ARTICLE

The Foundation and Development of Turkey's Defense Industry in the Context of National Security Strategy

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Abstract

This article aims to provide an overview of the development of Turkey's defense industry from a historical perspective within the context of the country's national security strategy. Due to its unique geostrategic location and deep-rooted historical, socio-political and economic relations with the countries of its neighboring regions, it is appropriate for Turkey to possess a multidirectional foreign policy and defense concept. Since 1980, Turkey has been taking impressive steps to build a modern defense industry, launching initiatives at the national and international level, leading to the emergence of a new national defense industry strategy and defense concept for the 21st century.

Keywords

Turkish defense industry, national security, military strategy, Turkish armed forces, defense spending.

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Introduction

Turkey sits in one of the most strategic positions in the world, given its unique geographical location. The Anatolian peninsula, situated between the Asian and European continents, is regarded as a connection point between Western and Eastern civilizations. Partly for this reason, Anatolia has a rich history and cultural legacy, and has been constantly exposed to great threats. Turkey is thus an important center in geopolitical and geostrategic terms; it sits right in the middle of several conflict zones that are important for the shaping of global geopolitical balances, such as the Middle East, the Balkans and the Caucasus.[1] At the same time, Turkey is an important country on NATO's southern flank, which further contributes to its strategic value in the eyes of the Western world.

Geographical location, including proximity to significant regions and power centers, defines the value of a country's geopolitical importance as well as its status in the world. In this sense, each of the geographical characteristics that constitute Turkey's geopolitical power are of great importance, and Turkey's threat perceptions emerge in relation to these characteristics.[2] Turkey must closely monitor and address the geopolitical and security-related issues that arise from its geographical location, including issues arising from other continents like Europe, Asia and Africa; the need to address such a broad array of considerations is a decisive factor in the formulation of its defense policy. Turkish leaders must always be well-prepared, since tackling symmetrical and asymmetrical threats and risks requires them to plan and implement both traditional and non-traditional defense options in a holistic manner.[3]

States' national security policies' are determined foremost by their national interests and objectives. It is necessary to develop both soft power (political, diplomatic and psychological) and hard power (military and economic) capacity in order to attain these national objectives. The protection of national interests and the achievement of national objectives requires states to develop political, diplomatic, economic and psychological power.[4] The national security policy prepared by the government determines the security precautions that need to be taken by a state against internal and external threats. Thus, a state's national security policy is of utmost importance.[5]

Within the framework of national security policy, it is essential for the Turkish Armed Forces (TAF), whose duty is to defend the Turkish territories—which have faced so many threats for centuries—to be served and supported by a domestic, national defense industry that provides it with cutting-edge military equipment and modern arms.

Turkey's national security policy is stated openly in the "White Paper" prepared by the Ministry of Defense. As defined in Law No. 2947, national security "refers to the protection and utilization of the state's constitutional order, national existence, integrity, all interests including those that are political, social, cultural and economic, and contractual law in the international scene against all kinds of internal and external threats." In Law No. 2945 in the same publication, national security policy is defined as follows: "a policy that includes principles regarding the internal, external and defense courses of action put forward by the Council of Ministers within the framework of the views determined by the National Security Council in order to ensure national security and achieve national goals."[6]

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Countries formulate their defense policies in line with their strategy documents, and organize and manage their plans for defense targets according to their predetermined objectives;[7] the views regarding the formulation and implementation of Turkey's national security policy are determined by the National Security Council. The principles, priorities and main programs of the armed forces regarding personnel, intelligence, operations, organization, education, training and logistics requirements are prepared accordingly. The national military strategic concept is developed by determining the programs and priorities related to military requirements that are based on the national security policy and national objectives. In this regard, meeting the present and future needs of the armed forces and managing a successful defense economy are co-

ordinated with other relevant authorities. Within the framework of the defense policy and according to the predetermined principles, priorities and programs, the defense industry, health services, construction/real estate and infrastructure services are provided along with weapons, tools, equipment, as well as all kinds of logistical requirements. [8]

The purpose of this article is to discuss the establishment and development of Turkey's defense industry in accordance with its national security strategy. To this end, the first section will focus on Turkey's efforts to build a defense industry, especially in the early Republican period, while the second section aims to shed light on the more recent development of the country's defense industry strategy and policy. The last section discusses the modernization of the defense industry and defense spending in Turkey in the 1980–2020 period.

