한·일간 무역 갈등을 중심으로 // 한국국제경제학회, Vol.27, №.3. - 2021. P. 41-66.

[194] Park Geun Seo. Defense Export Intergovernmental (GtoG) Transactions: Focusing on the transaction structure and the obligations and responsibilities of the parties // Korea Trade Insurance Association, Vol.14, №.2. - 2022. P. 127-153. 박근서. 방산수출 정부간(GtoG)거래 : 거래구조 및 당사자의 의무와 책임을 중심으로 // 한국무역보험학회, Vol.14, №.2. - 2022. P. 127-153/

product testing, quality assurance, and technology transfer. By ensuring the high standards and reliability of defense products, DTaQ plays a crucial role in building trust and reputation in the global defense market. Additionally, it is essential to establish networks with foreign defense ministries and officials for successful participation in bidding and overseas procurement plans.[195]

The confirmation of requirements and procedures involves three main steps. The first step involves determining whether the item is subject to export control and requires strategic/defense material status and export permission. The second step involves identifying the countries subject to export control. Both steps are managed by the Defense Acquisition Program Administration and the Korea Strategic Trade Institute (KOSTI), an affiliate of the Ministry of Trade. The third step involves confirming prior administrative procedures, including an exportability review and an export business declaration status. The associated organization for this stage is the Defense Acquisition Program Administration. International export control is a system designed to limit the indiscriminate transfer of strategic materials that could pose a threat to international peace and security.[196]

Moreover, the goal of the Korea Strategic Trade Institute (KOSTI) is to regulate the transfer of materials and technologies utilized in the construction of commercial aircraft that might be used for mass devastation. This system prevents the spread of prohibited weapons to countries threatened by war or terrorist organizations. It oversees multilateral export control regimes including the Wassenaar System (WA), the Nuclear Suppliers Group (NSG), the Australian Group (AG), and the Missile Technology Control Regime (MTCR). Its role is to establish principles, methods, and items for controlling export permissions.

An export license from the competent authorities is required to export strategic goods, military supplies, and defense research and technology that are subject to export control limitations. Before exporting, it is critical to determine whether the commodities fall into the categories that require export permits and to follow the appropriate procedures to get such licenses. That`s why governmental control in this process is extremely important not to violate any importing country`s restrictions. Identifying if the commodities are strategic materials, dual-

[195] About DTaQ // The Defense Agency for Technology and Quality official website URL: https://www.dtaq.re.kr/en/info/greeting.jsp (access date: 02.04.2023).
[196] Machiko Kanetake. Controlling the Export of Digital and Emerging Technologies: Security and Human Rights Perspectives // Security and Human Rights 31(1-4). – 2021. P.1-10.

use items, military goods, or defense supplies, as well as acquiring the required approvals from the nations to which they will be sent, are all part of this process.[197]

Before granting permission for participation in international bidding, various factors must be considered as specified by regulations. These factors include the potential impact on international peace and security, whether the country is subject to arms embargoes imposed by United Nations resolutions or other international treaties, concerns regarding the development and spread of weapons of mass destruction, and the impact on national security of South Korea. Exporting to countries where there is a risk of information leakage to North Korea or exporting military technology that requires protection is prohibited. Approval will also be denied if there is a risk of an anti-government attack on diplomatic missions or overseas Koreans as a result of exports.[198]

Additionally, the regulations require an assessment of whether the export target country is an export-oriented country, the possibility of diplomatic friction due to exports to a country in dispute, and whether a specific country has requested export restraint from South Korea. If the export target country or company is listed as an ineligible party for strategic material transactions by the Korean government or a member of the multilateral export control system, export approval will not be granted. Compliance with agreements reached between governments, including adherence to basic documents agreed upon in the multilateral export control system and adherence to regulations in Memorandums of Understanding (MOUs) on defense exports with other countries, is also critical.[199]

KOSTI entails the classification of export approved areas for strategic products, as defined in the Ministry of Industry's Notice of Import and Export of Strategic products. Under Article 32 of the Foreign Trade Act's Enforcement Decree, licensed regions are classified into «A» and «B» areas based on whether nations have joined the international export control system. The Wassenaar System (WA), the Nuclear Supply Country Group (NSG), the Missile

[197] Strategic Commodity Import and Export Notification [Enforcement April 24, 2023] [Ministry of Trade, Industry and Energy Notice No. 2023-75, 2023.4. 24, Partially amended] Ministry of Trade, Industry and Energy (Trade and Security Policy Division), 044-203-4836. 전략물자 수출입고시 [시행 2023. 4. 24.] [산업통상자원부고시 제 2023-75 호, 2023. 4. 24., 일부개정] 산업통상자원부(무역안보정책과), 044-203-4836.

[198] Park Eon Kyung. Seo Cheol Won. Legislative Evaluation and Improvement Measures of the Strategic Commodity Export Management Act - Focusing on Foreign Trade Law - // Korea International Economic Law Society, Vol.16. - 2018. P. 157-187.

[199] Park Geun Seo. Defense Export Intergovernmental (GtoG) Transactions: Focusing on the transaction structure and the obligations and responsibilities of the parties // Korea Trade Insurance Association, Vol.14, №.2. - 2022. P. 127-153. 박근서. 방산수출 정부간(GtoG)거래 : 거래구조 및 당사자의 의무와 책임을 중심으로 // 한국무역보험학회, Vol.14, №.2. - 2022. P. 127-153.

Technology Control System (MTCR), and the Australian Group (AG) are all part of the «A» region. The «B» region, on the other hand, comprises countries that are not listed in the «A» region. It is crucial to note, however, that the distinction between regions A and B can only be formed by excluding certain supplied papers, and even though the end destination is region A based on the final destination, it is categorized as area B if it goes via region B.[200]

Furthermore, several nations are banned from the import and export of weapons and military items, as specified by the Notice of Special Measures on Trade for the Performance of International Peace and Security Maintenance. The operation is intended to fulfill UN Security Council resolutions, and it applies to exports from ten countries, including Iraq, Somalia, the Democratic Republic of the Congo, Sudan, Eritrea, Lebanon, Libya, North Korea, Central Africa, and Yemen, and it is limited to arms, ammunition, military vehicles and equipment, quasi-military equipment, and military-related parts. It is also crucial to remember that the list of banned nations is subject to change without notice, and protective apparel and technical support for international organizations such as the UN and peacekeeping may be used with exceptions when allowed by the Ministry of Industry.[201]

Nevertheless, the current Government-to-Government (GtoG) system has certain limitations, where KOTRA[202] and the The Korea Defense Industry Trade Support Center are responsible for ensuring contract performance at the government level. However, purchasing countries demand a separate guarantee from the government, even though KOTRA represents the government in the contract, as they are not held accountable for actual contract fulfillment. To address this issue and increase future demand from purchasing countries, it is essential to strengthen the mechanism that allows the government to guarantee contract performance when signing GtoG contracts.[203]

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[200] Partial amendments to the notification of import and export of strategic materials. In Article 34 (2) 1, «the area referred to in Article 10 (1) » shall be referred to as «the area referred to in Article 10 (1) », and «ehe area referred to in Article 10 (2) 2» shall be referred to as «the area referred to in Article 10 (2) or (b) ». Notification of import and export of strategic materials (No. 2019-154).전략물자 수출입고시 일부개정안. 제 34 조제 2 항제 1 호 중 “제 10 조제 1 호의 가 지역”을 “가의 1 지역”으로 하고, 같은 항 제 2 호 중 “제 10 조제 2 호의 나 지역”을 “가의 2 지역 또는 나 지역”으로 한다. 전략물자 수출입고시 (제 2019 - 154 호). 담당자 김재환. 담당부서무역정책관. URL: https://www.motie.go.kr/motie/ms/nt/gosi/bbs/bbsView.do?bbs_cd_n=5&bbs_seq_n=63517 (access date: 03.04.2023).

[201] Lee Ji Seok, Kim Tae Myung. A Historical Review and Semiotics Analysis of Strategic Material Export Control // Korean Society of Management History, Vol.32. - 2017. P. 5-24. 이지석, 김태명. 전략물자 수출통제의 사적고찰 및 기호학적 분석 // 한국경영사학회, Vol.32. - 2017. P. 5-24.

[202] Functions of KOTRA were described in the second chapter.

[203] Kwon Heon Cheol. A Study on the Role and Guarantee of the GtoG Export Administration of Defense Industry Materials // Industry-Academic Cooperation Group of National Defense University, 01.2014. – pp. 35-40. 권헌철.

To export defense products to developing and potential markets, the Republic of Korea must provide guarantees and state support to satisfy the buyer country's government. This type of cooperation often requires resource diplomacy or industrial partnership between governments. For example, exported factories must meet the requirements for producing defense products, and industrial cooperation is desired to promote private industry development through the purchase of weapons. In some cases, trade plans are established to replace defense purchases with resources available to the buyer country. These treaties are as legally binding as domestic legislation under the Vienna Convention of international law, while non-contract agreements are not. The nature of the document varies in terms of government responsibility and does not follow a standard format in title or phrasing.[204]

Treaties and institutional arrangements differ not only in specifying responsibilities, but also in the conclusion procedure. The treaty is signed by the head of the state after a review by the Ministry of Foreign Affairs and a resolution by the State Council, and the consent of the National Assembly must be obtained if necessary. In particular, if the national finance is to be borne, the consent of the National Assembly must be obtained in accordance with Article 60 (1).[205][206] of the Constitution below. Interagency agreements are signed by both parties by the head of the relevant agency, and it is necessary to review whether the agreement falls under the Ministry of Foreign Affairs.[207]

In intergovernmental sales, contracts have the same characteristics as treaties as such they specify the legal responsibility of the government, which is the party to the contract. There is a possibility of causing a legal and financial burden on the government because liability provisions or precise points are inserted into contracts in case they violate mutual performance agreements. Therefore, considering the concept of the document format concluded between the government or government agencies, it is possible to devise a plan to conclude arms exports between the two countries in the form of a treaty. However, in the case of treaties, it is customary to write and

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방위산업물자등의 GtoG 수출 시정부의 역할 및 보증에 관한 연구 // 국방대학교 산학협력단, 01.2014. – pp. 35-40.

[204] Ibid. – pp. 40-43.

[205] Constitution of the Republic of Korea [Enforcement February 25, 1988] [Constitution No. 10, 1987 October 29, Revised], Article 60, Paragraph 1. 대한민국헌법 [시행 1988. 2. 25.] [헌법 제 10 호, 1987. 10. 29., 전부개정]

[206] The National Assembly has the right to sign and ratify treaties on mutual aid or security, treaties on important international organizations, treaties on sovereignty restrictions, treaties on strengthening, and treaties or treaties on legislative matters. (Article 60, Paragraph 1 of the Constitution).

[207] Cho Han Cheol, Choi Seok Cheol. Intergovernmental Transaction Defense Export Strategy Study // Korea Defense Management Association, Vol. 40. - 2017. P. 9-15. 조한철, 최석철. 정부간 거래 방산수출전략 연구 // 한국국방경영분석학회, Vol.40. - 2017. P. 9-15.

exchange them for the purpose of establishing long-term diplomatic relations from a comprehensive perspective. On the other hand, the contract is a one-time agreement between the trading parties, if it is concluded in the form of a treaty, it is not suitable to be handled neither the head of state, nor by the direct party. For instance, the U.S. FMS, considered a representative example of a government contract, is signed by the Ministry of National Defense individually for countries with comprehensive long-term treaties, such as the Korea-U.S. Mutual Defense Treaty.[208]

The agreement between institutions is not effective as a contract because it is an agreement that is not legally binding between the two. As in the case of the UK, for example, it is possible to enter a contract in the form of a memorandum of understanding (MOU), but this happens because there is an implicit agreement between the two countries in addition to the memorandum of understanding, not due to the binding force of the agreement itself. In this case, if a problem regarding responsibility arises, it can be said that there is an inherent possibility of a dispute between the two countries because the way to solve this problem is ambiguous.[209] In this case, there are probabilities where some countries can claim that South Korean government's responsibility exists based on the memorandum of understanding on defense cooperation, but this is clearly contrary to the common practice of government-government agreement documents. If the memorandum of understanding contains provisions related to the Korean government's responsibility, it can be said that the Foreign Ministry's review process to determine whether the document is a treaty is missing, but if it is not outside the scope of the memorandum of understanding, it is not directly related to individual exports.[210]

If that is the case, the question is whether the contract can be drafted and signed by the government. Although corporations play the real function in the intergovernmental sales system, the conditions are the same as selling government assets since the Korean government purchases domestic products and sells them to foreign governments.

Even if a contract can be signed, reaching a real agreement with a foreign government involves significant challenges. Governing laws and dispute resolution clauses should be

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[208] Cho Han Cheol, Choi Seok Cheol. Intergovernmental Transaction Defense Export Strategy Study // Korea Defense Management Association, Vol. 40. - 2017. P. 15-27. 조한철, 최석철. 정부간 거래 방산수출전략 연구 // 한국국방경영분석학회, Vol.40. - 2017. P. 14-27.

[209] Kim Ki Pyo. Act to Support Export of Defense Industry and System Maintenance Plan. // NARS Policy Research Service Report. National Assembly Research Service 30.11.2019. P. 2-3. 김기표. 방위산업 수출지원을 위한 법제도 정비방안 // NARS 정책연구용역보고서. 국회입법조사처 30.11.2019. P. 2-3.

[210] Ibid.- P. 4-6.

included in the contract, but reconciling and agreeing on differences in contract interpretation and dispute resolution between the Republic of Korea and the purchasing country is predicted to be difficult. Adopting the purchasing or selling country's domestic law as the contract's governing law is likely to be rejected by the other party.[211] In the case of FMS sales in the United States, the Letter of Offer and Acceptance (LOA) corresponding to the contract stipulates the basis law for dispute settlement as the U.S. Federal Procurement Act, and intervention in decisions by the International Court or a third party is prohibited.[212] Intergovernmental sales are foreign governments abandoning commercial sales channels and require South Korean government to purchase equipment or goods on behalf of it. Therefore, intergovernmental sales are partly advantageous for it. As in the case of the U.S. FMS, setting the principles set by South Korean government to a structure in which the purchasing country's government decides whether to accept them would be an advantageous way for the government to reach an agreement on the contract with other countries.

3.4. Challenges in Supporting Defense Exports: Organizational Capacity, Export Financing Restrictions, and Marketing Support

Despite all the factors that contributed to the revetalization of South Korean arms export there are still some challenges that the government faces. In the previous chapter major aspects of it were already discussed throw the overview of defense industry development in the country. Despite of the fact that the government actively tried to overcome these challenges some of them still exist nowadays.

For instance, Yu Soon Gil in his work discuses several significant challenges that the Korean defense industry faces in the 21stcentury, that impact its operations and growth. Firstly, the domestic market for defense products in South Korea is relatively small compared to major global players, limiting opportunities for sustained growth and economies of scale. To counter this, the industry focuses on expanding its reach through international defense exports. Secondly, there is a historical dependence on technology transfers and licenses from foreign suppliers, hindering the development of self-reliance and cutting-edge defense technologies. Efforts are

[211] Kwon Heon Cheol. A Study on the Role and Guarantee of the GtoG Export Administration of Defense Industry Materials // Industry-Academic Cooperation Group of National Defense University, 01.2014. – pp. 35-40. 권헌철. 방위산업물자등의 GtoG 수출 시정부의 역할 및 보증에 관한 연구 // 국방대학교 산학협력단, 01.2014. – pp. 35-40.

