

# STRATEGIC ANALYSIS IN THE DEFENSE INDUSTRY: A COMPREHENSIVE APPROACH TO INCREASE SITUATIONAL AWARENESS IN NATIONAL AND NATO PROCESSES

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## ABSTRACT

*The management of the interrelated processes of planning, budgeting, production, and supply chain logistics, as well as human resources and information sharing, is of paramount importance in the ecosystem of Türkiye's defense industrial system. Any disruption in this system could impede the timely provision of the necessary armaments for the readiness of the Turkish Armed Forces and Security Forces. Given the shifting global security landscape and its strategic geopolitical position, it is imperative that Türkiye possess a robust defense industry that can make technological leaps and advancements. This can be achieved through a collaborative effort that places a greater emphasis on research and development (R&D/Ar-Ge), swiftly addressing identified issues, enhancing the defense industrial ecosystem, and fostering organizations that possess critical technologies and a capacity for learning through a comprehensive approach. In this context, the acquisition and dissemination of information is of great import, and companies engaged in defense industry activities can effectively contribute and enhance interaction with national and NATO processes through the utilization of empirical and descriptive methods, as well as by adhering to certain recommendations for optimal results.*

**Keywords:** Defense industry ecosystem, security and geopolitics, technology, information sharing, holistic management

## INTRODUCTION

Türkiye's better position in the world's defense industry competition is dependent on each stakeholder could perform their duties in the best possible way, ensuring efficiency and productivity, maximizing the use of its current capabilities, and increasing national-local ratios. To achieve this goal, the article explains the basic information about security, geopolitics, and the defense industry using a comprehensive approach, and provides a strategic analysis of defense planning and better participation of companies in the processes. The goal of this paper is to add value to the existing literature and enhance the management of processes.

## SECURITY FACT

Security, a basic human need that is ranked second 1 after food-drinking-heating-shelter in the hierarchy of needs, is a concept related to the phenomenon of "self-protection" and is constantly evolving in the present day.

Adding new and complex problems to the changing process in the world has made security multidimensional. Only in 2022, the world saw numerous global conflicts, including the war between Ukraine and Russia, improved relations between Taiwan and the US amidst tensions with China in the Asia Pacific, North Korea's missile tests, women's resistance in Iran, and Iran's uranium enrichment, civil wars in Ethiopia and Yemen, the humanitarian disaster in Afghanistan, Myanmar's deepening political crisis, the ongoing Israeli-Palestinian conflict, and ferocious battles between states and militants in Africa, all while facing the threat of climate change. The conflict points in the world are increasingly dangerous due to the risk of creating wrong calculations that can turn into disasters.

In this new security environment, countries aim to continuously renew their methods of struggle, protect international peace and stability, and thus establish peace and prosperity. Today, in addition to conventional

threats, asymmetric terrorism, organized crime, depletion of resources, civil wars, migration, environmental problems (global warming, excessive urbanization, water scarcity, etc.), health, food security, cyber-attacks, energy, drugs, and smuggling are common challenges that need addressing. That makes cooperation, alliances, and NATO more important in security.<sup>2</sup>

The models used to understand the security order of the past are no longer applicable in the 21st century. Today, countries are making efforts to deal with current security problems, find solutions to future security problems, adapt to technological developments, and fulfill the requirements of geopolitics.

## **TÜRKİYE'S GEOPOLITICS**

Türkiye is located at a point where Europe, Asia, and Africa intersect, acting as a bridge and cultural center, making it a geographic region that can affect the balance of power centers in the world. As a result of this geopolitical location, Türkiye is constantly experiencing conflicts of interest and power in a multidirectional manner. This new geopolitical environment, created by Türkiye's location and the area of influence & interest, has also created conditions that increase its role and the development of its national interests, even in adverse regional conditions. <sup>3</sup>

The geography of the country is a constant element of geopolitics. Starting from the idea of Ibn-i Haldun that geography plays a determinative role in human life, the art of applying the strategy to geography and using the country's geography in world politics, namely geopolitics, should be used effectively.

For this, geopolitical values, strategic intelligence, strategic patience, and strategic wisdom must be managed realistically, and national power elements <sup>4</sup> (military, economic, population (demographic), geographical, scientific, and technological, psycho-social, and cultural) must always be strong.

## **DEFENSE INDUSTRY**

The defense industry encompasses all industrial facilities that manufacture military weaponry, vehicles, equipment, and ammunition, as well as their spare parts and vital inputs.