Efforts to Build a Defense Industry in the Early Republican Period

Strategy is the use of combat to achieve the goal of war. Carl von Clausewitz defines strategy as the combination of all methods and means implemented and followed in order to achieve a predetermined goal. [9] Grand strategy is the theory of how a state can ensure its security in accordance with its political-military purposes and means. Grand strategy should both address potential threats against a state in a concrete way, and anticipate the necessary political, military and economic measures that should be taken to counter these threats.[10] In this sense, the relationship between Turkey's tangible and intangible resources, and those of its neighbors and non-neighboring regional powers are the determining factors of its grand strategy.[11] In terms of defense industry strategy, this means that the procurement of all kinds of weapons and ammunition required by the armed forces should be made from the national defense industry.

The defense industry, also known as the war industry, is a group of enterprises that design, develop and produce the weapon systems necessary for a state's armed forces. During the period of the rise of the Ottoman Empire, the Turkish war industry was considered to be ahead of its time. The remarkable improvement in Ottoman cannon production

achieved during the reign of Fatih Sultan Mehmet in the mid-15th century should be particularly emphasized in this regard. However, this superiority ended due to the acceleration of technological developments in Europe starting in the 18th century; by the end of 19th century, the Ottoman Empire lagged behind the European states in terms of war industry.[12]

Nevertheless, by the middle of the 19th century, the Ottomans had built some new arms factories, and had added new facilities to the already functioning factories in the Tophane, Zeytinburnu and Bakırköy districts of Istanbul. As the Ottoman Empire had to fight many wars, it allocated a sizable budget to arms production in the 19th century, and the activities of the factories in Tophane became even more important. A significant shortage of supplies arose in the important raw materials needed for the arms industry, such as copper, iron and steel, as these materials were largely imported from other countries.

By the beginning of the 20th century, the European states had made significant advances in arms technology. Private companies in Germany, Austria, Britain, France and the U.S. in particular pioneered rapid development in arms technologies, and the use of electric, automatic looms in European and American arms factories quickly overshadowed the Ottoman Empire's relatively more primitive mode of arms production.[13]

In terms of the Ottoman army's organization structure, the Ministry of War was established on July 22, 1908; a year later, the General Directorate of Warfare Production (İmalât-ı Harbiye-i Umumiye Müdürlüğü) was established, and the entire arms industry in the empire was placed under the authority of this newly founded directorate.

In terms of the Ottoman army's organization structure, the Ministry of War was established on July 22, 1908; a year later, the General Directorate of Warfare Production (*İmalât-ı Harbiye-i Umumiye Müdürlüğü*) was established, and the entire arms industry in the empire was placed under the authority of this newly founded directorate. During the years of the First World War, the military requirements of the army were largely met from domestic sources and factories operating under the General Directorate.

Under the conditions of the armistice signed at the end of WWI in 1918, the production of arms in the factories affiliated with the General Directorate was stopped; however, with the start of the Turkish War of Independence one year later, the materials of these factories in Istanbul were smuggled to Anatolia and their facilities were reorganized on March 19, 1920. As a result, some manufacturing and repair workshops were opened in Anatolian cities such as Ankara, Eskişehir, Kayseri, Konya and Erzurum.

These factories and facilities were linked to the General Directorate of Military Factories (*Askeri Fabrikalar Umum Müdürlüğü*), which was re-established as a brand new organization on January 10, 1921, and thus started working in a more systematic way. Following WWII, the war industry, which had previously been united under the roof of this General Directorate, was placed under the Mechanical and Chemical Industry Corporation (MKE) founded in 1950.

During the years of the Turkish War of Independence, the activities of the General Directorate of Warfare Production were mainly concentrated in Ankara and the surrounding cities. The military factories working under the directorate in this period could be placed in three categories based on the product they produced: arms, ammunition or chemical materials. The first group included the Ankara Arms Factory, the Kırıkkale Rifle Factory and the Kırıkkale Cannon Factory.[14] The ammunition factories, which mainly produced bullets, cartridges, capsules, fuses and training bullets used in light and heavy weapons to complement arms production, included the Kırıkkale Ammunition Factory, the Ankara (Gazi) Cartridge Factory and the Silahdarağa Cartridge Factory, which later merged with the Kayaş Capsule Factory in 1968. Chemical production factories included the Kırıkkale Gunpowder Factory, the Bakırköy Gunpowder Factory, the Elmadağ Barut Factory, the Konya Güherçile Kalhane and the Mamak Gas Mask Factory. After the proclamation of the Republic of Turkey in 1923, some of these military factories were restructured, but the General Directorate of Military Factories still played a crucial role in the development of the Turkish arms industry. In addition, the Ministry of National Defense, which was restructured in 1923 in the early Republican period, played an important role in the supervision of the activities of these factories.