[212] DoD Directive 5105.38-M. Chapter. 5 FOREIGN MILITARY SALES CASE DEVELOPMENT // SAMM (Security Assistance Management Manual), 2003, p. 148.

underway to enhance indigenous research and development (R&D) capabilities and foster a strong defense science and technology base. Furthermore, the global defense market is highly competitive, with established players from various countries vying for contracts and market share. Korean defense companies face tough competition from global giants, necessitating continuous innovation, cost-effectiveness, and differentiation to secure international contracts. Export regulations and restrictions pose additional challenges, requiring effective navigation of complex international regulations, export control regimes, and political considerations. Moreover, the defense budget in Korea is finite and subject to competing priorities within the government, making it challenging to allocate adequate funding for defense R&D, modernization, and procurement. Maximizing the utilization of available resources and prioritizing key capabilities becomes crucial. Additionally, attracting and retaining a skilled workforce in the defense industry is essential for innovation and competitiveness, necessitating investment in human capital development and providing attractive career opportunities. Lastly, the evolving security landscape in the Korean peninsula and the broader region presents dynamic challenges. The defense industry must adapt to changing security needs, anticipate future requirements, and develop relevant capabilities to effectively address emerging threats. By addressing these challenges through strategic planning, investment in R&D, collaboration with international partners, effective export strategies, and continuous innovation, the Korean defense industry can enhance its competitiveness, strengthen national security, and contribute to the country's economic growth.[213]

Moreover, since the consumer of defense goods is the government of the purchasing country, the role of the government of the exporting country is most important in the conducting export agreements. As it was mentioned earlier, for a considerable time, South Korea's defense exports historically have been carried out with little government-level support comparing to the contemporary one, which stands in stark contrast to the assistance offered by advanced nations. Nevertheless, due to the fact that South Korea's primary arms export items include conventional weapons, such as ammunition, tactical vehicles, and aviation repair parts, it has been feasible to

[213] Yu Soon Gil. An Analysis of the Export Obstacles of the Domestic Defense Producers and the Activation Measures to Overcome Them // Master's thesis, Korean National Defense University, Seoul. - 2003. P. 63-89. 유순길. 방산물자의 수출 장애요인 분석 및 활성화 방안 연구// 국방대학교 석사학위논문. - 2003. P. 63-89.

export them without any active government export support policy for a of years.[214] However, as seen in the recent export competition of advanced weapons systems such as K-9 self-propelled howitzers, K-1 trainer jets, and K-2 tanks, not only South Korea but also its export competitors internationally are making joint efforts with defense companies to enhance export of weapons systems.[215]

That`s why one of the major challenges faced by South Korea in supporting defense exports is the lack of organizational capacity, which has led to limited support for defense exports for a significant period of time. As it was mentioned earlier The Defense Acquisition Program Administration and the Korean Defense Industry Association are organizations that promote and support South Korea's defense exports. The Korea Defense Industry Association supports preliminary export approval and export permission for general goods[216], preliminary approval for exports of major defense products[217], publishing export promotional brochures, maintaining export statistics, and holding international defense cooperation meetings among defense companies in major countries. However, due to the limited number of personnel for each related institution, it is virtually difficult to provide systematic support for defense exports. Therefore, in addition to basic support for defense exports, more active policies such as government certification guarantees for exports[218], discovering and fostering new export channels for military products, promoting defense products, financial and tax support, cross-government cooperation, and collection of data related to overseas defense markets required by defense companies are essential.

Limited marketing support also poses a significant challenge for South Korea in promoting its defense exports. Effective marketing strategies and support mechanisms are essential for raising awareness about South Korean defense products, showcasing their

[214] Yoo Byung Tae. Research on the Improvement of the Defense Material Import and Export System. / Research on Defense Industry Current Policy // Seoul, Korea Defense Industry Association. – 1998. P.261. 유병태. 방산물자 수출입 업무체계 개선연구 / 방위산업현안정책연구 // 서울 한국 방위산업 진흥회. – 1998. P. 261.

[215] K-Bangsan Five Musketeers who shook the world market to Europe by desert // K-Gonggam, 23.02.2023.사막으로 유럽으로 세계 시장 흔든 K-방산 5 총사 // K-Gonggam, 23.02.2023 URL:https://gonggam.korea.kr/newsContentView.es?mid=a10224000000&section_id=NCCD_SPECIAL&content=NC002&news_id=565b661a-c464-4746-9c59-7e20bf126cc7 (access date: 02.05.2023).

[216] General supplies refer to military supplies excluding defense supplies prescribed by the Defense Acquisition Program Act.

[217] The Korea Defense Industry Promotion Association acted on behalf of the export preliminary approval and permission for general goods.

[218] It refers to business management, test evaluation, airworthiness certification, quality assurance, government-to-government contractual defense export, general county support, technology, maintenance, education support, etc.

technological capabilities, and demonstrating their value to potential buyers. However, challenges exist in establishing comprehensive marketing campaigns, conducting market research, participating in international defense exhibitions and trade shows, and building strong relationships with foreign defense agencies and industry players. Without sufficient government support in collecting market information and providing marketing assistance, defense companies struggle to obtain crucial information from purchasing countries.[219]

The need for enhanced marketing support becomes evident when examining South Korea's defense budget. By this it can be seen the contribution of the government in promotion of its arms export. While the country ranked 8th in global defense spending according to SIPRI data in 2020, it dropped to the 9th position in 2022, with a defense budget of $49,618.26 million compared to $50,873.8 million in 2021 and $48,750.3 million in 2020. [220] Experts argue for continued increases in defense spending, emphasizing the stagnant investment in defense amidst various threats, including North Korea's military threat and the arms race in Northeast Asia. Considering the defense budget proportions of neighboring powers like China and the security concerns posed by North Korea's nuclear and missile capabilities, South Korea's defense budget is likely to continue increasing in the foreseeable future.[221]

Despite the challenges, South Korean defense companies have experienced growth in line with increased exports. According to the SIPRI Arms Transfers Database for 2022, four South Korean defense companies made it into the world's top 100 defense companies in 2021. However, compared to the rankings in 2015, three companies were not included in the ratings. That`s why South Korean defense companies still have relatively insignificant arms exports support compared to more advanced countries having only 1.2% in the rating. This vulnerability may stem from, the lack of government support in information collection and marketing.[222] Currently, market information related to defense exports is primarily gathered by defense companies

[219] Lee Chul Won. A Study on the Improvement of Cost and Contract System to Improve Price Competitiveness of Defense Materials // Asia.European Future Society, Vol. 8 - 2011. P. 117-150. 이철원. 방산물자 가격경쟁력 향상을 위한 원가 및 계약제도 개선 연구 // 아시아.유럽미래학회, Vol.8. - 2011. P. 117-150.

[220] SIPRI Military expenditure Database 2022 // SIPRI, URL: https://www.sipri.org/research/armament-and-disarmament/arms-and-military-expenditure/military-expenditure (access date: 05.04.2023).

[221] South Korea defense budget to rebound in 2024 after 2023 dip amidst growing threats from North Korea, China // The GlobalData, 18.05.2023 URL: https://www.globaldata.com/media/aerospace-defense-security/south-korea-defense-budget-to-rebound-in-2024-after-2023-dip-amidst-growing-threats-from-north-korea-china-predicts-globaldata/ (access date: 12.03.2023).

[222] Kang Seok Joong, An Analysis of Export Strategies and Implications of Major Emerging Defense Export Countries // Korea Institute of Industry. – 03.2015. P. 2-5. 강석중. 주요 신흥 방산수출 국가들의 수출전략 분석 및 시사점 연구 // 산업연구원. – 03.2015. P. 2-5.

themselves, with limited dedicated government functions for marketing support. Consequently, defense companies face difficulties in obtaining vital information from purchasing countries without sufficient government assistance.[223]

Hence, it is evident that the government's marketing support falls short in covering the entire export process. Currently, exporting defense companies rely on two main channels for information collection. The first involves acquiring information through agents of the purchasing country, which raises concerns about potential distortion of information. This distortion can lead to significant losses if contracts are carried out under unfavorable conditions or if information distortion is discovered after contract completion. The second channel involves information collection by overseas defense officials. However, there are limitations in understanding the overall intentions of the purchasing country due to a lack of personnel and information acquisition channels. Moreover, even if information is transferred to the home country, analyzing raw and unrefined information poses significant challenges. The Korean government's reluctance to provide information can be seen as a reason why defense companies struggle to obtain accurate information from purchasing countries, considering the significant impact inaccurate information can have on the country`s trust in the future.[224]

To address these difficulties, the Defense Acquisition Program Administration has established defense cooperation offices in exporting countries.[225] These offices aim to support defense exports, create new export demand, analyze regional arms markets, and develop implementation strategies. However, these defense cooperation offices often have limited personnel, requiring collaboration with military authorities for export cooperation with most countries. South Korea has signed international defense and military cooperation agreements and MOUs with over 30 countries, including the United States, to enhance information exchange and

[223] Currently, one or two people are in charge of regional export cooperation, including in charge of the United States, Middle East, Latin America, Russia, Asia, and Africa, in the Defense Acquisition Program Administration.
[224] Lee Chul Won. A Study on the Improvement of Cost and Contract System to Improve Price Competitiveness of Defense Materials // Asia.European Future Society, Vol. 8 - 2011. P. 117-150. 이철원. 방산물자 가격경쟁력 향상을 위한 원가 및 계약제도 개선 연구 // 아시아.유럽미래학회, Vol.8. - 2011. P. 117-150.
[225] It refers to defense export experts from the Defense Acquisition Program Administration stationed in major export destinations to revitalize defense exports, such as supporting defense exports and creating new export demand.

international cooperation in the defense market. Additionally, quality assurance agreements have been established with more than 17 countries. [226]

South Korea's defense export targets have predominantly focused on Asian and Latin American countries, such as the Netherlands, Turkey, Indonesia, Vietnam, Mexico, the United Arab Emirates (UAE), the Philippines, and Bangladesh. There has been a recent increase in arms exports to African countries like Egypt, Morocco, and Algeria. However, these countries face challenges in terms of payment for defense systems, making it difficult for them to import defense products. Moreover, major defense-developed countries like the United States, the United Kingdom, and France already dominate these markets, placing latecomers like South Korea at a significant disadvantage in terms of competitiveness. For example, export negotiations for the K-2 (Black Panther) with Egypt were actively pursued but eventually canceled due to absurd counter-payment demands from the purchasing country, including a request for delayed payment of arms imports for over 20 years and the construction of nuclear power plants. The challenges of exporting as a latecomer are expected to increase over time. [227]

Additionally, the country facing the challenge related to export financial supporting system. The export financing plays a crucial role in supporting defense exports, as substantial financial resources are often required for large-scale defense contracts. However, challenges arise due to export financing restrictions. Strict regulations, limited funding, and bureaucratic procedures can hinder the financing process, making it difficult for defense companies to secure the necessary financial support. Overcoming these restrictions and streamlining export financing mechanisms are essential to facilitate smooth execution of defense export contracts and enhance the competitiveness of South Korean defense products in the global market.

Currently, South Korea's arms export financial support system is deferred within the Export-Import Bank of Korea [228] 's export financial system. Initially established in the

[226] Kang Seok Joong, An Analysis of Export Strategies and Implications of Major Emerging Defense Export Countries // Korea Institute of Industry. – 03.2015. P. 8-14. 강석중. 주요 신흥 방산수출 국가들의 수출전략 분석 및 시사점 연구 // 산업연구원. – 03.2015. P. 8-14.

[227] Ibid.- P. 15-17.

[228] Establishment of the bank was discussed in the second chapter. Currently as the Export Credit Agency (ECA) in South Korea, alongside the Korea Trade Insurance Corporation, Eximbank hold a significant position in facilitating international trade and supporting economic development. It serves as a vital financial institution, supporting both export and import activities. Additionally, Eximbank is a major shareholder of the Korea Aerospace Industries, further highlighting its involvement in promoting the country's aerospace industry and defense exports. The head of Eximbank holds a prestigious position within the institution and often accompanies the president or prime minister on overseas trips. This reflects the bank's crucial role in managing and overseeing international aid provided by the

organization the Defense Industry Promotion Fund in 1980[229], the system was abolished on December 31, 2006, due to financial limitations. Until 2006, rovided a total of $555.3 billion in loans[230], but financial support for defense exports was almost impossible as most funds were allocated to R&D and raw material reserves. [231]

The deferred export financial system allows for delayed payment under certain conditions and is supported by bank funds with government guarantees. However, it primarily applies to non-lethal materials within a limited range, and Korea's Export-Import Bank adheres to OECD guidelines regarding interest rates, repayment periods, and support scale. In contrast, advanced defense countries like the United States, the United Kingdom, and France operate separate export financing support systems tailored to their countries, minimizing volatility risks. These systems include paying only the interest rate applied to past defense industry promotion fund loans, with the remaining interest rates supported by the defense budget. [232]

Moreover, most of South Korea's defense technology is acquired through American foreign military sales (FMS), primarily through transactions with the United States, a major defense trading country. Exporting goods utilizing original American technology requires consent from the United States. Essentially, the U.S. government's consent is necessary for the export of defense products developed or produced domestically using American technology. This consent system acts as a limiting factor for the export of South Korean defense products. [233]

In 1989, South Korea and the United States signed a memorandum of understanding (MOU) on technology usage fees for the production of defense materials in Korea, outlining specific items related to the use of American technology. However, analyzing the consent rates

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Republic of Korea. Given the importance of international aid in enhancing diplomatic relations and fostering economic cooperation, the Export-Import Bank of Korea plays a pivotal role in facilitating and coordinating these efforts.

[229] Enforcement Decree of the Foreign Trade Act [Enforcement October 20, 2008] [Presidential Decree No. 21087, October 20, 2008, Revised other laws] Ministry of Trade, Industry and Energy (Trade Policy Division - Import and Export Transactions), 044-203-4023, Article 91 of 4019 (Delegation and entrustment of authority) 대외무역법 시행령 [시행 2008. 10. 20.] [대통령령 제 21087 호, 2008. 10. 20., 타법개정] 산업통상자원부(무역정책과-수출입거래), 044-203-4023, 4019 제 91 조 (권한의 위임・위탁).

[230] Looking at the amount of use of the Defense Industry Promotion Fund, from 1980 to 2006, the company’s loan demand was KRW 2.4104 trillion, and the actual loan amount was KRW 555.3 billion, which is 23%.

[231] Choi Sang Deok. A Study on the Improvement of the Export Support System for Defense Materials // Master’s degree thesis, Seoul: Dankook University. 2008. P. 32. 최상덕. 방산물자 수출지원 제도에 관한 개선방안 연구 // 석사학위논문, 서울 : 단국대. 2008. p. 32.

[232] Ibid. p. 35.

[233] Yoo Byung Tae. Research on the Improvement of the Defense Material Import and Export System. / Research on Defense Industry Current Policy // Seoul, Korea Defense Industry Association. – 1998. P.261. 유병태. 방산물자 수출입 업무체계 개선연구 / 방위산업현안정책연구 // 서울 한국 방위산업 진흥회. – 1998. P. 261.

before and after the signing of the MOU reveals that over 80% of consent agreements were reached prior to its signing, while only a 15% consent rate was observed afterward. Additionally, excessive delays in the review process posed significant obstacles to domestic defense exports. High non-response rates weakened the purchasing country's willingness to proceed with the purchase, ultimately leading to failed export negotiations. The U.S. also requires the purchasing country's government to directly submit the End Use and Non-Transfer Certificate (EUC) to the third country, South Korea's export destination, which has a considerable negative impact on export success between the purchasing country and South Korea. [234]

Furthermore, the complexity of export-related systems and procedures is attributed to the specific nature of military products. South Korea's export control laws, primarily based on, mentioned earlier, Article 21 of the Foreign Trade Act and related laws, classify defense products as strategic materials subject to government control for export. The unique nature of defense materials necessitates different licenses for permission. Major defense materials and technologies require permission from the head of the Defense Acquisition Program Administration, as outlined in Article 68 of the Defense Acquisition Program Act's Enforcement Decree, while general defense technology requires permission from the Minister of Education and Ministry of Trade, Industry and Energy. [235] Additionally, export control laws for military equipment and weapons are divided between the Foreign Trade Act and the Defense Business Act (that were overview earlier.), leading to inadequate exporter perception of export control. This dualization of export-related control and regulation tends to complicate export-related procedures. [236]

Moreover, the defense sector has traditionally been cautious about foreign cooperation due to confidentiality and security concerns, with the Ministry of National Defense often imposing restrictions. This focus on developing individual components of weapon systems has led to inefficiencies and technological limitations. Additionally, it becomes increasingly challenging to penetrate the export market after developing a complete weapon system, as R&D

[234] Kim Chul Hwan. Theory and Practice of Defense Industry // Seoul: National Defense University. – 2002. P. 27-30. 김철환. 방위산업 의 이론과실제 // 서울: 국방대학교. – 2002. P. 27-30.
[235] Kim Ki Pyo. Act to Support Export of Defense Industry and System Maintenance Plan. // NARS Policy Research Service Report. National Assembly Research Service 30.11.2019. 김기표. 방위산업 수출지원을 위한 법제도 정비방안 // NARS 정책연구용역보고서. 국회입법조사처 30.11.2019.
[236] Kang Seok Joong, An Analysis of Export Strategies and Implications of Major Emerging Defense Export Countries // Korea Institute of Industry. – 03.2015. P. 2-5. 강석중. 주요 신흥 방산수출 국가들의 수출전략 분석 및 시사점 연구 // 산업연구원. – 03.2015. P. 2-5.

costs continue to rise due to the advanced and complex nature of these systems, coupled with intense competition from other exporters. While the Ministry of National Defense has recently made efforts to promote international cooperation through joint committees with defense chiefs from various countries, limitations on cooperation with top foreign companies persist due to issues of secrecy and security.[237]

South Korea's history of arms exports reflects its remarkable journey from a defense equipment importer to a respected defense exporter. Through strategic investments in R&D, government support, adherence to quality standards, and international collaborations, South Korean defense companies have successfully exported advanced military systems to countries worldwide. This chapter delved into the various aspects of South Korea's defense export support mechanisms, the challenges faced, and the outlook for the country's thriving defense industry. South Korea has made significant investments in research and development to develop cutting-edge defense technologies, which has played a key role in the country's success in defense exports. The government has encouraged collaboration between the private sector and universities to foster innovation and has also established a number of research institutes and centers dedicated to developing defense technologies. As a result, South Korean fighter jets, combat ships, mobile equipment, tactical strategic missiles, tactical communication systems, and surveillance and reconnaissance equipment have been successfully exported. However, despite the recent rapid growth of defense exports, efforts are still required to localize weapons and revitalize arms exports. The government and the private sector tend to work together to improve the trade balance through research and development related to core military technologies. This could involve investing in research and development for advanced technologies such as artificial intelligence, drones, and cybersecurity. By developing these technologies, South Korea can gain a competitive edge in the global arms market and increase its defense exports.