The foundation of Türkiye's defense industry was laid in the Ottoman era and has undergone continuous development in line with revised strategies during the Republic period. It is now rapidly advancing. The budget allocated for defense is being judiciously used to support national and local resources, and the "Defense Industry Support Fund (SSDF)" established under the law<sup>5</sup> regulating the establishment and duties of the Defense Industry Presidency (SSB) aims to meet the modernization needs of the Turkish Armed Forces (TSK) and establish a defense industry infrastructure. The weapons, systems, platforms, and equipment necessary for Türkiye's security are produced by both the private sector and public institutions, and the defense industry expenses and companies rank among the top in the World. <sup>6</sup>

The ever-evolving landscape of military technology has led to a significant shift in the defense industry, with globalization providing a host of new opportunities. Developed nations, with their access to cutting-edge technologies, have an advantage when it comes to designing specialized systems that meet the specific needs of their armed forces, while also reducing costs and allowing for greater autonomy in terms of the policy. <sup>7</sup> In the current globalized environment, it is crucial for countries to not only produce advanced technology but also to take advantage of these developments and remain competitive in the international market. Therefore, industrialized countries pay special attention to defense industry companies, benefit from their engineering capabilities for research and development, and control these companies.<sup>8</sup> Additionally, the technologies developed within the military sector can be adapted for civilian use through the application of the "Dual Use" concept, resulting in significant economic benefits. This approach is becoming increasingly important in today's world.

The realization of the critical importance of a self-sufficient and locally based defense industry came to light following the 1974 The Cyprus Peace Operation, which prompted a renewed focus and investment in the defense sector starting in the 1980s. This emphasis on an independent defense industry has been sustained to this day.

Between the years 1970-1974, Air, Sea and Land Forces Foundations were established, and in 1987 these foundations were brought together under the umbrella of the Turkish Armed Forces Foundation (TSKGV). The Turkish people made significant donations to these foundations, and with their income, between 1975-

1988 under the TSKGV, national defense industry companies such as Military Electronics Industry and Trade Inc. (ASELSAN), Air Electronics Industry and Trade Inc. (HAVELSAN), Turkish Aerospace Industry Inc. (TUSAŞ), Rockets-Missiles Industry Inc. (ROKETSAN), ISBIR Electricity Industry Inc., and Military Energy Industry and Trade Inc. (ASPILSAN) were established. 9

The performance of the defense industry sector has been increasing since the 2000s. Turkish defense industry; is developing to reduce foreign dependency, its export potential is growing, and efforts are being made to have an important place in the future. The largest share in defense industry production belongs to the USA, while China, Russia, and the EU are also important in this sector, Brazil, India, Israel, and Türkiye are among the newly developing countries.

Türkiye's 5-year defense industry performance is below.

Figure 1. Performance of Defense Industry in Türkiye

Year	Total Defense Industry Turnover (Billion \$)	Defense Exports (Million \$)	Number of Defense Projects
2015	4.908	1.929	416
2016	5.968	1.953	460
2017	6.693	1.824	553
2018	8.761	2.035	667
2019	10.884	3.068 (SASAD)	650

**Source:** Şennur Sezgin, Selami Sezgin, Dünya’da ve Türkiye’de Savunma Sanayi: Genel Bir Bakış, Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi (ASEAD) Cilt 5 Sayı 12 Yıl 2018, S 15., SASAD, 2019

<https://www.sasad.org.tr/uploaded/Sasad-Performans-Raporu-2019.pdf>, SASAD 2018

<https://www.sasad.org.tr/savunma-ve-havacilik-sanayii-performans-raporu-2018>. (*Baykar, which produces UAVs, is not included in these figures.*)

The Defense and Aerospace Industry Manufacturers Association (SaSaD), which brings together 206 manufacturing companies and 6 clusters, has stated in its 2021 Performance Report that the sector is showing signs of recovery from the pandemic and is on an upward trend with a production of 10.159 billion dollars, around 3.225 billion dollars in foreign sales revenue, and 75.660 employment.<sup>10</sup>

TSKGV’ partnerships, which have important places in the Defense Industry;<sup>11</sup>

- ASELSAN, which is ranked 49th in the Top 100 2022, is on the list of the 100 largest defense industry companies in the world by Defense News, which is considered one of the most prestigious publications in the field of defense.
- TUSAŞ, which is ranked 68th in the Defense News Top 100 2022.
- ROKETSAN, which is ranked 86th in the Defense News Top 100 2022.

In Defense News Top 100 2020; BMC- 89, STM Savunma Teknolojileri Mühendislik ve Ticaret A.Ş.-92, FNSS Savunma Sistemleri A.Ş.- 98 and HAVELSAN is 99.