The first factory to be founded by the private sector in the early years of the Republic belonged to Şakir Zümre Bey, who had settled in Turkey right after the proclamation of the Republic; Bey's factory served to meet the needs of the TAF for a long time. Another important figure in terms of the private sector's efforts in the Turkish war industry was Nuri Killigil, who was asked by the Turkish government to establish a pistol factory in 1942 in order to assist the Turkish army during WWII.[15] This factory received various incentives and support from the Ministry of National Defense.[16]

The new Turkish state had ambitious plans in the naval sphere from the very early years. Many warships were purchased and/or ordered from the national budget during the Atatürk period. Some of these include the Adatepe, Kocatepe, Tınaztepe and Zafer destroyers; Doğan, Martı, Deniz Kuşu assault boats; and Birinci İnönü, İkinci İnönü, Dumlupınar, Sakarya, Gür, Saldıray, Atılay, Yıldıray and Batıray submarine ships. Efforts to build a new shipyard began in Gölcük as early as 1926. Until the early 1960s, only the Haliç and Camialtı shipyards and the Taşkızak and Gölcük military shipyards built the small, auxiliary-class warships used by the Turkish Naval Forces. Meanwhile, an agreement was made with Germany in 1936 for the construction of four submarines for the Turkish Naval Forces. Eventually, the submarines "Atılay" and "Yıldıray" were put into service on August 14, 1937 and September 9, 1937, respectively. Re-established in 1941, the Taşkızak shipyard has accelerated its development, especially since 1960, and has continued to meet the needs of the Turkish naval forces with activities in the fields of modernization and installation.[17]

Aviation efforts in Turkey started in 1911 during the Turkish-Italian war in Tripoli. On June 11, 1911, an air commission was established under the second branch of the Inspectorate of Science and Combat Garrisons (*Kıtaat-ı Fenniye ve Mevaki-i Müstahkeme*), which paved the way for the foundation of the Turkish Air Forces. After the proclamation of the Republic, the Turkish Airplane Association (*Türk Tayyare Cemiyeti*) was established on February 16, 1925.

In the early years of the Republic, a decision was taken by the government upon the personal instructions of Atatürk to build an airplane factory in Kayseri, and the German Junkers Company was contacted

for this purpose. Due to the emergence of a positive atmosphere in Turkish-German relations during this period, the two countries eventually decided to build a joint airplane factory under the name Turkish Aircraft and Engine Corporation (TOMTAŞ). After the inauguration of TOMTAŞ, private sector initiatives in the field of aviation gained speed in Turkey; Nuri Demirağ opened the first private airplane factory in Turkey in Beşiktaş, and the Turkish Aeronautical Association's Etimesgut Airplane Factory and the Airplane Engine Factory were established between 1939 and 1941, at the beginning of WWII, upon the request of the General Staff. In 1950, both factories were transferred to the MKE.

Defense Industry Strategy and Policy in Turkey

Within the context of defense industry strategy, it is of great importance for a state to make sure that all of the arms and ammunition required by its armed forces are provided domestically from the national industry. However, it is quite difficult to achieve this objective. The technologies of the Turkish armed forces that are related to defense issues can be grouped into three categories. The first includes the systems and technologies that must be produced exclusively from national sources, while the second includes those that require technology transfer and joint production with foreign cooperation, as they cannot be produced in Turkey. The last category includes all the other systems and technologies that remain outside the first two categories.[18]

Developments in military technology are very dynamic and are constantly transforming the quality of defense industry products. Arms systems develop over time in accordance with radical changes in military technology, and these developments significantly change the strategic balance of defense between countries; this balance not only affects the causes, conduct, degree of violence and consequences of war, but also significantly influences states' national security policies and military relations.[19]

States' foreign policy strategies and doctrines reflect decisionmakers' perceptions about international and local developments. A strategy is created in accordance with a state's place in the world as well as its national interests and the instruments it is able to employ to reach

them.[20] A national security strategy in this regard depends on the intermediate and long-term policies followed by a state in its international relations. States' threat perceptions emerge as a result of various international considerations. Yet, ensuring the security of the state and protecting its national interests can only be possible if the state possesses an efficient defense industry with developed defense systems and powerful production capabilities. It is extremely important in this sense to establish a connection between science/technology plans and military requirements.[21]