Moreover, the South Korean defense industry needs to expand its focus on a domestic-biased industrial structure and enter overseas markets in order to increase exports. The government can play a key role in promoting the export of South Korean defense products by providing support through financing and export promotion activities. This could include offering

[237] Resi Qurrata Aini, Febry Triantama. The Implementation of South Korea’s Military Technology Reform in The Perspective of Techno-nationalism // Sospol, 1(7). – 29.06.2021.

tax incentives and export credits, as well as organizing trade missions and participating in international defense exhibitions.

Finally, South Korea continues to invest in research and development to develop cutting-edge technologies and maintain its position as a new arms export power. The government also tends to encourage collaboration between the private sector and universities to foster innovation and establish more research institutes and centers dedicated to developing defense technologies. By doing so, South Korea can maintain its position as a leading player in the global arms market, while also creating new jobs and economic opportunities in the country.

In conclusion, the success of South Korean defense exports can be attributed to several factors. Firstly, the Korean government's active involvement in supporting defense exports played a crucial role. Through various initiatives, including financial incentives, policy frameworks, and export facilitation measures, the government provided a conducive environment for defense companies to pursue international market opportunities. Secondly, the country's commitment to investing in research and development (R&D) enabled the development of cutting-edge defense technologies and innovative solutions. This R&D focus allowed South Korean defense companies to offer state-of-the-art products that met the evolving needs of the global market. Another significant aspect of South Korea's defense export success was its commitment to maintaining high standards of quality, reliability, and safety in its defense products that made it possible for efficient marketing. Strict adherence to international standards and certifications ensured that South Korean defense systems met the stringent requirements of potential customers, further enhancing the country's credibility as a trusted defense exporter. Moreover, the country developed efficient strategies of products promotion to specific regions, that made a significant contribution to its image worldwide. However, to continue this success, efforts are required to localize weapons, expand into overseas markets, and invest in research and development for advanced technologies. By doing so, South Korea can maintain its position as a leading player in the global arms market and increase its defense exports, while also creating new jobs and economic opportunities in the country.

A series of experts predict that within the next decade, the Republic of Korea will overtake China and become Asia's weapons powerhouse.[238] The potential of the Korean defense

[238] Jon Grevatt. Analysis: South Korea updates defense offset policy // Jane's Defence Weekly, 29.01.2019. URL: https://www.janes.com/defence-news/news-detail/south-korea-launches-offset-promising-list (access date: 12.03.2023).

export industry, which has been growing so far, is expected to shine further in the future. However, this will lead to practical results only when overcoming the aforementioned weaknesses or limitations. Therefore, it is necessary to overcome domestic bias through export industrialization of defense projects and solve the problem of high technology dependence of defense products through systematic investment in R&D. It should also not be forgotten that the revitalization of defense exports can be achieved by the government's efficient defense export support policy in addition to the private sector's own efforts.

Chapter 4. South Korea's Arms Export Strategies: Competitiveness Enhancement and Current Trends

The previous chapter examined the way South Korea has emerged as a new arms export power as a result of effective governmental policies. However, it was possible to identify some challenges that the country still faces while developing its policies of arms export improvement. Moreover, that are much more effort is required to sustain this success and fulfilling the governmental plans of archiving top five in the ranking of world export suppliers. This chapter will examine South Korea's present defense export strategies as well as actions aimed at increasing the country's competitiveness in the global arms market and point out possible tendencies for its future development and the way the government overcomes current challenges.

4.1. Revitalizing Arms Export: Contemporary Governmental Strategies

In the previous chapter it was mentioned that global military expenditures has increased significantly in recent years, as, for instance, total expenditure topping 1,822 billion USD in 2018, a 5.4 percent rise from 2009.[239] This increase in military spending has been matched by a significant increase in international arms shipments, which climbed by 7.8 percent from 2014 to 2018 when compared to 2009 to 2013.[240] Notably, the surge in military activity and security disputes in Asia has been a key driver of this trend, with China, India, Japan, South Korea, and Australia ranking among the top 15 military spending nations. In reality, Asia accounts for more than 28% of global military spending, with a remarkable 46% growth in spending over the last decade.[241]

Subsequently, countries of the Asia-Pacific region have seen significant demand for South Korean defense exports, especially in the area of maritime security, due to ongoing tensions and territorial disputes in the region. This has led many countries to seek stronger maritime capabilities, making South Korean defense products an attractive option for their needs. For instance, Hyundai Heavy Industries, a shipbuilder, has supplied the Philippine Navy with two guided-missile frigates and has been awarded a contract by Manila to deliver two corvettes and six offshore patrol vessels. The business also built the largest ship in the New Zealand navy,

[239] Dr Nan Tian, Dr Aude Fleurant,Alexandra Kuimova, Pieter D. Wezeman, Siemon T. Wezeman. Trends in World Military Expenditure, 2018 // SIPRI, Stockholm, 2019. P. 23-24.
[240] Ibid. P. 24.
[241] Ibid. P. 25.

the HMNZS Aotearoa. South Korea recently offered conventionally powered submarines to Australia, which may face a capability gap if its Collins-class submarines are unable to operate until the late 2030s or early 2040s. This is because Canberra intends to deploy its first nuclear-powered submarines as part of the AUKUS security arrangement with the United States and the United Kingdom.[242]

Moreover, the prosperity of the country`s arms export may be credited largely to platform-based items such as airplanes, artillery, and ships, which is amazing for a country the size of South Korea[243]. The modern armament is intended to offer high-quality alternatives to American and European weapons. The KAI 50 jet trainer, K9 155mm self-propelled howitzer, and K2 battle tank are all instances of successful weapon-platform exports, with several foreign forces considering purchasing the latter. Furthermore, Daewoo Shipbuilding and Marine Engineering (DSME), one of South Korea's shipbuilders, won contracts to build refueling tankers for the British Royal Navy and the Norwegian Navy in 2012 and 2013.[244]

Additionally, the high demand for South Korean military products can be ascribed to a number of variables. For instance, South Korea has one of the best growth trajectories among Asian countries that prioritize military spending and defense development. It became a significant indicator of influence of implemented reforms by that time but also served a motivation for the government to archive more profit in the field. As it was pointed by The Korea Institute of Industrial Economics and Trade the biggest advantage of South Korean weapons is their price competitiveness.[245] Compared to the German self-propelled gun[246], which is considered the world's best performance, the price of South Korean self-propelled gun with similar performance is known to be about half that of Germany. Thanks to its price competitiveness, South Korean self-propelled guns account for 69% of the global self-propelled

[242] Choe, S.H. South Korea Has Long Wanted Nuclear Subs. A New Reactor Could Open a Door // The New York Times, 13.12.2021. URL: https://www.nytimes.com/2021/12/13/world/asia/south-korea-nuclear-submarines.html (access date: 25.04.2023).
[243] Jon Grevatt. Analysis: South Korea updates defense offset policy // Jane's Defence Weekly, 29.01.2019. URL: https://www.janes.com/defence-news/news-detail/south-korea-launches-offset-promising-list (access date: 22.04.2023).
[244] Charmaine Chua, Martin Danyluk. Introduction: Turbulent Circulation: Building a Critical Engagement with Logistics. Environ Plan D // Annals of the American Academy of Political and Social Science. – 2018. P. 617-629.
[245] Korea Institute for Industrial Economics and Trade. K-Bangsan Export Support System Analysis and Future Tasks for Entering Global Defense Export Big 4 // KIET 10.10.2022. 산업연구원. 글로벌 방산수출 Big 4 진입을 위한 K-방산 수출지원제도 분석과 향후 과제 // KIET 10.10.2022 URL: https://www.kiet.re.kr/apply/newsLetterview?ns_no=408 (access date: 12.05.2023).
[246] HD Korea Shipbuilding bags US$92.8 million order for 2 product carriers // PortNews, 18.04.2023. URL: https://en.portnews.ru/news/346113/ (access date: 07.05.2023).

gun market.[247] When comparing similar-performance tanks, the price per Korean tank is half that of German tanks.

Another advantage of the Korean weapons is that they have a faster supply capacity than other countries. South Korea delivered 10 K2 tanks and 28 K9 self-propelled guns in four months, the first batch of weapons signed with Poland on a large scale in July 2022. It varies depending on the type of weapon, but it is very fast compared to the supply capacity of major arms exporters, which usually take years from order to delivery. Poland, which began importing weapons after supplying weapons to Russia's invaded Ukraine in February 2022, decided to import large quantities of South Korean weapons, partly because the delivery period of it was much shorter than that of its rival German weapons.[248]

One of the key factors is a transition in the culture of South Korea's defense sector from primarily fulfilling domestic demand to being more export oriented as a result of recent regulations imposed by the government. The Defense Industry Development Act and the Defense Science and Technology Innovation Promotion Act are two main policies that have had a considerable impact. The implementation of these policies gave been discussed in the previous chapters, but in the last decades they were constantly amended. To support exports and address weaknesses such as supply chain gaps in the domestic industrial base, these policies have introduced various initiatives such as enhanced import substitution, incentivized defense R&D, rapid acquisition policies for Fourth Industrial Revolution technologies, and full component manufacturing on key platforms.[249]

Furthermore, there has been a coordinated whole-of-government effort to support defense exports, with various government ministries, defense attaches, government incentives, government banks and lenders, and R&D funding all working together to facilitate such sales.

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[247] #1 in global self-propelled gun market share... Development of next-generation weapons with Britain and the United States // Dong-A Ilbo, 28.03.2022. 글로벌 자주포 시장 점유율 1 위... 영·미 등과 함께 차세대 무기 개발 // 동아일보, 28.03.2022. URL: https://www.donga.com/news/Society/article/all/20220326/112542245/1 (access date: 18.03.2023).

[248] Brad Lendon, Gawon Bae, Paula Hancocks. CNN, Speeding tanks, booming howitzers, shaking bones: This is how South Korea sells weapons // CNN, 25.22.2022. URL: https://edition.cnn.com/2022/11/25/asia/south-korea-defense-industry-weapons-intl-hnk-dst-ml/index.html (access date: 18.03.2023).

[249] Kwon Ban Seok. Defender of the Nation, Champion of Science: The Agency for Defense Development as a Nexus for the Technological Transformation of South Korea // Journal of Korean Studies, 1(28). – 2023. P. 59-90.

Moreover, 12th president Moon Jae-in's Defense Reform 2.0, announced in July 2018, stresses defense industry investment as a primary goal.[250] This effort intended to develop a leaner and more efficient South Korean military, with a stronger emphasis on the defense sector's export potential.[251] The expansion of this industry could assist not just the South Korean economy, but also contribute to the establishment of a more self-sufficient military, reducing its reliance on foreign defense technologies, especially given the US's fluctuating commitment to its regional allies.[252] Defense reform was regarded as a critical priority in light of China's growing influence and aggression in the region's security infrastructure. South Korea hopes to succeed in this initiative by becoming a leading contender in the arms export industry, where it already has a track record.[253]

However, due to pandemic of COVOD-19 there was a significant reduction of international arms sales that affected South Korea as well. Moreover, despite some good sales in the 2010s, South Korea's defense industry has suffered hurdles in its efforts to expand further. One of the most important failures was the loss of a bid in late 2018 by the United States Air Force to purchase 350 KAI jet trainers, which had previously sold well. The contract was awarded to Boeing, which had collaborated with SAAB, and the South Korean defense industry's stock dropped following the defeat, with the deal valued at 16 billion USD.[254]

Furthermore, South Korea's large investment in military R&D and platform-based development may produce the desired defense expansion benefits, but this method is not without challenges.[255] Other countries competing for the same tier of defense contracts as South Korea include Turkey, India, and Japan, as well as established defense export giants such as the United States, Russia, and France. As a result, competition for larger contracts from foreign

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[250] Defense Reform 2.0 // Ministry of National Defense, Seoul, 2019, URL: https://www.mnd.go.kr/mbshome/mbs/reform/ (access date: 05.12.2022).
[251] Song Sang Ho. Defense reform plan to cut generals, create ground command, retain 3-axis system // All News, 27.07.2018. URL: https://en.yna.co.kr/view/AEN20180727003900315
[252] Jon Grevatt. Analysis: South Korea updates defense offset policy // Jane's Defence Weekly, 29.01.2019. URL: https://www.janes.com/defence-news/news-detail/south-korea-launches-offset-promising-list (access date: 12.03.2023).
[253] Park Seong Jin. [100 Administrative tasks for the Government] Defense Reform 2.0 Reform Drive…OPCON Transfer Timeline changed to 'early return // Kyunghyang Shinmun, 19.07.2017. URL: http://news.khan.co.kr/kh_news/khan_art_view.html?artid=201707191421001&code=910302#csidxae7461929084e4d9b1b2f8a52682c28 (access date: 17.02.2023).
[254] South Korean defence sector in disarray after $16bn US tender fails // The Financial Times, 27.09.2018. URL: https://www.ft.com/content/490cc960-c2c9-11e8-95b1-d36dfef1b89a (access date: 05.04.2023).
[255] How Much Does Your Country Invest In R&D? // UNESCO Institute of Statistic URL: http://uis.unesco.org/apps/visualisations/research-and-development-spending/ (access date: 02.11.2022).

governments has become exceedingly severe, and a country the size of South Korea has struggles to get into the aforementioned group of top-tier exporters.

Additionally, there is United States Force Korea (USFK) that is aimed to be addressed in order to push for successful South Korean domestic defense growth that does not jeopardize the alliance's stability. A focus on unified command and control and high preparedness is one such component. To accomplish these goals, all defense equipment were interoperable for combined forces. Interoperability with US forces may be jeopardized if the ROK military uses a greater proportion of South Korean-made armaments.[256]

As such South Korean government attempts to approach current challenges and arms export development with a mid- to long-term perspective, vision, and strategy, as the military and government are the ones that employ defense materials, and exports of other defense products, including following military support, are expected to continue. For instance, every four years since 2008 the government releases Basic plan for defense industry development. The Basic Plan for Defense Industry Development, mandated by the Defense Industry Development and Support Act, is a crucial document aimed at systematically supporting and nurturing the defense industry in South Korea. In the previous chapters the content of some of them was already discussed. In short, the significance of the «08-12 Basic Plan» lies in its introduction of the national vision of "motorizing the new economic growth of the defense industry" within government documents. The subsequent the «13-17 Basic Plan» set a quantitative target of fostering ten global defense companies and securing the 8th position in defense science and technology, aiming to propel the advanced defense industry with international competitiveness. While the goal was not fully achieved, the plan played a meaningful role in promoting strategies and policy tasks to transform South Korea's defense industry, traditionally reliant on domestic demand, into a globally competitive sector. The «18-22 Basic Plan» (also known as Defense Reform 2.0) focused on enhancing advanced weapons system development capabilities and strengthening global competitiveness, positioning the defense industry as a core foundation for independent defense. Notably, it prioritized the establishment of an efficient defense ecosystem and emphasized the nurturing of promising small and medium-sized venture companies among its four policy directions. However, despite significant efforts in the past five years (2018-2022)

[256] Jim Garamone. U.S. Readiness in Korea Important to Diplomacy, Nominee Tells Senate Panel // DoD News, U.S. Department of Defense, 25.09.2028. URL: https://www.defense.gov/News/News-Stories/Article/Article/1644701/us-readiness-in-korea-important-to-diplomacy-nominee-tells-senate-panel/ (access date: 02.03.2023).

to build a developmental ecosystem, bolster defense R&D capabilities, foster small and medium-sized ventures, and transform the industrial structure towards exports, certain limitations remain.[257]

Addressing these limitations necessitates the establishment of an open system that integrates cutting-edge private technologies like artificial intelligence into defense industry policies, systems, organizations, and budget allocations. Furthermore, additional reinforcements are required to overcome failures stemming from insufficiencies in the current framework, despite the implementation of 14 major tasks and 39 detailed tasks. Accordingly, the «23-27 Basic Plan» is important in that it presents a basic direction for the development and growth of the defense industry over the next five years (2023-27) by comprehensively considering changes in the internal and external defense industry environment along with the performance analysis of past basic plans. [258]

According to the Defense Acquisition Program Administration, the basic direction of the '23-27 Basic Plan' is summarized as '3S'. First, it includes «Speedy Acquisition» to quickly respond to rapidly changing internal and external security threats in the future, «Securing State of the Art» through defense R&D innovation to support it and establishing a healthy defense ecosystem through «Sustainable Growth» due to the recent surge in defense exports.[259]

Firstly, in building military forces to protect national interests, strategic planners mainly used two methods: «threat-based planning» and «capabilities-based planning».[260] In order to have a wide range of challenges and capabilities fit for today's environment in uncertain security circumstances, **capability-based planning** is described as planning and implementing military

[257] Jang Sang Guk. K-Bangsan Export Innovation Plan from the perspective of Trinity // Humanities Society 21, Vol.13. - 2022. P. 783-794. 장상국 . 삼위일체관점에서 K-방산 수출혁신 방안 // 인문사회 21, Vol.13. - 2022. P. 783-794.
[258] The Basic plan for civil-military technology cooperation for strategic industrialization of the defense industry // Mechanical Robot Aviation Division, Manufacturing Industry Policy Division, Ministry of Trade, Industry and Energy. 2023.02.15. 방위산업 수출 전략산업화를 위해 '23~'27 민군기술협력 기본계획 마련 // 산업통상자원부 산업정책실 제조산업정책관 기계로봇항공과. 2023.02.15 URL: https://eiec.kdi.re.kr/policy/materialView.do?num=235454&topic=P&pp=20&datecount=&recommend=&pg= (access date: 14.02.2023).
[259] Ibid.
[260] John F. Troxell. Force Planning in an era of Uncertainty: Two MRCs as a Force Sizing Framework // Carlisle, Pennsylvania: Army War College.1997. P. 2.

construction in an efficient manner within the spectrum of available resources.[261] The new strategy of «Speedy Acquisition» is directly related to it.