The unique characteristics that set the defense industry apart from other sectors and force it to be innovative are as follows:

- High technology, precise production techniques, and special quality standards are required.<sup>12</sup>
- High costs, investments, and comprehensive logistics support are needed.<sup>13</sup>
- Providing solutions to generally customer-directed requirements such as durability, invisibility in physical and electronic terms, the ability to operate in any environment, and longevity. <sup>14</sup>
- Long-term product planning and goals are essential. <sup>15</sup>
- Developing systems that consist of many sub-parts from a single product.<sup>16</sup>
- Requires multi-disciplinary knowledge and qualified human resources.<sup>17</sup>
- Constant use of the latest technologies is required and as a result, it requires many R&D activities. <sup>18</sup>

- Companies need to rely heavily on external collaborations and support mechanisms for technology acquisition and innovation.<sup>19</sup>
- Having buyers demanding products/systems with advanced technologies in the domestic market (Armed Forces and Security) and having a foreign market dependent on foreign political influences.<sup>20</sup>
- The defense sector experiences higher technological uncertainty compared to other industries due to unique operational conditions and physical limitations that differ from typical situations.<sup>21</sup>
- The defense industry is closely related to the country's defense and security policies, and the government plays an important role in its development and management.<sup>22</sup>

There are varying opinions regarding the impact of defense spending on economic growth, both positive and negative. Benoit<sup>23</sup> studied the relationship between defense spending for 44 countries, including Türkiye, during the period of 1950-1965, and found that there is a correlation between them. According to Benoit, countries with high defense burdens generally have the highest growth rates, while countries with the minimum defense burden have the lowest growth rates.

The relationship between economic growth and defense spending is a topic that is examined from two different viewpoints. The first is that defense spending will reduce spending in many areas such as private consumption and investment, and social security programs, and will negatively affect economic growth.<sup>24</sup> The second is the supply and demand effects of defense spending, which will positively affect economic development.<sup>25</sup> Specifically, the demand-side effects of defense spending can lead to a decrease in unemployment and an increase in overall demand, thereby stimulating economic growth. With the advanced technology of the domestic defense industry and the international competitiveness of the products produced, both dependences on foreign countries will decrease and national income will remain in the country.<sup>26</sup> As a result, import costs will decrease and social welfare in the country will improve with the increase in employment opportunities.

The main sectors of the defense industry can be classified as follows:

- Aviation and Space Industry
- Arms and Munitions Industry
- Military Shipbuilding Industry
- Military Automotive and Armor Industry
- Rocket and Missile Industry
- Electronics Industry
- Military Clothing Industry and
- Autonomous Systems Industry.

To enhance its defense sector, Türkiye is actively engaged in a multitude of projects aimed at both developing the industry and ensuring the availability of necessary systems. A key consideration in this endeavor is to prioritize areas that are expected to be significant force multipliers based on future technological advancements, using a combination of technology mapping, strategic planning, taxonomies, and comprehensive approaches to devise effective solutions.

## **DEFENSE PLANNING**

For a strong Türkiye, to create a high-skilled industrial infrastructure, and support R&D to increase domestic and national production, it is significant to know all the processes to meet all the needs of military and security forces in the necessary place and time. That requires knowledge, becoming a learning organization, and strategic management.

The defense industry ecosystem can reach a more effective structure through the participation and added value of all companies in the defense industry sector, small businesses, research and development organizations, universities, and techno-parks. In this process, it is possible for defense industry partners to serve with high efficiency and effectively use their abilities by understanding and adapting the defense industry planning- strategy.

Türkiye 's defense planning process in general is as follows:

The foundation of national defense and security strategies and policies is in the National Security Policy Document (MGSB), and the preparation and updating processes of MGSB are carried out under the coordination of the National Security Council General Secretariat (MGK).<sup>27</sup>

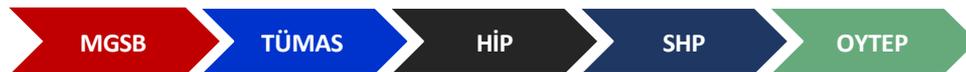
The MGSB contains evaluations and predictions from the previous period, the status of achieving the set targets, identification of any shortcomings and their reasons, and predictions and goals for the new period. The analyses and predictions in the MGSB are made regarding international relations & policy, defense-security, sociology, environment, and other necessary topics; at regional, national, societal, and individual scales. After being prepared, the MGSB is presented for approval to the Council of Ministers and published with an implementation directive. The main principles and guidelines in the MGSB constitute the basis for the strategy documents of the areas of responsibility of the Turkish General Staff (TGS-Genkur), Ministries, Public Institutions, and Organizations."<sup>28</sup>

Within the scope of MGSB, the Turkish General Staff prepares Türkiye's National Military Strategy (TÜMAS) document in the light of MGSB. The main functions of TÜMAS are:<sup>29</sup>

- National military goals and the strategy for a vision of 20-30 years,
- Principles regarding the preparation, development, and use of military force in coordination with other elements of national power (economic, population, geographical, scientific, and technological, psychosocial and cultural).