The goal of the Turkish defense industry policy and strategy is to formulate a vision that is based on realistic assessments and scientific data in order to enable Turkey to meet its defense requirements with its available resources. It is imperative for Turkey to plan all its defense industry activities and the procurement of its defense products in accordance with this strategy.[22]

Mustafa Kemal Atatürk's principle of "Peace at home, peace in the world," which has constituted the essence of Turkish foreign policy ever since the Republic was founded, highlights principles such as the peaceful resolution of conflicts in Turkey's neighborhood and in the world, non-interference in the internal affairs of other states and maintaining good relations with neighboring countries. Within the framework of these principles, Turkey provides direct support to the activities of the United Nations for the resolution of global issues as well as regional disputes.

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after the Cyprus Peace Operation in 1974, the necessity of establishing a national defense industry became crucial. Therefore, one could argue that the foundations of the core organizations of Turkey's national defense industry were laid after the Cyprus operation. More recently, the Undersecretariat for Defense Industries (SSM), established in 1985, has launched remarkable projects with the purpose of producing all kinds of weapons, tools, equipment and ammunition needed by the TAF by relying on domestic resources.[23]

In order for the Turkish state to thrive in its geography and secure its future interests, it is of utmost importance that it possess a strong defense industry to take its security to a higher level. In this sense, Turkey's fundamental policy should be to refrain from taking any steps that could weaken its defense industry capacity. This is because the military power and deterrence capability of states whose defense industries do not depend on national technology are vulnerable. States control the development of their national defense technologies in order to maintain the confidentiality of their arms systems. Therefore, the defense industry needs to be national in every state.[24] However, the delicate balance between the development of a national defense industry and the security of the state should be preserved, the national industry should not be put at risk due to unnecessary concerns, and obstacles to the technological development of the national industry should be removed.

The most important factor that could help support the development of Turkey's domestic defense industry is to increase the "domestic contribution rate", which generates additional costs; it is impossible to make further investments and achieve greater technological gains without paying higher prices. Some of Turkey's national defense industry companies have been encouraged to compete with each other on certain projects, while they cooperate on other projects that are important for the interests the country. The export activities of all of the national defense industry companies should be actively supported by all the organs of the state without discrimination.[25]

The principles of military strategy in Turkey are first of all based on the total defense concept and the capacity to have a deterrent military force structure. To this end, superior mobility; the ability to intervene in events in a short time; forward defense; maintaining readiness for

high-intensity battle; possessing modern weapon systems and operating in all kinds of terrain, visibility and weather conditions are very important. The execution of these duties is the responsibility of the TAF. This responsibility can only be provided by powerful, modern and well-equipped military forces. Thus, the military force structure of the TAF is equipped with specifically developed command-control and combat systems, military units with superior mobility and early warning capability and improved air defense and response systems. The modernization of the TAF should be continuous and uninterrupted in order to elevate Turkey's defense technologies to a level that is renewable and capable of responding to future threat perceptions. [26]

Although intensive efforts were made to achieve lasting peace and security globally and in Turkey's neighborhood in the post-Cold War period, the emergence of regional conflicts could not be completely prevented. New security problems have emerged due to instability and uncertainty in the regions defined as 'rimland' zones. Regional, ethnic and religious conflicts, nuclear proliferation, proliferation of weapons of mass destruction, drug trafficking and international terrorism are important challenges to security, both for Turkey and the world at large.

The Modernization of Turkey's Defense Industry & Defense Spending (1980–2020)

The defense industry has its own unique characteristics. Defense industry products are expected to be confidential and reliable. The use of the most advanced technologies possible, the development of powerful, large and reliable companies, and the smallest degree of dependency on other countries are important features of a state's defense industry.[27] There is a very close relationship between a state's defense capabilities and the level of development of its defense industry. Since the defense industry is a sector in which advanced technologies are used, national defense capabilities are directly related to the technological level of development. In addition, the most obvious criterion for the production of defense systems is privacy. This means that the features of military systems should be confidential, and their strong and weak points should be known only by their users. Otherwise, the effectiveness of the arms systems will be significantly weakened.