Capability-based planning plays a significant role in arms export as it involves assessing and aligning a country's military capabilities with its defense industry's capacity to produce and export weapons systems. Capability-based planning focuses on identifying the specific military capabilities needed to address national security requirements and then determining the resources, technologies, and expertise necessary to develop and maintain those capabilities.

According to Jung Sung Kyu, Doctor of Economics of the Chosun University, there is a direct correlation between arms export and capability-based planning. Due to his studies in the context of arms export, capability-based planning helps guide the selection and prioritization of defense products and technologies for export. It involves assessing the strengths and capabilities of the domestic defense industry to determine which products and technologies can be effectively developed, produced, and marketed to international customers. This approach ensures that the arms export strategy is based on the country's existing capabilities and competitive advantages.[262]

By conducting a thorough analysis of its defense industry's capabilities, a country can identify areas of expertise where it has a comparative advantage and can excel in the global arms market. This analysis helps in determining which defense products and technologies are most suitable for export, considering factors such as market demand, technological sophistication, cost-effectiveness, and compliance with international export control regulations. Capability-based planning also considers the potential impact of arms export on a country's own defense needs and industrial base. It seeks to strike a balance between fulfilling domestic defense requirements and leveraging the defense industry's capabilities to generate revenue through arms exports. This ensures that arms export activities do not compromise national security or undermine the development of critical defense capabilities needed for self-defense. [263]

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[261] Paul K. Davis. Analytic Architecture for Capabilities-based Planning, Mission-System Analysis, and Transformation // Santa Monica: RAND. 2002. P. 18.

[262] Jung Sung Kyu. A Study on the Improvement of the Defense Industry Goods Export System // Chosun University. 2018. 정성규. 방위산업물자 수출제도의 개선방안 연구 // 조선대학교. 2018.

[263] Yu Soon Gil. An Analysis of the Export Obstacles of the Domestic Defense Producers and the Activation Measures to Overcome Them // Master's thesis, Korean National Defense University, Seoul. 2003. PP. 63-89. 유순길. 방산물자의 수출 장애요인 분석 및 활성화 방안 연구// 국방대학교 석사학위논문. 2003.

One of the key advantages of defense exports is the potential to reduce the maintenance and procurement costs associated with the government's responsibility for the defense industry base. By actively exporting defense products, the government can alleviate the burden of maintaining the production facilities and manpower needed for domestic consumption. The export volume allows for the distribution of these costs, enabling the government to achieve cost efficiencies.

At the same time, it also necessary to maintain the domestic production base during the operation cycle of defense products developed and produced in South Korea. By extending the production-run and distributing the cost of maintaining production facilities and manpower to the export volume, the government can lower the cost of maintaining the production base and decrease the domestic procurement unit price during the process of exporting. If defense companies maintain stable operation, quality control costs for domestic procurement defense products can be reduced.[264] This is because it is easy to maintain the quality of defense products produced evenly if a stable production line is maintained without fluctuations in seasonal production. Capability planning involves assessing and mitigating risks associated with arms export. It includes evaluating geopolitical factors, export regulations, and potential security risks. Developing risk management strategies ensures that arms exporters can navigate uncertainties, protect sensitive technologies, and maintain the security of defense-related information during the export process.

Additionally, the government's R&D expenses can be recouped. The government can recoup non-repeated R&D input expenses it infused by including them in the export price when exporting competitive products. In this case, the government’s defense R&D expenditure can be recycled as an investment resource rather than a one-time consumption cost, which can further strengthen the legitimacy of domestic defense product development, resulting in a virtuous cycle of strengthening and expanding the defense industry base. Ultimately, defense exports are supposed to directly contribute to the reduction of the defense budget enhancing its efficiency.[265]

[264] Shin Dong Hyup. A Study on the Analysis of Defense Export Competitiveness for Korea-US Reciprocal Defense Procurement // Journal of the The Korean Institute of Defense Technology, Vol. 02, №. 3ю – 2022. P. 5-10.
[265] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

Furthermore, some researchers claim that defense exports in some cases will enhance the country's external influence. Importers of weapons systems could depend on exporting countries for military discipline and military affairs. In general, the position of the importing country is high before arms sales, but once weapons are sold, the position of the exporting country is strengthened because importing ones can start to rely on the exporting country for military support during the operation period of this weapon. It is also possible to expand the international common military cooperation. In the case of transferring the production capacity of parts required by the importing country through trade-off trade along with the export of defense goods, in case of emergency, even if the parts production facility is discarded in South Korea, it is possible to import back from the importing country.[266]

Furthermore, South Korea is actively implementing «Securing State of the Art» is directly related to **strategies to foster competitive product systems**. Instead of directly competing with advanced defense countries in supplying products that they already focus on in the market, South Korea aims to target niche markets and produce specialized products. This approach enables South Korea to beat competition and secure a stable defense export market. The export strategy focuses on specific items that are considered advantageous in this regard. These items include advanced ubiquitous technologies, IT products, laser weapons, and unmanned fighter jets. Advanced ubiquitous technologies and IT products refer to weapons equipment that incorporates advanced information technology, such as the new network system. South Korea is recognized for its technological competitiveness in these areas, making them attractive for export to the global market. By emphasizing the production of niche products and leveraging its technological expertise, South Korea aims to carve out a unique position in the defense export market. This strategy allows South Korea to differentiate itself from competitors and offer specialized solutions that meet the specific needs and requirements of niche markets. By focusing on these areas, South Korea can capitalize on its technological strengths and create a competitive edge in the global defense industry.[267] This strategy emphasizes producing military products, with quality approved and price competitiveness worldwide, and that are manufactured

[266] Shin Dong Hyup. A Study on the Analysis of Defense Export Competitiveness for Korea-US Reciprocal Defense Procurement // Journal of the The Korean Institute of Defense Technology, Vol. 02, №. 3ю – 2022. P. 5-10.
[267] Kim Kyung Min. Future Development Direction of the The Korea Defense Industry Trade Support Center// Seoul: Hanyang University, Industry-Academic Cooperation Group Research Report. – 2010. 김경민. 산물자교역지원센터 향후 발전방향 // 서울: 한양대학교 산학협력단 연구보고서. – 2010.

entirely in South Korea, such as home appliances for daily use and mobile communication technology.

Moreover, as it was mentioned in previous chapters, South Korea's geopolitical conditions, with three sides bordered by the sea, make the country highly dependent on the ocean for its livelihood. However, historically, there has been little emphasis on maritime security, investment in marine technology, or a spirit of challenge to the sea among the South Korean citizens, except for a few scholars, navy personnel, and maritime officials. Nevertheless, as even advanced countries struggle to fully equip themselves with marine-related research and technology due to the unique challenges of the marine environment, research and development on marine technology, particularly in the areas of underwater military management and underwater weapon systems, are of significant value according to current military planning.[268]

South Korean military's education and training capabilities are also a part of global competitiveness. The country has a variety of training systems that can reduce costs and maximize effectiveness using scientific and advanced techniques such as a scientific combat training system that can master real-world training using MILES equipment[269], a simulation model for large-scale command training, simulators for various specialized training, anti-terrorism training, and KAI T-50 trainer jets. Command and control systems, vigilance and protection systems, unit and resource management systems, logistics management systems, and ammunition management systems using recently developed IT technologies are also competitive. It is considered as an area that can generate remarkable economic benefits if the system seeks to expand overseas in combination with South Korea's image of an IT powerhouse.[270]

In addition, considering the acquisition of South Korean arms within last two-year, new surface naval systems and new generation submarines, military semi-cinductor systems, the laser weapons and unmanned aircraft sectors are the key technology areas of the future defense

[268] Resi Qurrata Aini, Febry Triantama. The Implementation of South Korea's Military Technology Reform in The Perspective of Techno-nationalism // Sospol, 1(7). – 29.06.2021.
[269] Multiple integrated laser engagement system.
[270] Jeong Yeon Bong. National Defense Diplomacy Promotion Plan to Revitalize Defense Export // Seoul: Korea Defense Research Institute 's Defense Policy Study Journal, Summer. – 2010. P. 55. 정연봉. 방산수출 활성화를 위한 국방외교 추진방안 // 서울 : 국방연구원, 국방정책연구. – 2010. P. 55.

industry. However, as its level is still not well commercialized and needs more advanced tech development in the nearest future.[271]

On the other hand, as it was mentioned in the second chapter, when attempting to export defense products, the reliability of the product is crucial, and the Korean military's use of the weapons system promote exports if it is sufficiently secure. Therefore, establishing a test organization (unit) that exclusively conduct tests during the development of the weapon system is one of the priorities for the country to prove its consistency with future warfare.[272]

Thirdly, **step-by-step export market development and approach strategy** is currently being implemented by South Korean government to increase of South Korean arms imported countries worldwide. Given the constraints of limited resources and high defense expenditures, it is impractical and ineffective to increase arms exports to all markets. Moreover, as it was mentioned in the third chapter, governments and defense firms face challenges in meeting South Korea's export criteria due to a lack of information and marketing strategies. Therefore, it becomes crucial to select collaboration partners based on their competitiveness in the defense industry. The South Korean government aims to identify countries that exhibit a demand for cutting-edge defense capabilities while offering opportunities for financial gains through defense exports. Optimal partners are those with comparable defense technologies but differing competitive fields, emerging nations with significant growth potential, abundant natural resources or energy reserves, substantial military presence, or similar security requirements. Additionally, to tap into new markets, arms exporters often adopt a strategic approach where exports commence with small volumes. By initially targeting niche markets, they can gain expertise and establish a strong foothold. Once they have mastered a specific niche, exporters can then expand to higher ones, promoting a wider range of products and other auxiliary weapons. This progressive approach allows arms exporters to gradually expand sales in the new markets while leveraging their expertise and reputation gained from successful ventures in smaller markets. It enables them to adapt to varying customer needs, establish trust, and develop a solid foundation for future growth. By strategically selecting collaboration partners and employing a gradual expansion approach, South Korea's arms exporters can effectively navigate

[271] Lee Kang Kyong, Seol Hyeon Ju. Developing Strategies to Improve Operational Test and Evaluation of Weapon System in the Age of the Fourth Industrial Revolution // J. KIMS Technol, 6(23). – 2022. P. 591-601.
[272] Shin Dong Hyup. A Study on the Analysis of Defense Export Competitiveness for Korea-US Reciprocal Defense Procurement // Journal of the The Korean Institute of Defense Technology, Vol. 02, №. 3ю – 2022. P. 5-10.

the complexities of the global defense industry, maximize their export potential, and promote the sale of a broader range of products and defense-related services.[273]

Based on the analysis, the correlation between defense diplomacy and actual defense exports should be emphasized. An illustrative example is the cooperation between countries in response to the Russian-Ukraine conflict that erupted in February 2021. Following the conflict, Ukraine and several European nations, including Ukraine itself, sought military assistance from South Korea. Notably, SIPRI's (2022) report highlights that South Korea's provision of military aid to Ukraine, facilitated through NATO members, was contingent on arms sales to Norway, Poland, and the United Kingdom. This collaboration began as early as 2014 in response to Russia's annexation of Crimea. [274]

In this context, defense diplomacy serves as a conduit for promoting defense exports and fostering cooperation between nations facing security challenges. South Korea's provision of military assistance to the Ukraine demonstrates its commitment to supporting allied nations and addressing regional security concerns. By aligning defense diplomacy efforts with defense exports, South Korea can forge strategic partnerships, enhance its reputation as a reliable defense supplier, and contribute to international security efforts.

South Korea's response to the Ukraine crisis happened in the midst of a busy domestic context, including presidential elections and North Korean missile launches. Despite some media debates about the potential consequences of backing Ukraine, South Korean public opinion overwhelmingly supported backing Kiev and imposing sanctions on Moscow. Initially, the Moon administration prioritized the safety of South Korean citizens and businesses in affected areas, followed by more comprehensive responses consistent with Western and other democratic states.[275] While supporting Ukraine came at a cost in terms of economic costs and geopolitical tensions due to Russia's leverage over North Korea, it also provided reputational benefits and opportunities for closer relations with other democratic partners. South Korea was able to present an image of a responsible democratic society and acquire respect as a like-minded partner

[273] Jeong Yeon Bong. National Defense Diplomacy Promotion Plan to Revitalize Defense Export // Seoul: Korea Defense Research Institute 's Defense Policy Study Journal, Summer. – 2010. P. 56. 정연봉. 방산수출 활성화를 위한 국방외교 추진방안 // 서울 : 국방연구원, 국방정책연구. – 2010. P. 56.

[274] Importer/Exporter TIV tables // SIPRI, 2022. URL: https://armstrade.sipri.org/armstrade/page/values.php (access date: 12.03.2023).

[275] Address by President Yoon Seok-yul on Korea’s 77th Liberation Day // The Korea Times, 15.08.2022. URL: https://www.koreatimes.co.kr/www/nation/2022/08/356_334423.html (access date: 15.03.2023).

through its response. The Yoon administration saw South Korea's response to the events in Ukraine as a chance to strengthen ties with the United States, NATO, and European partners. As a result, Yoon's first month in office highlighted his administration's dedication to value-oriented diplomacy and ambition to become a "global pivotal state."[276]

Currently South Korea aims to rejuvenate its defense exports in the future by adopting export strategies that focus on target countries where it has not yet entered but that possess advanced defense capabilities. By proactively establishing and implementing export strategies, South Korea can forge partnerships and cooperation agreements with these countries, thereby paving the way for entry into new defense markets. This approach enables South Korea to capitalize on the interest shown by these nations in its defense products and enhance its export competitiveness.

Meanwhile, when choosing a target country for focused defense market management, it is crucial to consider that the nature of the defense market differs across regions. Asian countries have moderate defense technology levels, with most relying on foreign purchases. They possess relatively high purchasing power due to economic growth, and cost factors play a significant role in purchasing decisions. Meanwhile, the Middle East has high purchasing power and actively engages in foreign purchases due to local conflicts. As a monarchy, decision-makers' relationships are vital in this region. Africa is plagued by frequent conflicts related to culture, religion, race, and political instability. Additionally, the region boasts abundant natural resources, resulting in a high demand for industrial cooperation and joint investment. Lastly, in Latin America, there are no inter-country disputes, but there are issues with terrorism/drugs, and political relations with countries involved in arms sales are crucial.[277]

Hence, to boost defense exports across different regions and countries, South Korean tries to establish bases that cater to the specific needs of each location and devise unique access strategies. This not only optimizes efforts but also save resources and enables a swift response to emerging defense requirements. Furthermore, accessing defense demand information accurately

[276] Yoon, S.Y. South Korea Needs to Step Up // Foreign Affairs, 08.02.2022. URL: https://www.foreignaffairs.com/articles/south-korea/2022-02-08/south-korea-needs-step (access date: 01.05.2023).
[277] Jang Won Jun. Analyzing and Implications for Export Support Systems in Major Defense Exporting Countries // Industrial Research Institute. – 02.2012. P. 193. 장원준. 주요방산수출국가의 수출지원제도 분석과 시사점 // 산업연구원. – 02.2012. P. 193.

and promptly can result in synergistic effects.[278] KIET outlines the classification of defense export bases into three categories presented in the Table 2[279]: main export bases (MEB), forward export sites (FES), and prospective export nations (PEN).[280]

The main export bases are regional countries where defense exports have already made some headway. South Korea tends to set up a dedicated organization in these countries to expand defense exports. Forward export hubs are countries that are already importing South Korean defense products, which have garnered favorable reviews and trust. These countries can strengthen the publicity effect and contribute to market development in the region. Potential importers are countries that have yet to be explored for export, such as China, Russia, and India, but have great potential based on market size and future bilateral relations. Therefore, a gradual approach to the global defense market can be effective only if South Korea's defense industry export base is established. If the government does not provide support policies or promotion strategies for the construction of overseas defense export bases, it may result in a one-off event and waste of budget. Hence, South Korean government actively supports mid- to long-term support policies to ensure continuous use of the export bases.