Subsequently, the Land, Naval, and Air Force Commands determine their own operational needs within the Planning, Programming, and Budgeting System (PPBS) and the Concept-Based Needs System (KDİS/CBRS) <sup>30</sup> in accordance with TÜMAS. The Operational Needs Plan (HİP) prepared by each force defines the equipment, tool, and capabilities that can respond to the issues defined in TÜMAS. Then, the SHPs are prioritized in line with the Strategic Goal Plan (SHP) and as a result, the Ten-Year Procurement Plan (OYTEP) is prepared. <sup>31</sup>

Ten-Year Procurement Plan (OYTEP) begins with the creation of a Project Definition Document (PTD) for each item. These procurement processes are divided into three distinct channels, known as the Concept-Based Requirements System (CBRS/KDİS) in English literature. The process of converting the needs identified in the OYTEP into specific PTDs typically takes an average of ten years.<sup>32</sup> To ensure that the OYTEP remains current and relevant, it is reviewed and revised every two years, considering the available resources.<sup>33</sup> The necessary budget for each project is allocated for three years to ensure successful implementation.



**Figure 2. Defense Planning Schematic Illustration**

Source: Produced by the article author.

According to the information and open sources provided, the institutions responsible for needs, planning, budgeting, procurement, and implementation in the defense industry are:

- Needs Institution : TSK
- Planning and Budgeting : TGS, Ministry of National Defense (MSB), SSB
- Procurement Institution : MSB, SSB, and Force Commanders
- Implementation of Defense Industry: TSKGV subsidiaries and companies, Private Sector, and Foreign Procurement

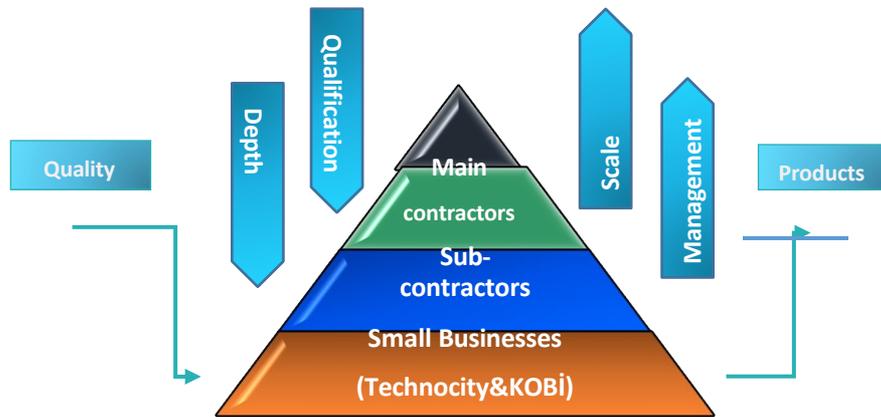
The sources for TSK Needs-Modernization<sup>34</sup> are: MSB Budget, Defense Industry Support Fund (SSDF), and State/Company Credits.

## **PARTICIPATION OF COMPANIES IN THE DEFENSE INDUSTRY PROCESS**

To meet TSK's needs in peace and operations, using local and national technologies at the highest level, effectively planning, managing, and developing all resources is required. In these activities, sustainability, opening to the world, international cooperation, maintaining contact between the inside and outside of the sector, effective coordination, understanding, and collaboration are very important.

As the customer of defense industry products is the state, like in all countries, the roles of companies operating in this field in Türkiye are generally regulated by the state.

It is important to understand the structure and operation of the entire defense industry system, for this purpose, the mentioned structure is shown schematically below.



**Figure 3.** Defense Industry Structure

Source: Erdal Torun, Vice President, Communication Systems at Meteksan Defense, 19.07.2022 (Written Note and Personal Communication) Istanbul

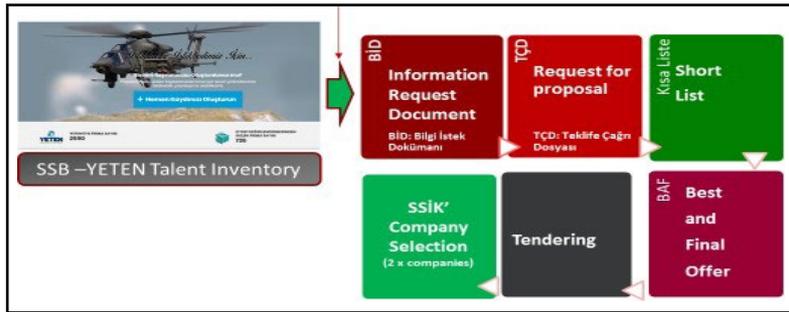
In this structure:

- At the top, there are TSKGV companies (such as ASELSAN, ROKETSAN, TÜSAŞ, HAVELSAN, etc.) with strong capital structures and private companies such as Baykar, FNSS, Otokar, and BMC which are platform manufacturers-main and contractors. TSKGV companies are generally grouped as main integrators according to their field of activity. The private companies, where a large part of the revenue comes from exports, are encouraged by the state in domestic projects.
- In the second tier, mostly private companies are located (such as Meteksan Defense, SDT, Milsoft, etc.). These firms have grown by investing in one area and have gained competency through SSB's project-based work. These companies develop and produce sub-systems for main contractors and take on the role of the main contractor with system projects directly from SSB/MSB.
- Small businesses, located in the third tier, generally operate under the direction and choice of main and sub-contractors. Because defense industry systems are systems that will be used under special conditions, their development and production require special care. Therefore, main, and sub-contractors select and work with qualified suppliers by applying a series of criteria by passing the small business through a qualification process. In this sense, especially in industrial sites such as OSTIM in Ankara, a significant number of Small and Medium-sized Enterprises (KOBİ) have been established that produce qualified products."
- Research institutions and universities in the fourth tier typically focus on technology/system development and receive technology development projects from the government. Unfortunately, they often struggle to convert their developed technologies into products due to various reasons, leading to lower- than-expected productivity.
- The essential elements that should be present in this structure include a deep understanding of the technology, high-quality standards and processes, and a focus on delivering eligible products. The outputs from this system should be characterized by a significant scale of production, consistently high-quality products, and efficient management practices.

## Participation Procedures Of Companies In The Defense Industry With The Defense Industry Talent Inventory (Yeten):

The YETEN project, led by the Defense Industry Presidency, aims to gather and classify information, such as financials, human resources, products, production, and test infrastructure, of companies operating in the defense sector through software. The purpose of this project is to determine the national industry's ability to fully meet the needs of the Turkish Armed Forces for weapons and services, identify areas of open technology, and identify potential companies that can meet the demand. For the success of this project, companies in the defense sector must register and fully complete their assigned areas on the software. 35

The process that starts with YETEN is as follows.



**Figure 4.** The Initiated Process related to YETEN or a Need.

Source: Alpaslan Erdoğan, STM Thinktech Coordinator 31.07.2022 (Personal Interview), Istanbul.

## Companies Apply To The Turkish Armed Forces Or Msb In Writing Or Verbally.

A company/organization wishing to present its capabilities through a briefing/demonstration must submit a request letter and necessary documents to the Director of MSB Technical Services. 36 In this case, TGS, MSB, and the Air-Sea-Land Forces technical personnel participate in a meeting where the company's work is reviewed. Following this, a thorough evaluation is conducted by the technical personnel, and the change of command is informed, determining whether the project aligns with the modernization needs of the TSK or has potential as a future product.

## Fairs/Expo (World's Fair)

Fairs are essential activities in terms of business meetings and networking. A trade fair where manufacturers can meet other manufacturers is an opportunity for participants to establish connections with current and potential business partners, additionally essential industry professionals and suppliers, both domestic and foreign. For example, at the SAHA EXPO 21 held in 2021, 123.5 million dollars' worth of projects were signed with 4 agreements, in addition to 27 different contracts, and protocols, and more than 18,000 professional visitors were the quest. 37

Other important fairs are International Defense Industry Fair (IDEF), Homeland-Border-Internal Security and Defense Systems organization-SEDEC and TeknoFEST. University and techno park activities can be added to these.

## Defense Industry Clusters

Defense industry companies are clustered associations established to join forces and achieve a common synergy. These are:

- In Ankara: Teknokent Defense Industry Cluster (TTSK- more than 140 defense industry companies, research center with more than 380 companies, laboratories) OSTİM Defense and Aviation Cluster (OSSA- Ankara, Balıkesir, Bursa, İstanbul, İzmir, 260+ member companies from Kayseri, Kocaeli, Konya, Manisa, Mersin with nearly 10000 employees and more than 50 branches of activity)38
- SAHA İstanbul ~ Defense, Aviation and Space Cluster Association in İstanbul (816+ members established in the Northern Marmara Region, which contains 54% of Türkiye's industrial production, 83% KOBIs, 22 universities, with companies engaged in production in 51 sectors of the members and spread throughout the country. It was the largest industrial cluster in Europe in 2022.39
- Eskişehir Aviation Cluster in Eskişehir (member of ESAC-32; industrial organizations, universities, Eskişehir Chamber of Industry and Organized Regional Directorate).40

Clusters provide member companies with benefits such as facilitating the ability to come together with local industry partners and actors in the relevant industries of the region and country, creating an ecosystem where knowledge is shared, providing ease of access to relevant institutions and companies, promoting the development of the value chain, shortening the supply chain and increasing efficiency, contributing to the formation of a qualified labor market, and reducing R&D costs. 41

## Defense Industry Congress-Seminar-Panel

Government agencies, universities, organized industrial zones, think tanks, civil society organizations (STKs), R&D centers, and associations organize defense industry congresses, seminars, and panel discussions. By participating in these activities, it is possible to learn about defense industry projects, future trends, and strategies, as well as to make connections, promote oneself and collaborate with others.