Meeting the needs of the armed forces in a secure and stable manner forms the basis of the Turkish defense industry strategy. For this purpose, it is necessary to produce high-tech combat weapons and vehicles on a national basis, to form the necessary technology base as well as production facilities and to encourage and support the national defense industry. R&D activities have great importance in this process, as a low R&D capacity increases a state's external dependency. In fact, developed countries that possess advanced defense industries owe their technological and industrial achievements mainly to the R&D activities they have been conducting for many years.[28]

The most important factor that could negatively affect the development of the national defense industry is the failure to base procurement activities on R&D. The most important task to complete in this regard is to undertake critical defense projects with R&D-based procurement.[29] When one takes a look at the last 40 years of the Turkish national defense industry, apart from utilizing ready-made options in terms of meeting supply needs, new implementation programs have also been started. Since the 1980s, Turkey has introduced new production models based on smart procurement, production under license, joint production/technology transfer, original design and R&D. [30]

One of the most important concepts in the defense industry is "technological depreciation." This means that a new weapon that is developed in tandem with progress in new technologies reduces or completely eliminates the military effectiveness of the previous weapons that had been produced for the same purpose. In other words, as new technologies are developed, weapon systems lose their economic and military value and become obsolete before they complete their life cycles. In this respect, defense industry companies and corporations need to constantly renew and improve their techniques in order to remain competitive. [31]

The defense industry is an area that is directly related to the security of the state, and because it is dependent on the level of technological development, it requires the allocation of large resources from the state budget.

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Since the risks to be confronted in the case of failure are immense, the defense industry is a sphere that should be controlled by the state. This is also because the knowledge, experience, investments and capabilities gained in the field of defense industry are very valuable and should be passed on to future generations.[32]

The defense industry is also a strategically important sector; states aim to use the most up-to-date technologies to elevate their competitiveness, especially in the field of R&D and innovation. This aim remarkably increases the share of defense expenditures in some states' national budgets.[33] High performance and quality are quite important in the assessment of the effectiveness of defense industry products. In this regard, it is once again crucial to use advanced technology, although this requires significant R&D investments, both in terms of the allocation of greater financial resources and the employment of more researchers.[34]

From World War II until the Cyprus operation in 1974, Turkey chose to meet the needs of its armed forces, including weapons, vehicles, equipment and materials, mainly from abroad by using foreign aid and credits in addition to resources allocated from the national budget. After 1974, however, efforts to develop the defense industry gained speed as a result of the U.S. embargo imposed on Turkey. However, it should be noted that developments in the defense industry were very slow until the early 1980s, while particularly from 1990 onwards the Turkish defense industry has gained significant momentum and has started to produce a much larger share of the requirements of the TAF.

The development of an independent defense industry is only possible when a state has an independent technology base; therefore, important initiatives to produce critical technologies are required. In the process of transitioning to a modern defense industry, it is important to coordinate activities with foreign companies without undermining national capabilities. The national defense industry should be supported by the state as much as possible in order to keep the resources used to meet the needs of the armed forces inside the country.

In Turkey, more modern and organized working programs in the field of the defense industry were developed at the beginning of the 1980s. The General Directorate of Defense Equipment Enterprises was estab-

lished in 1983 for the purpose of placing the Turkish defense industry on a more solid basis with more guidance from the government. This organization was later transferred to the Directorate of Defense Research and Development (SAGEB) together with its capital before it could perform any meaningful activities. SAGEB was established in 1985 to coordinate defense industry activities and enable Turkey to develop a self-sufficient industrial defense capacity. SAGEB later continued its activities under the name of Undersecretariat for Defense Industries (SSM), which was established by the Ministry of National Defense as a legal entity aiming to modernize the TAF along the lines of a much more efficient and functional model.[35]

Within the scope of Law No. 3238, dated November 7, 1985, the Defense Industry High Coordination Board and the Defense Industry Executive Committee (SSIK) were founded, and the Defense Industry Support Fund (SSDF) was formed to coordinate financial structuring under the umbrella of the SSM. The SSM has been mainly responsible for the production of defense systems in accordance with the TAF's strategic targets and plans, while supporting the establishment and development of the defense industry in Turkey. For this purpose, the task of carrying out defense procurement activities, such as planning, programming, budgeting, organization, coordination, fund management, incentives, credits and investments, foreign capital, technology transfer, R&D, manufacturing, quality assurance, contract management, export and off-set implementations were all assigned to SSM within the framework of the decisions of the Defense Industry Executive Committee.[36]

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Since its foundation, the main goal of the SSM has been the development of a national defense industry in Turkey that is compatible with current technological advances in accordance with the existing industrial capacity of the country. By taking advantage of the capabilities of the Turkish defense industry, the SSM aims to meet the needs of the TAF from national resources to the maximum extent possible. In this

sense, priority is given to efforts for bringing the defense industry into the most ideal structure and maximizing the efficient use of resources, time and personnel.[37]

The establishment of the SSM in 1985 was a very important step for the modernization of the TAF and the development of a modern infrastructure for the defense industry. With the support of a constant and stable annual budget that exceeds $1 billion provided by the SSDF, the weapons, tools and equipment needed by the TAF have started to be met from national sources.