4.2. Defense Science and Technology Paradigm Shifts: An Overview of Current R&D Vision and Objectives

Developed countries are prioritizing their defense budgets towards the research and development of advanced core technologies in order to secure superiority in defense, science and technology. The development of R&D is crucial in the context of arms export. R&D efforts in the defense sector are instrumental in developing advanced defense technologies, systems, and weapons, thereby enhancing a country's defense capabilities and competitiveness in the global arms market. Due to statistics countries with a high technology defense industrial base and

[278] Cho Nam Hoon. Market Research Analysis and Export Strategy Establishment for Revitalizing Defense Exports // Seoul: Korea Defense Research Institute, 2007. - pp. 121-136. 조남훈. 방산수출 활성화를 위한 시장조사분석 및 수출전략 수립 // 서울 : 한국 국방연구원, 2007. - pp. 121-136.

[279] Table 2 // Annex.

[280] Top 10 Promising Countries for Defense Export // Korea Institute of Industrial Research (KIET), 2014. 방산수출 10 대 유망국가 // 산업연구원(KIET), 2014 URL: https://www.kita.net/cmmrcInfo/cmmrcNews/cmmrcNews/cmmrcNewsDetail.do?nIndex=62340&recommendId=0#:~:text=%EC%95%9E%EC%9C%BC%EB%A1%9C%205%EB%85%84%EA%B0%84%20%EB%B0%A9%EC%82%B0%20%EC%88%98%EC%B6%9C,%EB%93%B1%2010%EA%B0%9C%EA%B5%AD%EC%9D%84%20%EB%BD%91%EC%95%98%EB%8B%A4 (access date: 03.05.2023).

substantial defense R&D tend to be major arms exporters.[281] Defense R&D drives technological innovation, leading to the development of cutting-edge defense systems and weaponry. This innovation creates a competitive edge for arms exporters, making their products attractive to potential buyers. It also enables countries to enhance their defense capabilities by developing advanced weapons, communication systems, surveillance technologies, and military equipment.[282]

Moreover, defense R&D often involves collaboration and partnerships between governments, defense industry players, and research institutions. These collaborations facilitate knowledge sharing, resource pooling, and the exchange of expertise. Such collaborations strengthen the capabilities of arms exporters, increase their research capabilities, and enhance their ability to offer innovative defense solutions to potential buyers.[283]

Based on these the Defense Acquisition Program Administration set the *Vision* of the «23-27 Basic Plan» as «fostering the global defense industry through rapid high-tech power construction». In the coming years, South Korea has formulated a strategic plan to cultivate a dynamic research and development (R&D) ecosystem that will expedite the advancement of state-of-the-art weapons systems, particularly unmanned technologies, aligning with the objectives of the new government (No. 106).[284] The primary objective of this endeavor is to lay a robust groundwork for the defense industry and actively promote the exportation of these advanced weapons systems to the global market. By actively participating in defense exports of these cutting-edge products, South Korea aims to achieve an «economy of scale» within the defense industry. This approach involves capitalizing on increased production and sales volumes of defense products to enhance their competitiveness and fortify the overall strength and capabilities of the defense industry.

Furthermore, the Defense Acquisition Program Administration has put forward specific and quantitative goals to position South Korea as one of «the five major defense science and technology powers» and one of the «four major defense export countries» by 2027. To

[281] Kerem Toker. The Mediator Effect Of R&D Employment On R&D Expenditures And Export Revenues // ISMC 13th International Strategic Management Conference. - .2017. P. 14-23.
[282] Yasemin Dumrul, Zerrin Kilicarslan. The effect of research and development (R&D) expenditures on export: evidence from a panel of selected OECD countries // Pressacademia, 3(5). – 2018. P. 234-241.
[283] Maican, Florin, Orth, Matilda, Roberts, Mark J.,Vuong, Van Anh. The Dynamic Impact of Exporting on Firm R&D Investment // SSRN Journal. – 2020. P. 11-59.
[284] Yoon Seok Yeol administration's 120 national tasks // Notice, 20th Presidential Office. 27.07.2022. 윤석열정부 120 대 국정과제 // 공지사항, 주제 20 대 대통령실. 27.07.2022.

accomplish this vision, the administration has announced plans to elevate South Korea's defense science and technology capabilities from its current 9th global ranking to the 5th position by 2027. This will be achieved through the establishment of an innovative, inclusive, and forward-thinking defense R&D system, as well as the pursuit of transformative defense projects to rapidly enhance national power. Additionally, the administration has set a target of achieving 40 trillion won in defense sales by 2027, comprising 30 trillion won from domestic demand and 10 trillion won from exports.[285] With this ambitious objective, South Korea aims to join the ranks of the world's top four defense export powers, alongside the United States, Russia, and France.

To achieve the vision and goals outlined in the 23-27 Basic Plan, four policy directions, 13 key tasks, and 31 detailed tasks have been presented. Firstly, in terms of establishing a defense project foundation, one of the policy direction focuses on creating an innovative defense project foundation for building a technologically advanced force. This involves reestablishing a rapid acquisition system, streamlining existing acquisition systems, enhancing quality and data management. Notably, the introduction of a required-based rapid acquisition process is being promoted to align with global defense industry trends. The aim is to innovate the rapid pilot project, which currently remains at the pilot stage, to match the standards of advanced countries. Additionally, efforts will be made to improve the testing and evaluation capabilities of domestic weapons systems to keep pace with advancements in advanced and convergent weapon systems.[286]

The vision of defense science and technology development is to «build a strong military with advanced defense science and technology capabilities and ultimately contribute to national security», and the goal of defense science and technologies are supposed to be divided into medium-term and long-term goals. [287] In the mid-term, the focus is on securing core

[285] Kim Jung Soo. Invested 25 trillion won in 12 strategic technologies over 5 years...As one of the top five scientific and technological powers // Hankyoreh, 07.03.2023. 김정수. 12 대 전략기술에 5 년간 25 조 투자…과학기술 5 대 강국으로 // 한겨레, 07.03.2023 URL: https://www.hani.co.kr/arti/society/environment/1082486.html (access date: 08.04.2023).

[286] The Basic plan for civil-military technology cooperation for strategic industrialization of the defense industry // Mechanical Robot Aviation Division, Manufacturing Industry Policy Division, Ministry of Trade, Industry and Energy. 2023.02.15. 방위산업 수출 전략산업화를 위해 '23~'27 민군기술협력 기본계획 마련 // 산업통상자원부 산업정책실 제조산업정책관 기계로봇항공과. 2023.02.15 URL: https://eiec.kdi.re.kr/policy/materialView.do?num=235454&topic=P&pp=20&datecount=&recommend=&pg= (access date: 08.04.2023).

[287] Kim Sung Bae, Park Jun Su, Yang Young Cheol. Defense Science and Technology Development Strategy // Tongwon №. 87. – 2022. P. 181 김성배, 박준수, 양영철. 국방과학기술 발전전략 // 방정책연구 №. 87. – 2022. P. 181.

technological capabilities based on defense science and technology. This entails identifying key technologies that require intensive development in each field and achieving capabilities equivalent to those of advanced countries. Since core technologies are crucial to developing weapons systems, the plan is to prioritize the development of technologies necessary to create advanced weapons systems. In the long run, the vision is to realize the objectives of defense science and technology. The plan is to develop advanced weapons systems, achieve competitiveness in the global market, and actively export them while using them domestically. This approach will secure independence in developing critical weapons systems to maintain future self-defense capabilities and promote dynamic growth in the national economy through the export of advanced weapons systems to advanced countries.

In particular, the South Korean government's defense plan aims to strengthen both offensive and defensive capabilities to respond to various threats. The plan includes spending 106.7 trillion won on improving defensive capabilities, such as establishing a 24-hour monitoring system and strengthening ballistic missile defense. The plan also involves spending 208.5 trillion won on force operation, including fostering elite forces and securing long-range precision strike capabilities. The government also plans to replace older fighters with Korean fighters, upgrade air superiority and precision strike capabilities, and improve long-distance air transport capabilities. The plan also includes the development of a light aircraft carrier in the early 2020s.[288]

The practical strategies for achieving the goals of defense science and technology development may be divided into four main categories. First - it is a strategy to expand investment in defense R&D; second - goal-oriented defense R&D promotion strategy; third – open defense R&D activation strategy; and fourth, defense R&D system advancement strategy. This includes expanding the defense R&D budget and increasing spending on the research and development of high-tech weapon systems such as radars, sonars, satellites, and missiles. The defense R&D budget is set to increase from 4 trillion and 331.4 billion won in 2021 to 7 trillion and 131.3 billion won in 2026, while spending on high-tech weapon systems will increase from 2

[288] Ministry of National Defense. Mid-term Defense Plan 2022-2026 // Press Release, 01.10.2021.URL:https://www.mnd.go.kr/user/boardList.action?command=view&page=1&boardId=O_47261&boardSeq=O_283459&titleId=null&siteId=mndEN&id=mnd EN_020100000000&column=null&search=null (access date: 06.05.2023).

trillion and 187 billion won in 2021 to 3 trillion and 445.9 billion won in 2026. by indirectly supporting specific industries using the WTO or FTA Security Exception Clause.[289][290]

On the other hand, treating investment for the future and investment for the present as a single budget category reduces long-term investment, so it is necessary to separate the two budgets. It is necessary to induce companies to expand their R&D investment. It will encourage companies to invest in defense R&D as a way to overcome the limitations of size expansion of the defense R&D budget and expand resources that can be used for defense R&D. The primary criterion for a company's investment decision is the feasibility of the investment's business aspect. For companies to invest in defense R&D, they need guaranteed profits in terms of business feasibility. There are two types of risks that companies can bear: the risk of achieving the technology development target and the risk of achieving the business profit. Encouraging investment in defense R&D projects that can reduce these two risk burdens is desirable. Moreover, there is a need to increase investment in technology development, as South Korea's defense R&D expenditure has a lower budget invested in technology development than that of advanced countries. Currently, the ratio is 13%[291], and it is necessary to gradually increase this to 20%. In comparison, advanced countries in defense R&D, such as the US and the UK, have ratios of 15% and 27%, respectively.[292]

Second, the goal-oriented defense R&D promotion strategy is focused on developing an export-competitive weapon system. To prepare for mid- to long-term needs, exporting countries concentrate on the new «23-27 Basic Plan» and select a weapon system that necessitates domestic development. The Ministry of National Defense is currently reviewing potential globally competitive weapon systems and applying a «choice and concentration» strategy. This involves dividing areas of promotion into surveillance and reconnaissance, command and control,

[289] Security exceptions to Article 3 (1) of the WTO's Government Procurement Agreement: No provision shall be deemed necessary to prevent the procurement of weapons, ammunition or war material essential for national security or defense purposes. Article 23.2 of the Korea-U.S. FTA Agreement on Security Exceptions: No provisions of this Agreement shall be construed as follows: requiring the parties to provide information that, if disclosed, is contrary to their essential security interests, or preventing the parties from applying measures deemed necessary to fulfill their obligations to maintain or restore international peace or security or protect their essential security interests.

[290] Ministry of National Defense. Mid-term Defense Plan 2022-2026 // Press Release, 01.10.2021.URL:https://www.mnd.go.kr/user/boardList.action?command=view&page=1&boardId=O_47261&boardSeq=O_283459&titleId=null&siteId=mndEN&id=mnd EN_020100000000&column=null&search=null (access date: 06.05.2023).

[291] Ministry of National Defense, Defense Science & Technology. Promotion Policy 2019-2033 // Seoul: MND, 2019. URL: https://policy.nl.go.kr/search/searchDetail.do?rec_key=SH2_PLC2020025033 (access date: 12.04.2023).

[292] Antonella Biscione, Raul Caruso. Military Expenditures and Income Inequality Evidence from a Panel of Transition Countries (1990-2015) // Defence and Peace Economics, 1(32). – 2019. P.46-67.

precision strikes, and basic power, and strengthening the connection between the development of core technologies and weapon system development. In addition, the ministry aims to secure necessary core technologies in advance to prepare for future warfare and promote eco-friendly green defense technology development. The defense sector will invest in and apply differentiated technology development strategies for green sources and leading technologies, in line with the government's goal of achieving «low carbon green growth».[293]

Third, the strategy to revitalize open defense R&D allows companies to expand R&D led by them directly. The level of defense science and technology of defense companies in South Korea has also been developed to a level similar to that of advanced defense countries depending on the field. Since most of the bi-benefit and strategic weapons systems are important projects of the state, even if they are developed centering on the Defense Science Research Institute, the development of conventional weapons systems will be promoted by defense companies. While promoting a company-led research and development project, it is supposed to ensure that excellent science, technology and research, and development infrastructure in the private sector, such as industry, academia, and research, can be utilized to the fullest.[294]

In addition, the utilization of private standards for commercial products or weapon system parts are being enhanced by improving overall conditions. This includes expanding civil and military technology development projects, involving multiple government ministries, and finding areas for joint R&D cooperation. The Ministry of Knowledge Economy and the Defense Acquisition Program Administration work together to establish a mid-term plan for civilian-military R&D at the pan-ministerial government level, creating a stable framework for promoting mid- to long-term projects.[295]

Fourth, the strategy of advancing the defense R&D system is to introduce a competitive system for defense R&D projects. This method involves competing with multiple companies from the research and development stage in weapons systems development projects, which is a technique utilized by developed countries. The budget for exploration and development is

[293] Ministry of National Defense, Defense Science & Technology. Promotion Policy 2019-2033 // Seoul: MND, 2019. URL: https://policy.nl.go.kr/search/searchDetail.do?rec_key=SH2_PLC2020025033 (access date: 07.05.2023).
[294] Shin Dong Hyup. A Study on the Analysis of Defense Export Competitiveness for Korea-US Reciprocal Defense Procurement // Journal of the The Korean Institute of Defense Technology, Vol. 02, №. 3ю – 2022. P. 5-10
[295] Ministry of National Defense. Mid-term Defense Plan 2022-2026 // Press Release, 01.10.2021.URL:https://www.mnd.go.kr/user/boardList.action?command=view&page=1&boardId=O_47261&boardSeq=O_283459&titleId=null&siteId=mndEN&id=mnd EN_020100000000&column=null&search=null (access date: 18.04.2023).

typically only about 10% of the system development budget, so it is more efficient to compete with two or more companies in the research and development stage and select the best companies to promote system development.[296] Moreover, this strategy is a transition to the defense R&D management system. The current R&D management system is being changed to enable the Ministry of National Defense, Joint Chiefs of Staff, and the National Intelligence Service to efficiently implement the technology development management system, considering the necessity of budgeting for R&D.[297]

Additionally, it aims to systematize the reflux of defense science and technology planning, development, and evaluation to create a virtuous cycle effect. Particularly for large system development projects, it minimizes the risk of business failure due to immature core element technologies by conducting technological maturity evaluation (TRA) and using it as a basis for decision-making on the phase shift of the project.[298]

Meanwhile, the role of R&D between the Agency for Defense Development (ADD) and defense companies in defense science and technology is still in the process to be redefined. Currently, ADD is in charge of researching and developing major weapons systems for exports, but there is difficulty in adapting these systems to meet the needs of countries that demand overseas defense supplies. To increase efficiency, it aims to distinguish between domestic and export use from the R&D stage. Defense companies are directly involved in the export of weapons systems, so a company-level research and development environment are being developed.[299]

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[296] Kim Si Kwon. A Study on the Determinants of Export Competitiveness of Korean Defense Companies // Doctoral thesis, Kyung Hee University Graduate School, Seoul. 2012. 김시권. 한국 방위산업체의 수출경쟁력 결정요인에 관한 연구 // 경희대학교 대학원 박사 학위논문. 2012.

[297] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

[298] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

[299] Ministry of National Defense, Defense Science & Technology. Promotion Policy 2019-2033 // Seoul: MND, 2019. URL: https://policy.nl.go.kr/search/searchDetail.do?rec_key=SH2_PLC2020025033 (access date: 12.03.2023).