### **INFORMING THE RELEVANT INSTITUTION- ORGANIZATIONS ABOUT THE MODERNIZATION PROJECTS IN THE SHP, WHICH INCLUDES THE NEEDS OF THE TSK FOR YEARS:**

Information about modernization projects in the SHP, which includes the TSK's annual needs, is provided to relevant institutions and organizations. The aim is to meet the TSK's needs primarily from domestic sources, direct the defense industry organizations, and inform relevant institutions and organizations about modernization projects in the SHP for cooperation in similar areas. These activities are not open for personal applications, authorized representatives of the institutions/organizations can apply, and information is provided with the provision of the necessary documents. 42

The institution/organization that receives the SHP information is expected to;

- Submit a "Feasibility Study" for projects of interest within 3 months to the MSB' Technical Services Directorate and R&D,
- Provide information on personnel, production, and test infrastructure for the project.

### **Follow The Think Tanks& Their Studies.**

Think-tanks are non-governmental organizations that research, analyze, publish and provide consultancy services. It is useful to follow the studies to pursue new areas, and future trends and increase situational awareness.

Despite a growing number of think tanks and improved work in Türkiye, the country still ranks in the middle of the pack on a global scale. In 2020, Türkiye had 53 think tanks<sup>43</sup>, which is not a significant number compared to developed countries. Additionally, the rate of increase in the number of think tanks in Türkiye is not enough. In the field of defense, Türkiye only has one think tank, STM ThinkTech, whereas other countries such as the US- DARPA, Russia- Skolkovo Innovation Center, China -Military Sciences Academy, the UK- Aria, and the EU- JEDI have multiple think tanks respectively. 44

### **Urgent Operational Needs/Projects.**

The system is the same as routine in the "Urgent Operational Needs" required for counterterrorism, international joint exercise/mission, NATO activities, Peace Shield etc. operations (See Figure-4), but since the process is shorter, better follow-up and coordination is required.

### **Construction, Modernization, Repair, Maintenance And Sustainability Projects.**

The Ministry of National Defense's 27 military factories and 3 military shipyards have the capabilities for production, maintenance, repair, renovation, and operation, which are then exported and generate revenue for the modernization projects of these military factories and shipyards. These projects are carried out by ASFAT (Askeri Fabrika ve Tersane İletme A.Ş -Armed Forces Industry and Shipyard Management Inc.). ASFAT has a webpage with a "Company Information" section like the SSB YETEN system. To effectively track and coordinate these projects, it is essential that the necessary information is entered into the system<sup>45</sup> and regular communication is maintained with ASFAT.

### **Participation In Nato Projects**

The North Atlantic Treaty Organization (NATO) was established in 1949 with 12 members to ensure the freedom and security of all its members through political and military means. It has since grown to encompass 30 members and has maintained its presence through expansion. Collective defense is the most important subject of the Alliance. 46

Today, NATO; It covers a wide area in America and Europe with its 30 members, 13 Commands, 15 Agency, peace mission in Kosovo.



Figure 5. NATO Existing Members and its Coverage Area

Source:“NATO Enlargement & Open Door” Fact Sheet, July 2016, [https://www.nato.int/nato\\_static\\_fl2014/assets/pdf/pdf\\_2016\\_07/20160627\\_1607-factsheet-enlargement-eng.pdf](https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2016_07/20160627_1607-factsheet-enlargement-eng.pdf), pdf (Accessed:10.02.2020)

- NATO's relationships with universities and industries are managed by the Allied Command Transformation (ACT-See [www.act.nato.int](http://www.act.nato.int)) headquartered in the United States. ACT does this task:
- Alliance Warfare Development Conference (AWDC- ACT's annual meeting of Generals and Senior Civilians from NATO countries to interact and collaborate with ACT and other senior executives on war development).
- NATO-Industry Forum (NATO primary venue for strategic dialogue with industry on capability planning, development, and delivery)
- Fulfills with various meetings (seminar, panel, round table etc).

The other strategic command, the Allied Command Operations (ACO- See [www.shape.nato.int](http://www.shape.nato.int)) located in Belgium, is responsible for operations and exercises, such as those in Afghanistan and Kosovo.

Companies are required to register on the NATO Support & Procurement Agency (NSPA) registration page, which is the largest agency for participation in NATO projects. 47 Before registration, the company must also apply to the Ministry of Defense of their country to obtain a facility security certificate (a clearance of no objection for participating in tenders). Even if the company directly applies to NSPA, NSPA will still refer the company to their Ministry of Defense for the security certificate. The steps on the Ministry's website must be completed to obtain the certificate. 48

Once the company that has obtained this certificate enters the necessary information about the company on the NSPA page, it is accredited to take on published projects&work and can make offers. Also, NSPA contacts registered suppliers for new Request for proposal (RFP) if the registered capabilities match the requirements of the RFP.

Similarly, opportunities for business can be seen after completing the information on the website of the NATO Communications and Information Agency (NCIA), which is another major agency of NATO. 49

NATO exercises, with budgets averaging 1 million Euros each, and infrastructure projects are crucial subjects. A significant portion of the total NATO budget (2.5 billion Euro) 50, approximately 1/3, is allocated to infrastructure projects. Defense industry companies could showcase their products and services during exercises, such as the ‘İlk Hedef’ exercise held in İzmir. It's worth mentioning that some nations have objections to the use of these NATO infrastructure projects, and the recent Ukraine-Russia war has led to the evaluation that such projects may be directed towards new NATO members that are closely experiencing the threat from Russia, such as Romania and Bulgaria on the Black Sea coast and the Baltic countries.

What needs to be done in this regard is to register in agencies and commands such as NSPA and NCIA, to follow up on the projects and exercises, to contact, to make visits, and to get a job with the project by being an entrepreneur-supplier after obtaining a document from the MSB.

## STRATEGIC ANALYSIS

Türkiye's geopolitics necessitates a strong army and a strong defense industry.

Türkiye is making significant progress in the direction of indigenizing and self-reliance in its defense industry, but at the same time, it faces regional and global challenges due to its geopolitical position and the shifting security system and power dynamics in the world. Additionally, Türkiye's advancement also

impacts the interests of other nations, resulting in competition, alteration of potential customers, and fluctuations in gaining or losing influence and interest. As a result, the national defense industry faces challenges from both covert and overt sanctions and limitations.

Big powers can act against Türkiye, as and when necessary, due to the reasons stated by them. The first instance of this was the embargo placed on Türkiye by the US following the 1974 The Cyprus Peace Operation, and the topic of the embargo has resurfaced with Türkiye's procurement of the S-400 Air Defense System from Russia in 2019. As a result of the Countering America's Adversaries Through Sanctions Act (CAATSA), sanctions have been imposed on Türkiye, specifically targeting the defense sector, which led to Türkiye being excluded from the F-35 fighter jet program. 51

Under these conditions, it is extremely important for Türkiye to produce domestic and national solutions in critical technology, systems, subsystems, components, and materials in the defense industry and to have a say and be a leader in these fields in the world.

The defense industry's supply is usually demand-oriented, and companies focus on areas that the state prioritizes. In the supply-oriented model, companies take on a pre-buyer and directing role by offering defense products developed by their R&D budgets to the state,<sup>52</sup> for example, ASELSAN and ROKETSAN, TSKGV partnerships continue their R&D studies in projects procured by institutions like SSB, MSB and the Ministry of Interior. In addition, they start R&D based on technology roadmaps and finance it through their resources, incentives, and external sources. These resources are SSDF, TÜBİTAK, SSB, and MSB R&D project supports, Ministry of Industry and Technology Incentive, Türkiye Technology Development Foundation, EU Framework Programs, and KOSGEB incentives.<sup>53</sup> R&D is essential because it provides powerful knowledge and insights, and can increase efficiency, reduce costs, and lead to improvements in existing processes.

The proposed model emphasizes that companies operating in the defense industry can greatly benefit from researching and tracking global developments, participating in relevant studies, and staying abreast of future trends. To achieve this, it is crucial to bolster the number of research and development centers and think tanks related to the defense sector.

Information is the most important weapon anytime. In today's world, while high-level information wars are taking place, companies/businesses need the training to participate in PPBS, OYTEP/SHP processes, and adapt their business plans. Thus, companies will be able to manage their projects and businesses effectively.

Increasing the capacity of qualified, trained, and expert human resources for the defense and security ecosystem has become a national duty. This problem can be solved by the participation of stakeholders in this topic, and comprehensive and coordinated work with universities, state, and research centers.

It is impossible to catch up with technology giants by running behind them as the path taken by large companies in the global system and technology changes rapidly. Therefore, having high capabilities, as in the example of UAVs, is vital in the defense industry to make a jump, cause a big leap and close the gap, creating a surprise effect.

Using defense industry products with a multi-purpose and holistic approach, as a value network, will support this leap and lead to benefits for all parties. As a result, the cost-benefit ratio will also increase elibly.

Although it is a recommended decision for all activities related to the defense industry and supply to be carried out under the supervision of the Ministry of National Defense<sup>54</sup>, there are differences in practice. Improving the interaction among stakeholders and implementing a holistic understanding in line with the goal of one-handed management will be important in terms of adapting to rapidly developing technology and timing.