4.3. Measures to Improve Governmental Policies and Institutional Support for Arms Exports

Having analyzed major challenges and main implemented by South Korean Government it is possible to find out measurers proposed by leading experts in the field pf defense science in South Korean to overcome it based on the current governmental policies and arms export state described in the second and third chapters.

The defense industry is of utmost importance as it is directly linked to the survival of a nation. It is a vital strategic industry and forms the foundation of a nation's security. Due to its far-reaching impact, it is considered the country's number one strategic industry sector and must never be weakened. For the defense industry to flourish, joint efforts are required from the government, military, and people to secure competitiveness and create a strong foundation. The government and military hold significant influence over the defense industry, and therefore, an increase in defense spending is necessary for its development. To achieve this, systematic measures at the national level are essential to educate the public about the significance of investing in defense spending and promoting the development of the defense industry with the right view of security. Such a measure was called **Transformation of National Perception to Improve Defense Export Conditions by** Kang Seok Joong, Doctor of Economics of Korea Institute for Industrial Economics and Trade. According to his work, this approach is vital to transform national perception and improve defense export conditions, educating security as a regular subject can raise public awareness about the importance of it.[300]

Efforts made solely by private defense companies or exporters are insufficient for effective defense product exports. In order to maintain and develop the defense industry base as a national security asset, the government must provide adequate support for defense exports, which are crucial for economic growth. Ultimately, the benefits of such exports are attributed to the government.

Meanwhile, it is crucial to recognize and address potential issues that may arise during the export of defense products. Following the September 11 attacks in the U.S. in 2001, the Iraq War in 2003, and the North Korean nuclear issue, export control of strategic materials has become a global concern, and adherence to such regulations has been highlighted as a significant

[300] Kang Seok Joong, An Analysis of Export Strategies and Implications of Major Emerging Defense Export Countries // Korea Institute of Industry. – 03.2015. P. 2-5. 강석중. 주요 신흥 방산수출 국가들의 수출전략 분석 및 시사점 연구 // 산업연구원. – 03.2015. P. 2-5.

norm that all countries must adhere to. Therefore, for South Korea, which is striving to meet its export goals, it is essential to have a comprehensive understanding of and comply with these laws when exporting strategic goods, including defense products.

In 2006, it was discovered by the Defense Security Command that seven companies had illegally exported defense production facilities and technical data worth 160 billion won to Myanmar, a country that was restricted from importing defense goods. These exports to Myanmar included the production of six types of shells, such as 105 millimeters of anti-tank and high-bombing ones. Moreover, there was a case when prosecutors have accused a South Korean trading company of illegally exporting strategic materials to Libya, which are regulated by the Nuclear Non-Proliferation Treaty (NPT) and the International Atomic Energy Agency (IAEA) as export-controlled items. After this the Ministry of Commerce, Industry and Energy established a strategic material management department to control the export of strategic materials and a private organization, the Strategic Material Management Center, within a month and the first half, respectively, to strengthen its organization.[301] The export of goods designated as major defense goods without proper export control can lead to criticism from the international community, cause diplomatic friction, and have a significant negative impact on future exports by lowering national credibility.

As such, there are problems that are supposed to be recognized when exporting defense products. In other words, the impression as a major conventional arms seller and the image as a military power should be noted, and high security measures should be accompanied at the same time because the leakage of core defense science technologies can have a huge negative impact on national security. On the other hand, the negative effects of activating defense exports can be also considered. When the U.S. Congress reviewed whether to allow F-22 exports to Japan, it presented five items as consideration: industrial benefits, technology transfer issues, weapons interoperability with Japan, regional security in Northeast Asia, and domestic restrictions.[302] This will be a good example for establishing standards between the revitalization of exports and national status when establishing South Korea's defense export policy.

[301] Kim Yoon Seok. The democratic deficit in South Korea: the democratic control of armed forces since 1993 // Japanese Journal of Political Science. – 2020. P. 41-52.
[302] Christopher Bolkcom, Emma Dhanlett-Avery. Potential F-22 Rapter Export to Raptor // CRS Report for Congress,Foreign Affairs, Defense, and Trade Division, 02.07.2007.

According to Moon Jong Yeol, Leading Specialist of the National Assembly Budget Office, **gradual expansion of the functions of the organization dedicated to defense exports** is also a pivotal direction in the field for South Korea. As such, in most advanced countries, the governments have established dedicated organizations to support its defense exports and actively supports it. In reality, it is quite difficult to revitalize defense exports without active government support because the main targets of defense exports are the governments and military of the other countries. To shift from a domestic-focused defense industry to one that is export-oriented, it is necessary to establish an export support organization comprised of defense and acquisition experts. This organization can provide systematic assistance for defense exports and ensure confidence for the importing country. In order for South Korea to become a leading defense country, a robust defense export policy would be implemented at the government level, and a dedicated organization is necessary to manage and implement these policies.

Despite the need in South Korea for a dedicated organization to strengthen the competitiveness of export negotiations and promote exports, amending relevant laws and securing budgets from administrative departments and government agencies has proved to be difficult. To address this issue, the Defense Ministry, the Ministry of Knowledge Economy, and DAPA established «the Defense Trade Support Center» in October 2009. This center, which is based on KOTRA, has a team of 14 people led by the director of the Ministry of Knowledge Economy. Its responsibilities include managing the defense export support system, including finance, industrial cooperation, linked trade, static trade, information analysis, G2G, and IR.[303]

With mid- to long-term plans in mind, South Korea's defense export organization is gradually expanding its size to prepare for a possible increase in the volume of defense exports. While the government's recognition of the need for a dedicated organization to support defense exports is commendable, the current organization of 14 personnel may have limited capabilities, and its achievements are yet to be fully analyzed. While establishing a dedicated organization like SIBAT in Israel would be ideal, it may not be feasible at present. Instead, a realistic approach would be to gradually strengthen the organization's function and size as the volume of Korea's defense exports increases. The appropriate organizational form and number of personnel was initially determined to achieve the goal of $3 billion in defense exports in 2012, that was

[303] Moon Jong Yeol. Defense Industry Financial Expenditure Performance and Challenges: Intensifying Defense Industry Crisis and Core Military Dependency // Budget Analysis, No. 20. – 09.2008. P. 15. 문종열. 방위산업 재정지출 성과와 과제:방 위산업 위기와 핵심군사력 해의존도 심화 // 예산현안 분석, 제 20 호. -2008 년 9 월. P. 15.

successfully archived with the government and companies maximizing the current organization's potential and adjusting its size as needed in the future.[304]

Another important tendency, according to Doctor of Ecomocs of Kyung Hee University, Kim Si Kwon, can be elicited from the previous chapter and aimed on **revitalizing the pan-government defense export consultative body**.[305] Due to his research, defense exports require pan-governmental cooperation due to the complex interplay of political, diplomatic, military, and economic factors, as well as the application of international strategic material export control regulations. To effectively market defense products, it is necessary to have access to country-specific defense market information, which can be achieved through market analysis and organic cooperation with related organizations. The ministry's role in facilitating procurement requirements, such as subsequent county support, quality assurance, trade-offs, and infrastructure establishment, also plays a significant role in the success of defense exports.[306]

In the case of France, for instance, a government-level support system for pre-approval of arms exports is carried out through linkage activities between ministries, and an Inter-Ministerial Committee was established for major contracts involving the Ministry of National Defense, the Foreign Ministry, and the Ministry of Economy. It shows that the government is committed to facilitating pre-approved arms export procedures, as evidenced by the active cooperation of each ministry in supporting defense exports under the government's direction.[307] Accordingly, in order to promote a strong defense export drive policy at the government level, South Korea tends to actively operate a defense export consultative body organized by the highest national institution. To ensure comprehensive and efficient consultation on defense exports, a pan-government consultative body consisting of various ministries, such as the Ministry of National Defense, the Ministry of Foreign Affairs, the Ministry of Knowledge Economy, the National Intelligence Service, and major related ministries, is necessary. This body would have multiple channels for consultation, involving director generals and manager-level officials, to gather opinions on

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[304] National Defense Reform Act, enacted on December 28, 2006, amended by Act No. 14609, March 21. 법률 제 14609 호로 개정된 2006. 3. 21. 국방개혁법 2006. 12. 28.

[305] Kim Si Kwon. A Study on the Determinants of Export Competitiveness of Korean Defense Companies // Doctoral thesis, Kyung Hee University Graduate School, Seoul. 2012. 김시권. 한국 방위산업체의 수출경쟁력 결정요인에 관한 연구 // 경희대학교 대학원 박사 학위논문. 2012.

[306] Building the Pan-Government Defense Export Council // Defense Acquisition Program Administration, 2007. 범정부 방산수출 협의회 구축 // 방위사업청, 2007.

[307] Yon Gu Won. Change in the Defense Environment and Direction of French Defense Policy: French Defense White Paper // Seoul: Dong Agency Press. – 2008. P. 9. 107.연구원. 국방 환경 변화와 프랑스 국방정책 방향 : 프랑스 국방백서 // 서울 : 동기관 출판부. - 2008. P. 9.

defense exports in one place. By exploring overseas government markets, preparing a joint strategy, and considering substitution with purchasing country resources, the pan-government defense export consultative body can play an important role in expanding South Korea's defense exports in areas such as politics, diplomacy, military, and the economy. Given the importance of the defense industry as a new growth engine industry, regular meetings attended by heads of ministries, vice ministers, and representatives of defense companies would be held under the presidency of the nation's top institution.[308]

To effectively gather information on the international defense market, it is crucial to establish a sharing system for local market trends and internal acquired data among foreign missions. However, the current activities of the Ministry of National Defense and the Defense Acquisition System of the Purchasing Country, as well as contact with defense-related personnel, may not be sufficient to resolve difficulties faced by overseas companies. Therefore, at the pan-government level, it is essential to synthesize and analyze information on defense exports from each department's overseas dispatched personnel and promote active cooperation in performing tasks related to defense exports. To achieve this, a system aimed to be established to enable information sharing among the Defense Acquisition Program Administration (military officer, defense cooperation officer), the Ministry of Foreign Affairs (embassy), NIS (main officer), Commerce Ministry, and KOTRA (dispatcher).[309]

To effectively gather information on the international defense market, it is important for foreign missions to establish a sharing system that combines local market trends with internally acquired data. However, the current activities of the Ministry of National Defense, the Defense Acquisition System of the Purchasing Country, and contact with defense-related personnel make it difficult to resolve difficulties faced by overseas companies. To address this issue, the various departments involved in defense exports are supposed to work together at the pan-government level to synthesize and analyze information from overseas personnel and create an environment where cooperation is actively pursued. A system is being developed to facilitate information sharing between the Defense Acquisition Program Administration (including military officers

[308] Han Ki Hoon. Study on ways to boost exports of defense materials: focusing on policy improvement using AHP // Master's thesis, Korean National Defense University, Seoul. 2005. 한기훈. 방산물자 수출활성화 방안 연구: AHP 를 이용한 정책 개선을 중심으로 // 국방대학 교 석사학위논문. 2005.

[309] Yu Soon Gil. An Analysis of the Export Obstacles of the Domestic Defense Producers and the Activation Measures to Overcome Them // Master's thesis, Korean National Defense University, Seoul. 2003. PP. 63-89. 유순길. 방산물자의 수출 장애요인 분석 및 활성화 방안 연구// 국방대학교 석사학위논문. 2003.

and defense cooperation officers), the Ministry of Foreign Affairs (embassy staff), the National Intelligence Service (main officers), the Ministry of Trade, Industry and Energy, and KOTRA (dispatchers).[310]

Additionally, according to Cho Nam Hoon, leading researcher of DAPA, supplementation **of the defense export financial support system** is also being developed in South Korea currently. He acknowledges that although most of South Korea's defense export target countries are concentrated in middle and backward developed countries with low economic power, financial support measures for defense exports are very insufficient. South Korea's defense export target countries mainly consist of middle and low-income countries, and these countries face financial constraints. However, South Korea's financial support measures for defense exports are inadequate compared to those of most defense-developed countries, which have effective financial support systems that contribute to their export success.[311] Establishing government-level support systems is crucial to increase external credit, strengthen the export capacity of large-scale system equipment to mid- to low-income countries, and consequently enhance the utilization rate of defense companies and improve export performance. There are four aspects in which the policy financial system should be improved according to Cho Nam Hoon: first, by enhancing deferred export financing through the Export-Import Bank of Korea's recommendation to improve export standards; second, by securing funds for defense export support through the expansion of secondary conservation projects; third, by simultaneously utilizing defense industry development funds.[312]

First, The Export-Import Bank of Korea's credit risk assessment determines whether or not to support deferred export financing. However, the current standard rating is quite high, limiting the number of countries that can receive support. Since South Korea's defense export

[310] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

[311] The United States: DELG Program, Eximbank Dual-Use Financing, Foreign Military Financing, etc. France: Defense companies arrange long-term low-interest annual payments using their advanced private financial markets, and the government carries out export insurance (COCE) and export credit guarantees. Cho Nam Hoon. Market Research Analysis and Export Strategy Establishment for Revitalizing Defense Exports // Seoul: Korea Defense Research Institute, 2007. - pp. 121-136. 조남훈. 방산수출 활성화를 위한 시장조사분석 및 수출전략 수립 // 서울 : 한국 국방연구원, 2007. - pp. 121-136.

[312] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

target countries are mainly low-income and high-risk, it is challenging to provide deferred export financing without considering the differences in export characteristics and effects. Therefore, it is necessary to adjust the Export-Import Bank of Korea's annual export finance provision rating standard to reflect this. Furthermore, as the funds of the Export-Import Bank of Korea are intended for high-policy support finance, it is desirable to apply more flexible standards and provide deferred export financing, considering national interests rather than just commercial transactions.[313] The expansion of secondary conservation projects and the simultaneous use of defense industry development funds can also secure funds for supporting defense exports.

The second, there was a plan is to expand and apply the secondary preservation project, which was launched in 2007 and amended in 2020, to increase financial resources to support defense exports. This involves budgeting for funds to support the production of export goods or providing partial interest rate reductions on deferred export financing from the Export-Import Bank of Korea, with the government compensating for the difference in interest. In the past, the Defense Development Fund provided an annual interest rate of 7% for defense product deferred export funds, which could be used as direct deferred export financial funds.[314]

To revive the Defense Development Fund, there is an urgent need to develop a persuasive argument backed by objective data that shows the limitations of relying solely on secondary conservation projects for supporting the defense industry. The first step is to emphasize the importance of fostering the national defense industry and revitalizing defense exports. This can be followed by a logical explanation of why establishing the defense development fund is necessary to achieve these objectives. Ultimately, the goal is to convince the National Assembly to allocate funding to the Defense Development Fund, based on a solid rationale and data-driven evidence.

Furthermore, it is crucial to propose legislation that takes into account various factors such as the compatibility with Article 14 of the National Finance Act, the evaluation of secondary conservation projects after a year of implementation, and changes in the situation that

[313] Kim Jong Dae. History of past defense reform failures, Roh Tae-woo's 818 Defense reform plan // Hankyoreh. - 2011. P. 9-14. 김종대. 과거 국방개혁 실패의 역사, 노태우 818 국방개혁안 // 한겨레 - 2011. P. 9-14

[314] Mid-term Defense Plan 2022-2026 // Ministry of National Defense, Press Release, 01.09. 2021. URL: https://www.kida.re.kr/cmm/viewBoardImageFile.do?idx=32670 (access date: 28.04.2023).

led to the decision to abolish the Defense Development Fund. [315] It is also recommended to utilize both the secondary conservation project and the defense development fund, capitalizing on their respective strengths, to allocate the defense budget for short-term projects and use the defense development fund for mid- to long-term projects. Ultimately, the most desirable approach would be to use stable defense development funds to support defense exports through direct support for deferred export financing or government guarantees, while continuing to support other items currently covered by secondary conservation projects.[316]

To support state funds for defense export activities and cover overseas marketing costs, there supposed to be continuous improvement of the cost recognition system of overseas marketing expenses. When defense products are exported using the government's budget, the company pays 2% of technical fees for domestic consumption and export. If a defense company develops technology for the national defense system and uses it for domestic military use, it is necessary to introduce a collection cap and continue to invest in developing better technology supply. However, technical fees paid for export use would increase costs and weaken price competitiveness, so an exemption is required. It is also necessary to provide comparative cost compensation for domestic demand and exports and interest-free support for defense export finance. These measures will be critical for Korean defense companies to secure price competitiveness with defense companies in major foreign defense exporting countries.[317]

Close international cooperation with advanced countries or foreign defense companies is required to supplement the weak technology of the domestic defense industry and boost defense exports. That`s why strategy of active promotion of international cooperation in arms export is essential for the South Korean government nowadays. Given the increasing R&D costs and fierce export competition in the advanced and complex weapon systems market, breaking into the export market is challenging. Therefore, to revitalize defense exports, it is important to consider both domestic demand and the export market during the R&D planning stage to derive

[315] In July 2007, in an effort to re-establish the Defense Industry Promotion Fund, 12 lawmakers, including Kim Hak Song, submitted a «Act on Funding for the Promotion of Defense Industry», but it was automatically discarded due to the expiration of its term in May 2008.

[316]Kwon Young Geun. Studies on Changing and Unchanging Parts of ROK Defense Reforms // Seoul: Yeonkyung. - 2022. P. 251-252. 권영근 씨. 대한민국 국방개혁의 변화와 불변의 부분에 관한 연구 // 서울: 연경. - 2022. P. 251-252.

[317] Lim Chi Kyu. A Study on the Impact of Defense Industry Promotion Policy on the Management Performance of Defense Companies // Ph.D. thesis, Kyung Hee University School of Network Research on Defense Export Support Policy, Seoul. 2010. 임치규. 방위산업육성 정책이 방산업체의 경영성과에 미치는 영향에 관한 연구 // 경희대 방산수출 지원정책에 관한 정책네트워크 연구 학교 박사학위논문. 2010.

exportable products, product performance, and target prices. The Integrated Project Team (IPT) of the Defense Acquisition Program Administration would conduct prior research to investigate and identify global market environments and international cooperation opportunities without restrictions on project implementation methods, including R&D, technology cooperation, production, and purchase. During this process, if participating in R&D projects already being promoted or planned in foreign countries is more advantageous than independent development in South Korea, the government actively leverages international joint development opportunities. The earlier the country participate in international joint development projects with its procurement volume, the greater the opportunity to supply parts to the global market.[318]

The cost of acquiring advanced weapons systems has skyrocketed since the end of the Cold War and the establishment of a global economic system. As a result, it is becoming increasingly difficult for countries to independently develop and produce all types of weapons systems. Instead, countries are focusing on specialized core technology fields and promoting cooperation in development, production, marketing, and investment based on this. This trend emphasizes the importance of securing a competitive edge for each country, even through interdependence, leading to increased foreign investment and international cooperation in the defense industry. In many advanced countries, companies owned by foreigners are considered part of their defense industries if they conduct technology development activities, create intellectual assets, and generate employment opportunities in the country. Examples of such countries include Britain, Sweden, and Australia.[319]

Recognizing the importance of acquiring advanced weapon systems and the need to attract foreign investment in the defense industry, the Korean government aims to strengthen incentives for foreign investment to promote development, production, and employment. In order to achieve this, it is essential to treat domestic foreign investment defense companies in the same way as domestic defense companies, except for very few areas that are owned and operated by South Koreans for national security purposes. While international defense cooperation is primarily a matter of management judgment of defense companies, government support and cooperation are also necessary.

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[318] Kwon Young Geun. Studies on Changing and Unchanging Parts of ROK Defense Reforms // Seoul: Yeonkyung. - 2022. P. 255-269. 권영근 씨. 대한민국 국방개혁의 변화와 불변의 부분에 관한 연구 // 서울: 연경. - 2022. P. 255-269.

[319] Kim Jong Dae. History of past defense reform failures, Roh Tae-woo's 818 Defense reform plan // Hankyoreh. - 2011. P. 9-14. 김종대. 과거 국방개혁 실패의 역사, 노태우 818 국방개혁안 // 한겨레 - 2011. P. 9-14.

To enhance the competitiveness of domestic defense companies and promote international cooperation, the Korean government has taken various measures, including overseas mergers and acquisitions (M&A) and joint investments. For example, Hanwha Defense acquired the UK's EDG Defense Services in 2019, and LIG Nex1 established a joint venture with Lockheed Martin in 2017. The government has also encouraged domestic defense companies to participate in joint development projects with foreign companies, such as the KF-X project with Indonesia and the Global Hawk project with the United States[320]. Additionally, the government provides support for related information to companies and creates an advantageous environment for foreign companies to do business in Korea through various policies and initiatives.

In an environment where competition in the international defense market is intensifying, efforts to obtain information on the defense market are inevitable. According to Kwon Young Geun, Senior Specialist of KIET, this measure **on strengthening the means of obtaining information on the defense export market** is also overseen in South Korean tendencies of export revitalization.

Defense companies are facing a major challenge due to a lack of information on defense exports. The responsibility of obtaining information for defense exports lies with military diplomatic experts and defense cooperation officers, including overseas delegations. Currently, Korea dispatches military officers to five countries, totaling 14 people, and defense cooperation officers to two regions. However, compared to advanced defense countries, which dispatch about 20 to 30 people to 10 to 20 countries, Korea needs to expand the number of dispatched countries and personnel. Out of the 14 military officers, 10 are concentrated in the United States, and it is necessary to adjust and increase the number of personnel as the number of dispatched countries is expanded. To address the lack of information for defense exports, the government needs to provide more support and resources to military diplomatic experts and defense cooperation officers to increase their effectiveness.[321]

To promote the collection of defense information, it is important to increase the number of dispatched defense cooperation officers and to ensure that they are assigned to national units

[320] Dominguez, G. Massive arms deal highlights South Korea's growing defense industry // The Japan Times, 28.07.2022.URL: https://www.japantimes.co.jp/news/2022/07/28/asia-pacific/south-korea-weapons-exports-2/ (access date: 19.02.2023).
[321] Kwon Young Geun. Studies on Changing and Unchanging Parts of ROK Defense Reforms // Seoul: Yeonkyung. - 2022. P. 255-269. 권영근 씨. 대한민국 국방개혁의 변화와 불변의 부분에 관한 연구 // 서울: 연경. - 2022. P. 255-269.

rather than regional units. Countries vary greatly in terms of their culture, characteristics, tendencies, degree of development, and military construction levels, so obtaining export information on a regional basis is not ideal. Discovering untapped areas and countries for defense exports through military officers and defense cooperation officers is also crucial for expanding defense export routes. An example of this is Korea's successful foray into the Latin American export market after dispatching a defense cooperation officer there in October 2007.[322]

To ensure the success of defense exports, it is important to dispatch military or defense cooperation officers who are experts in national defense, defense industry, or history, including defense science and technology experts, weapons systems and acquisition experts, and regional researchers. These officers are supposed to be well-equipped to make the target country «pro-Korea» and build human information networks in advance. To select the right personnel, it is essential to identify those who have access to information on the policies and procedures for acquiring weapons systems of export destinations, defense industry strategies, R&D levels, business practices, and marketing methods. The selection process will not be limited to soldiers but open to all qualified individuals. In advanced defense countries, both soldiers and defense cooperation officers as diplomats are dispatched.[323]

Recently, some countries that want to purchase South Korean defense goods, such as Venezuela and Peru[324], are demanding follow-up military support for purchase and export goods under G2G contracts. Therefore, according to Kwon Heon Cheol, senior research of South Korean National Defense University, it is urgent to actively utilize South Korea’s G2G contract system to meet these demands. Such tendency can be conceptualized as **active promotion of the government-to-government (G2G) contract system**. The Defense Acquisition Program Administration has chosen the establishment of a pan-governmental defense export support system as one of its top priorities. This is in line with the government's objective to provide legal support for G2G exports and other defense-related exports.

To facilitate G2G contracts in South Korea's defense exports, revisions to related laws such as the Defense Business Act and the Military Supply Management Act are necessary. These

[322] Roh Soo Hoon. Study on ways to increase exports of defense products // Seoul: National Defense University, Security Paper, 2007. - pp. 39-40. 노수훈. 방산물자 수출증대 방안 연구 // 국방대학교 안보논문, 2007. - pp. 39-40.
[323] Ibid. - pp. 47-56.
[324] In the case of the Peruvian government, the import of combat vehicles directly from overseas companies is very negative from the experience of various irregularities and irregularities related to the selection of companies in the past, and the Korean government hopes to become a direct seller of combat vehicles under the G2G concept.

revisions will support G2G exports and subsequent military service contracts, settle costs, and collect fees. Currently, the state aims first to go through a separate domestic acquisition process for defense exports and transfer ownership of weapons, which is not recognized by the current legal system. Thus, revision of the law is crucial for the state to become a seller as a party to an arms purchase contract. Additionally, since the burden of legal obligations as a contracting party (seller) is accompanied, the state's control under the National Finance Act needs to be resolved.[325] Secondly, a stable follow-up country support system for defense export products under G2G contracts tends to be established. The utilization of equipment, parts, and facilities owned by defense companies and each county is necessary to induce export destinations to purchase Korean defense products with confidence.

Fourth, similar to the United States, if a purchasing country chooses to make a purchase through commercial channels rather than a G2G contract, the Korean government tends to ensure that there is no competition between defense products exported through the G2G contract system and those exported through general commercial sales. Therefore, it is necessary for the Korean government to leave the decision-making process to the purchasing countries, and other governments are not supposed to be allowed to compare the prices of defense products offered by South Korean defense companies and those that are demanded by the Korean government.[326] To achieve this, the Korean government could work closely with the governments of exporting countries and avoid any interference in the commercial sales of defense products. The Korea Defense Industry Trade Support Center, which was established in October 2009, strengthened its function of overseeing the G2G contract system, similar to the role of DSCA in the United States. Furthermore, the President actively supports smooth export contracts with defense partners by facilitating information exchange and business cooperation among relevant agencies such as the Prime Minister's Office, Ministry of Defense, Ministry of Foreign Affairs, and Ministry of Knowledge Economy.[327] To provide comprehensive analysis of the political, economic,

[325] Kwon Heon Cheol. A Study on the Role and Guarantee of the GtoG Export Administration of Defense Industry Materials // Industry-Academic Cooperation Group of National Defense University, 01.2014. – pp. 40-42. 권헌철. 방위산업물자등의 GtoG 수출 시정부의 역할 및 보증에 관한 연구 // 국방대학교 산학협력단, 01.2014. – pp. 40-42.

[326] Kwon Heon Cheol. A Study on the Role and Guarantee of the GtoG Export Administration of Defense Industry Materials // Industry-Academic Cooperation Group of National Defense University, 01.2014. – pp. 44-46. 권헌철. 방위산업물자등의 GtoG 수출 시정부의 역할 및 보증에 관한 연구 // 국방대학교 산학협력단, 01.2014. – pp. 44-46.

[327] Shin Dong Hyup. A Study on the Analysis of Defense Export Competitiveness for Korea-US Reciprocal Defense Procurement // Journal of the The Korean Institute of Defense Technology, Vol. 02, №. 3ю – 2022. P. 5-10.

diplomatic, and military aspects of potential customers, the Defense Acquisition Program Administration (military officer, defense cooperation officer), the Defense Ministry (defense officer), the embassy (embassy), NIS (main officer), Knowledge Economy (general officer), and KOTRA (dispatcher) are supposed collaborate effectively.

Moreover, in order to address potential challenges resulting from the implementation of the G2G contract system, it is important to take proactive measures. The government may face issues related to efficiency when it takes on the rights and obligations of numerous defense export contracts. To mitigate these risks, the G2G contract system can only be utilized when the government of the exporting country explicitly requests it, while commercial sales would remain the primary method of exporting Korean defense products. Many defense-developed countries provide legal, institutional, and financial support to promote defense exports by exporting defense products as sellers, with the exception of FMS in the United States. Therefore, the Korean government will only become the seller of defense products in special and limited cases. If a foreign government requests the purchase of defense products through the G2G contract system, the Ministry of National Defense can assess the intentions of the other country and meet their requirements through commercial sales, rejecting the G2G contract system and instead opting for commercial sales.[328]

Finally, according to Ahn Young Soo, Jang Won Joon and Kim Jung Ho, KIET senior researchers, it is possible to highlight the nessessity on **activating the military surplus and culled goods sales system**. Discarded military equipment in South Korea can serve as a viable weapon system for developing and underdeveloped countries to ensure their own security. Although it may be sold at lower prices, exporting South Korea's surplus and discarded defense equipment to underdeveloped countries could expand the export market and secure future opportunities for the sale of weapons systems.[329] The United States is utilizing the WWRS system to redistribute surplus equipment among FMS member countries, and the U.S. Department of Defense's DRMS operates the DoD Surplus Property Sales Program. Similarly, the UK has established surplus equipment sales outlets within UKTI D&SO, and Israel has an

[328]Ahn Young Soo, Jang Won Joon and Kim Jung Ho. An analysis and implications of export support systems in major defense exporting countries // KIET Industrial Economy, 2012. - pp. 19-29. 장원준·안영수·김정호. 주요 방산수출국가의 수출지원제도 분석과 시사점 // KIET 산업경제, 2012. - pp. 19-29.

[329] Inthaly, Risdhianto, Sarjito. The Reason South Korea Approved The Placement of A High Altitude Area Defense (THAAD) Terminal System in 2016 // JESS.- 2022. P.11-12.

Access Inventory Sales Division within SIBAT, which handles direct sales and the arrangement of major equipment and repair accessories by the government and defense companies.[330]

In May 2008, the Ministry of National Defense established a law (example on the overseas transfer of unused military supplies) to sell or provide equipment at low prices or for free to other countries under the military modernization plan.[331] The Ministry of National Defense is currently carrying out a project to transfer surplus military supplies to the Philippines, Pakistan, Peru, and Cambodia. This approach not only helps alleviate overseas aid efforts but also addresses the issue of managing unused military equipment. Additionally, such initiatives paved the way for increasing military exchanges in the national interest and expanding the defense export market. To this end, the Defense Trade Support Center is supposed to establish a dedicated department, similar to those in the UK and Israel, to manage the sale of surplus goods. This department would oversee the disposal and liquidation of surplus goods throughout the lifecycle of the weapon system and facilitate the active purchase and sale of surplus goods.[332] Although South Korea's defense exports have a limited impact on the global market, it may be beneficial to consider establishing an online platform to sell surplus and cull goods and redistribute surplus goods among countries that utilize South Korean defense exports.

Furthermore, it is crucial to develop an export strategy for used military supplies while taking into account the growing overseas demand for Korea’s used weapon systems. The government is taking measures to enable the sale of used munitions to overseas countries. The "Regulations on Overseas Transfer of Unused Military Products," enacted in May 2008, was revised in 2018 to include exports of used products. This means that rules are revised to allow for the sale of both unused and used military supplies.[333] However, exporting used munitions may increase the burden on defense costs due to the need to introduce new weapon systems

[330] Antonella Biscione, Raul Caruso. Military Expenditures and Income Inequality Evidence from a Panel of Transition Countries (1990-2015) // Defence and Peace Economics, 1(32). – 2019. P.46-67.

[331] The Ministry of National Defense’s International Military Cooperation Team. Open the Way for Overseas Military Support for Unused Military Products // Korea Policy Portal, 2008. 국방부 국제군수협력팀. 불용군수품의 해외 군사지원 길 열어 // 대한민국 정책포털, 2008. URL:www.korea.kr (access date: 19.02.2023).

[332] Kwon Heon Cheol. A Study on the Role and Guarantee of the GtoG Export Administration of Defense Industry Materials // Industry-Academic Cooperation Group of National Defense University, 01.2014. – pp. 35-40. 권헌철. 방위산업물자등의 GtoG 수출 시정부의 역할 및 보증에 관한 연구 // 국방대학교 산학협력단, 01.2014. – pp. 35-40.

[333] Ministry of National Defense. Mid-term Defense Plan 2022-2026 // Press Release, 01.10.2021.URL:https://www.mnd.go.kr/user/boardList.action?command=view&page=1&boardId=O_47261&boardSeq=O_283459&titleId=null&siteId=mndEN&id=mnd EN_020100000000&column=null&search=null (access date: 12.03.2023).

(self-research and development, technology transfer, or overseas purchases) to replace them. Therefore, if a system for selling used military supplies is established, a mechanism can be put in place to convert foreign currency earned from exports of used military supplies into defense expenses.

In conclusion, South Korea has emerged as a new arms export power in the global arms market. The country's competitiveness in this area has been enabled by a series of policies aimed at revitalizing the defense industry and improving research and development to generate cutting-edge defense technologies. These policies have introduced various initiatives such as enhanced import substitution, incentivized defense R&D, rapid acquisition policies for Fourth Industrial Revolution technologies, and full component manufacturing on key platforms. Moreover, the country's price competitiveness, faster supply capacity, and transition from fulfilling domestic demand to being more export-oriented have contributed to its success in the global arms market.

However, South Korea has faced challenges in expanding further in the global arms market. These challenges include competition from other countries, dependence on foreign technology, intense global competition, complexity of export regulations, limited defense budget allocation, workforce retention, and evolving security needs. To overcome these challenges, South Korea has developed a mid- to long-term perspective, vision, and strategy, with strategies focused on capability-based planning, competitive product systems, step-by-step export market development. By conducting a thorough analysis of its defense industry's capabilities, South Korean government identified areas of expertise where it has a comparative advantage and can excel in the global arms market. This analysis helps in determining which defense products and technologies are most suitable for export, considering factors such as market demand, technological sophistication, cost-effectiveness, and compliance with international export control regulations. Capability-based planning also considers the potential impact of arms export on a country's own defense needs and industrial base. It seeks to strike a balance between fulfilling domestic defense requirements and leveraging the defense industry's capabilities to generate revenue through arms exports. This ensures that arms export activities do not compromise national security or undermine the development of critical defense capabilities needed for self-defense.