It is important to prepare defense forces in the best way possible for the current and future battlefield, to plan our current achievements with a holistic approach, to ensure sustainability/continuity within the defense ecosystem, to increase situational awareness, and to contribute.

To optimize the efficiency and effectiveness of the defense industry, it is crucial to eliminate unnecessary repetition which leads to a drain on labor, time, and resources. By leveraging technology taxonomy and road maps and taking a holistic approach to creating mutually beneficial solutions, the industry can redirect

efforts toward critical projects. That can be achieved through clearly defined areas of responsibility for companies and research centers, filling in any gaps, and maintaining high-level coordination. Unfortunately, a common issue that arises is that the results of R&D are often implemented internally instead of being passed on to main contractors, leading to a further waste of resources.

NATO member countries closely track the development of defense-related skills and projects, investing in training for their citizens and reaping the benefits of these projects. However, in Türkiye, there is a lack of information about these topics available on written or digital platforms, and the projects undertaken by NATO are not well-known by companies. From my observations, Turkish businesses often participate as sub-contractors rather than main contractors in NATO operations. Furthermore, European countries, most of which are NATO members, have increased their defense budgets (including police, gendarmerie, etc.) by 13% in conjunction with the war in Ukraine. This has been the largest annual increase since the end of the Cold War, and the defense projects market has also grown. In the case of Türkiye, although military expenditures increased nominally by 28% in 2022, they decreased by 2.06% due to inflation, but exports have increased respectively.<sup>55</sup> As an utmost member of NATO, it would be beneficial for Turkish businesses and companies to take advantage of the current opportunities in European military expenditures, increase our exports by undertaking major projects, and contribute to strategic, operational, and logistical effectiveness within the alliance. The "Consult the Commercial Counselor" application or the assistance of the 115 trade counselors abroad provided by the Ministry of Trade of Türkiye<sup>56</sup> and the military attachés of Ministry of National Defense of Türkiye can also be considered to help companies.

Considering this information, change and transformation stand out in our defense industry, and we need to think differently to achieve different results. To this end: <sup>57</sup>

1. Do the right things - Be efficient,
2. Do things right - Be effective,
3. Do what need to be done - Avoid unnecessary tasks - Take initiative,
4. Do things better - Be productive, valuable,
5. Benefit from what others do - Be smart,
6. Do what others don't do - Be original, creative,
7. Do the impossible - Be innovative.

The article explains how creativity, thinking differently, and being bold can lead to results that go beyond the expectations of an institution, produce solutions, and even make seemingly impossible tasks possible.

Based on this, it is believed that by making small changes in the defense industry, successful results can be achieved through transformation.

## CONCLUSION

As Türkiye's defense industry develops, the threats faced by the country are becoming more diverse and changing, which increases the need for defense. Despite making progress in some areas, the defense industry, which has a dependency rate of 30%, needs strategic planning and cooperation to avoid the impact of embargoes and to progress further in some areas. Technological independence, a goal that is being pursued step by step, is not impossible, especially considering the negative experiences we have had with the use or export of our systems.

In developing economies, the efficient use of resources, the progress of human resources, and investment in people stand out as the driving force for development. In developed countries, the continuity of development is dependent on the continuity of policies that invest in people. It is necessary to retain trained human resources in the system of the defense industry and to bring back highly qualified human resources who are working abroad. Additionally, it is considered that utilizing the educated and experienced retired personnel of the Turkish Armed Forces to the optimum extent in special areas within TSKGV joint companies and the defense industry will be beneficial in the race against time."

An effectively functioning research and innovation ecosystem and the development of the capacity to produce and use knowledge will support high-value-added products and services, and the number of defense industry R&D and think tanks must be increased rapidly.

Having a strong military power is necessary for peace, national sovereignty, territorial integrity, and deterrence. The development and integration of new and emerging technologies in the defense industry, the

development of human resources, and the increase in the number of R&D and think tanks are essential to achieve this goal.<sup>58</sup>

It is essential to conduct studies based on future technology and combat methods, adopt a comprehensive and holistic approach, prioritize education, communication of knowledge and professionalism, maintain the sustainability of our defense ecosystem, prevent repetition that results in wastage of time, resources, and effort, update technology taxonomies and roadmaps and have strategic management of the defense industry system under one roof.

Reverse engineering, improving compliance with international standardization, conducting research and having possession of critical minerals, meeting the operational needs of the industry and increasing situational awareness, revitalizing critical technology research, transforming our companies into learning organizations with improved corporate and scientific capabilities, effective coordination and collaboration in the R&D system and reviewing technological strategies for the future are considered as a priority.

In line with the saying "geography plays a role in everything", a strong army and defense industry are necessary for the geography we live in.

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