Moreover, South Korea's R&D expenses are being recouped through defense exports. By exporting defense products, the government can alleviate the burden of maintaining the production facilities and manpower needed for domestic consumption. The export volume allows for the distribution of these costs, enabling the government to achieve cost efficiencies. Additionally, exporting weapons systems can increase a country's external influence, as importers of these systems could depend on exporting countries for military discipline and military affairs. Furthermore, South Korea's strategy of targeting niche markets and producing specialized products allows the country to differentiate itself from competitors and offer specialized solutions that meet the specific needs and requirements of specific markets. By focusing on these areas, South Korea capitalizes on its technological strengths and create a competitive edge in the global defense industry.

South Korea's arms export strategies have been successful in the recent years, and the country is expected to continue to play a significant role in the global arms market. Currently the country’s Basic Plan for Defense Industry Development mandated by the Defense Industry Development and Support Act is a crucial document aimed at systematically supporting and nurturing the defense industry in South Korea. The plan prioritizes the establishment of an efficient defense ecosystem and emphasizes the nurturing of promising small and medium-sized venture companies among its four policy directions. Additionally, the "23-27 Basic Plan" presents a basic direction for the development and growth of the defense industry over the next five years (2023-27) by comprehensively considering changes in the internal and external defense industry environment along with the performance analysis of past basic plans.

South Korea's arms export achievements have been significant, but the country cannot be complacent in its success. According to experts, the country is going continue to develop strategies that align with its capabilities, address potential risks associated with arms export, and take proactive measures to mitigate these risks. By doing so, South Korea will continue to grow its arms export market and maintain its position as one of the major players in the global arms market. The defense industry is directly linked to the survival of a nation, and its importance cannot be overstated. As such, joint efforts are required from the government, military, and private companies to secure competitiveness and create a strong foundation, ensuring that the defense industry remains a vital strategic industry that forms the foundation of South Korea's national security.

Conclusion

The new international security environment in the 21st century requires new national defense capabilities, and the defense industry plays a crucial role in securing economic efficiency and growth. Arms exports have specific political, strategic, and economic considerations that require in-depth research. South Korea's defense industry grew to become one of the world's largest military exporting countries through incentives, financial assistance, and technical support from the US. The decision to export arms, announced by the South Korean Government in 1977, produced friction with the United States over the latter's political and licensing restrictions on the ROK third country sales. South Korean defense industries also faced problems of excess production capability as a result of overinvestment under government incentives in the 1970s. In the late 1970s and early 1980s the government took firmer control of both manufacturing and exports of defense products.

This master thesis is constructed to find an answer to: What are the main trends and tendencies of South Korea arms export policies? — In approaching the answer, a thorough an extensive analysis of government official documents and regulations related to the armament procurement policy is necessary. The research reveals that the growth of the defense industry policies in South Korea relies heavily on promoting arms export, which serves as a significant economic driver for the country. Consequently, the study identifies several factors that shape South Korea's policy on arms export and explores the current tendencies in its development.

It was explored that since South Korea’s defense scale is fundamentally low in demand, fostering the defense industry only for domestic demand does not fit market principles. Moreover, the defense industry has traditionally been used to foster new national industries and drive economic growth, but it is currently facing a difficult situation. Sales have fallen since 2017, mainly due to a decline in overseas market sales. Despite recoveries in 2018 and 2019, sales have fallen below the 2016 level. Therefore, South Korea is inevitably required to secure the defense export market. With demand for defense products decreasing worldwide, governments and defense industries are focusing on strengthening international cooperation based on their own demand and exploring and expanding the export market for defense products. From the perspective of governments, it is essential to maintain the defense industry base corresponding to their economic power in order to prepare for the uncertain security environment in the future, and to achieve this economically, it is absolutely necessary to create overseas

demand. From the perspective of defense companies, exports are an important breakthrough for survival under conditions in which the domestic and foreign defense goods market is shrinking. In this situation, the South Korea tends to pursue policy strategy of defense industry that can break away from the domestic-oriented defense industry and expand more export-oriented and international cooperation.

South Korea's defense export strategy has three main directions nowadays elicited from the most recent governmental announcements and reforms. These strategies highlight South Korea's intention to optimize its defense export potential by aligning capabilities, targeting specific markets, and strategically developing partnerships through defense diplomacy. By adopting a multi-faceted approach, South Korea aims to strengthen its position as a competitive player in the global defense industry and enhance its export prospects. Fist one is Developing an export strategy based current national security policies. This strategy entails planning and aligning South Korea's military construction and defense industry capabilities to meet various security challenges effectively. It involves identifying and enhancing the country's unique strengths and competitive advantages in defense technology, manufacturing, and innovation. By strategically aligning capabilities with potential export opportunities, South Korea aims to maximize its defense export potential and ensure the economic viability of its military construction plans. Second one is fostering a competitive product system. This strategy focuses on developing and offering specialized defense products that cater to niche markets rather than directly competing with established defense exporters. South Korea aims to leverage its technological expertise, research and development capabilities, and innovation to create cutting-edge defense systems and solutions. By targeting specific market segments and addressing the unique needs of potential customers, South Korea can differentiate itself and gain a competitive edge in the global defense market. The third one is step-by-step export market development. This strategy involves a systematic approach to export market development by selecting countries that require advanced defense capabilities as cooperative partners. South Korea prioritizes bilateral defense cooperation and diplomacy to establish relationships with partner countries and create opportunities for defense exports. By engaging in mutually beneficial collaborations and leveraging defense diplomacy, South Korea aims to gradually expand its export markets and establish long-term partnerships with countries that value its advanced defense capabilities.

Moreover, it was possible to conclude that the enhancing of arms export in South Korean directly related to improvement of R&D policies. It is possible to trace the trend on the paradigm

shift of defense science and technology research in ROK in order to establish and systematically implement a developmental mid- to long-term policies. The main goal of defense science and technology research is to build a strong military with advanced defense science and technology capabilities and ultimately enhance security of a country. The mid-term goal is to secure core technology capabilities based on defense science and technology, and the long-term goal is to develop weapons systems at the level of advanced countries. The practical strategies to achieve the goal of defense science and technology development are: investment expansion strategy, goal-oriented defense R&D promotion strategy, open defense R&D activation strategy, and defense R&D system advancement strategy.

Additionally, the development of arms export policies is directly conducted under related the institutional and legal procedures. Therefore the government's policy and institutional support measures in South Korea include: 1. changing the national perception of defense export procedures, 2. gradually expanding the functions of defense export organizations, 3. activating the defense export consultative body, 4. promoting international cooperation development, 6. strengthening the defense export market information acquisition means, and 8. fostering a strong defense industry that can contribute to the development of the national economy in the mid to long term.

Furthermore, South Korean defense industry faces limitations in marketing its products due to the basic level of weaponry and reliance on U.S. technology. The financial problems of potential buyers and global trends towards credit sales and grant transfers also affect their marketing efforts. South Korea has participated in international arms exhibitions since the early 1980s to increase defense exports. Their foreign military sales are influenced by political, economic, and military conditions in purchasing countries. As a member of the Wassenaar Arrangement, South Korea has obligations to control exports of conventional arms and dual-use goods. This poses a challenge for economic cooperation with North Korea as it is closely related to the issue of nuclear weapons. That`s why the current government-promoted Basic plan 2023-2027 aims to be reborn as a strong military capable of responding to all-out threats and a public-trust in the military sector. In addition, it presents securing the competitiveness of the defense industry as one of the pillars to successfully implement this. Even in terms of industry, not policy, the military trade has infinite potential as a driving force for future growth and a major technology-based industry.

Therefore, for South Korean government it is time to provide effective government policy support and guidance to defense companies while forming a public consensus so that they can be competitive on the international stage. Considering the security situation on the Korean Peninsula, it is absolutely necessary to maintain high-tech military technology and defense industry infrastructure for the development and maintenance of South Korea's economic power in terms of national competitiveness. This is not a matter of cost-effectiveness by economic logic, but an essential choice for national survival. Therefore, when the government establishes and implements strong support policies at the national strategic level, defense companies strive to secure international competitiveness and sound corporate management, and the whole nation supports it, defense industry will build a solid foundation for national development.

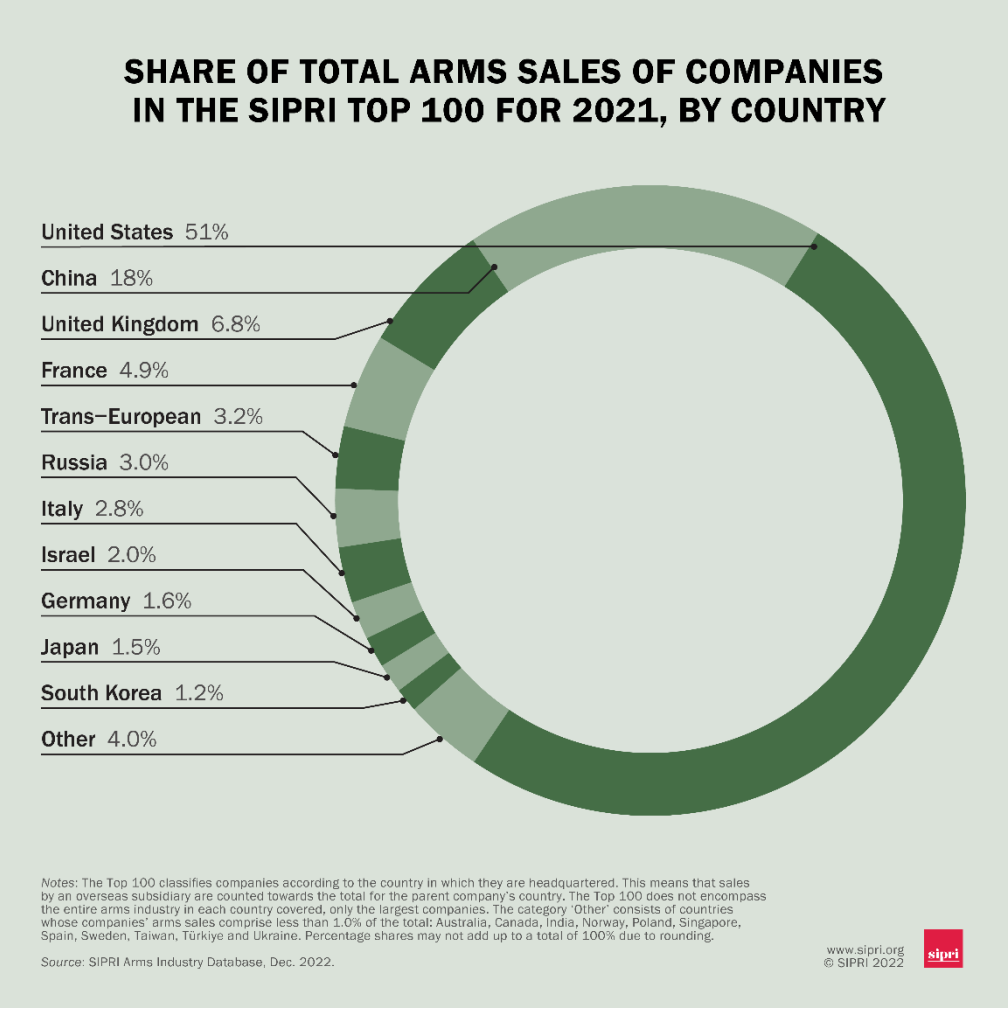
Finally, although this study tries to foresee a strategic direction to strengthen the competitiveness of South Korean defense materials in the international weapons market, it has several limitations due to research conditions. First, it is difficult to prove whether the research results can be applied in a dynamic environment by conducting exploratory and technical research through existing research documents, expert opinions, and existing data of related institutions due to the peculiarity of defense industry. Second, this process is a qualitative study, and there will be actually unknown difficulties in each defense export environment, so it would have been more valid if quantitative factor analysis on deriving export difficulties for more detailed research. Third, the government-level defense export policies and systems were mentioned, but most of them require legislative measures, but due to the limitations of legal knowledge, legal provisions have not been specifically presented. Finally, this study deals with a vast field of defense export strategies, but there are limitations in that many strategies exist other than those derived through concrete work, so a more specific and comprehensive study should be conducted in future research.

Annexes

Annex 1. Figures

Figure 1. Share of Total Arms Sales Of Companies In The SIPRI Top 100 For 2021, By Country.[334]

The share of total arms sales of companies in the SIPRI Top 100 for 2021 varies by country and reflects the global distribution of arms production and sales. The SIPRI Top 100 is an annual ranking of the world's largest arms-producing and military services companies based on their arms sales revenue.



[334] Share of Total Arms Sales Of Companies In The SIPRI Top 100 For 2021, By Country, 2021 // SIPRI Arms Industry database 2022.

Annex 2. Tables

Table 1. Destination of Korean of Major Arms, 2016-2022.[335]

The Stockholm International Peace Research Institute (SIPRI) compiles comprehensive data and analysis on international arms transfers, providing valuable insights into the global arms trade. The SIPRI database includes information on the origin and destination of major arms transfers worldwide. In the context of South Korea, the SIPRI database offers a comprehensive overview of the destination of major arms exports from 2016 to 2022. This data provides crucial information on the countries and regions that have been recipients of South Korean arms during this period.

Destinations of Korean of Major Arms, 2016-2020

(By now you know the *; that is 74% of total)

Recipient	% of Korean exports		Recipient	% of Korean exports
United Kingdom	14.2		Poland	2.3
Philippines*	11.8		Malaysia*	1.9
Thailand*	11.4		Colombia*	1.6
India*	11.4		Egypt*	1.6
Iraq*	11.3		Finland	0.8
Indonesia*	10.3		Turkey*	0.7
Peru*	6.2		Ecuador	0.3
Norway	5.8		Estonia	0.2
Viet Nam*	3.2		Senegal	0.2
New Zealand	2.4		Saudi Arabia*	0.1
Myanmar*	2.4		Nigeria*	<0.1

sipri 25/10/2021

[335] Siemon Wezman. Ranking major importer of South Korean weapons during the 2016-2020 period // SIPRI, 2021.

Table 2. Major Defense Export Base Classification.[336]

The KIET (Korea Institute for Industrial Economics & Trade) Top 10 Promising Countries for Defense Export is a classification that highlights the countries with significant potential for defense export. This classification is based on various factors such as market demand, economic indicators, geopolitical considerations, and strategic partnerships. The table of Major Defense Export Base Classification provides valuable insights into the countries that offer lucrative opportunities for South Korea's defense industry.

Category	Content	Countries	Reason of selection
Main Export Bases (MEB)	- a large-scale defense export support base with all amenities concerned - Allocated personnel can work for long periods of time and accompany family members - Identifying defense demand information and building trust with key personnel - Quick Problem-Solution System in case of need - Establishment of local subsidiaries of	the United States UAE Israel Saudi Arabia Etc.	- Obtaining the latest defense product demand info material without obstacles - Export consultation in progress - Holding a Giant Defense Market Maximize interoperability

[336] Top 10 Promising Countries for Defense Export // Korea Institute of Industrial Research (KIET), 2014. 방산수출 10 대 유망국가 // 산업연구원(KIET), 2014 URL: https://www.kita.net/cmmrcInfo/cmmrcNews/cmmrcNews/cmmrcNewsDetail.do?nIndex=62340&recommendId=0#:~:text=%EC%95%9E%EC%9C%BC%EB%A1%9C%205%EB%85%84%EA%B0%84%20%EB%B0%A9%EC%82%B0%20%EC%88%98%EC%B6%9C,%EB%93%B1%2010%EA%B0%9C%EA%B5%AD%EC%9D%84%20%EB%BD%91%EC%95%98%EB%8B%A4 (access date: 12.03.2023).

	defense contractors and institutions		
Forward Export Sites (FES)	- a base that is smaller than the MEB - Work for not more than one year without family - Select key countries by region and use them as base countries - Awareness and presence of South Korean Defense Products in Neighboring Countries	Turkey South Africa The United Kingdom Venezuela	- Successful experience of export of South Korean arms to the country - an influential nation in the region - Promotional effect of South Korean defense products in neighboring countries is maximized
Potential Export Nation (PEN)	- Operated by the relevant national defense contractor or private contractor and prepared for intervention in the event of major regional issues - Role as a small contact - Areas where direct defense exports are not attempted, but only small liaison personnel reside to	China India Russian	- Potential Defense Market - The Necessity of Building Trust - Military Innovation to Revitalize Import Market

	establish political and diplomatic trust and determine the need.		

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