The SSM was placed under the Presidency of the Republic of Turkey with the amendments made in 2017; under Decree-Law No. 703, it was restructured under the name of Presidency of Defense Industries (SSB) in 2018. With the ratification of Law No. 3238, an efficient and flexible system was established to ensure that the needs of the TAF and other security forces would be supplied more rapidly, and to develop the modern defense industry in Turkey. The fundamental mechanisms of this system are the SSB, SSIK and SSDF.[38]

Defense services protect national sovereignty and ensure the security of the state against all kinds of illegal activities that could take place inside the country. In this regard, since defense expenditures ensure the maintenance of national sovereignty and thus the state's very existence, states allocate large shares from their national income for defense purposes at the expense of their wealth.[39]

Defense expenditures are generally one of the largest and most important categories of government spending. For this reason, changes in a country's defense expenditures affect all sectors of a country's economy. The positive aspect of this influence is that increases in defense expenditures can help stimulate industry demand and economic growth.[40] However, particularly during periods when the arms race intensifies between states, increased defense spending creates various difficulties, as governments allocate a larger part of their economic resources to armament, which could trigger inflation, unemployment and a decrease in the country's growth rate.[41]

The "Turkish Defense Industry Policy and Strategy," which was approved by the Council of Ministers and entered into force after being published in the Official Gazette on June 20, 1998, sets out the princi-

ples for short-, intermediate- and long-term planning for the development of the defense industry and the production of the weapons, tools and ammunition needed by the TAF from Turkish national resources and using indigenous capabilities to the maximum possible extent.[42]

According to the "White Book" published by the Ministry of National Defense in 1998, the sources of funding necessary for defense expenditures are defined as follows: "Resources allocated from the national defense budget, resources of the defense industry fund, resources of the Foundation for Strengthening the TAF, budget of the Gendarmerie General Command, budget of the Coast Guard Command and credits given by the state or companies whose repayments are guaranteed from the budget of the Undersecretariat of Treasury."[43]

In all countries of the world, defense expenditures are financed largely from the state budget. This is because defense is an area that should be completely under state control. In Turkey, the share of defense expenditures in the state budget in the early years of the Republic was very high, as necessitated by the conditions of that period. The country's struggle to protect its national sovereignty immediately following the War for Independence obviates the importance of defense issues. In 1924, Turkey's defense expenditures were around 48 million Turkish liras, equal to a 36% share in the budget. In other words, more than one third of the Turkish budget was allocated to defense expenditures, while the share of defense expenditures in Turkey's GNP for that fiscal year was 4%. Comparatively, 8 million Turkish liras was allocated to education and health expenditures, which made up only 5.5% of the budget.

The world economic crisis in 1929 caused a sharp decline in Turkey's defense spending; in 1929 its defense expenditures were around 78.5 million Turkish liras, while their share in the budget was 30.8% and the defense spending/GNP ratio was 3.8. Although defense expenditures increased between 1924 and 1934, their share in the budget decreased in the same period. In the 1935–1944 period, the effects of WWII should be taken into consideration; during this period, the share of defense expenditures in the budget increased considerably—from 30% in 1938 to 43.1% in 1939, 53.2% in 1940 and 55% in 1941. In the 1945–1954 period, the share of defense expenditures in the budget gradually decreased as WWII came to an end, and Turkey joined the NATO alliance and started receiving greater foreign aid from the West.[44]

Weapons technologies and production, which developed after WWII, were an important factor in the increase in many country's military expenditures. Global defense expenditures reached their highest level in 1987, then started to decline.[45] The emergence of the Cold War and a bipolar international system also contributed to the increasing share of defense expenditures in state budgets all around the world. With the emergence of the bipolar world order, the need to develop national capabilities increased in terms of the development and production of weapon technologies. In this period, new companies were established, especially in the U.S., while the production of the new weapons of the missile age also gained speed.[46]

The trajectory of Turkish defense expenditures, like that of many countries during the Cold War period, reflects the strong influence of the global arms race of the 1960s, characterized by the rapid development and production of arms technologies. In the 1970s, Turkey had the highest increase in defense expenditures of all NATO members, allocating significant resources for defense purposes mainly due to the influence of the Cyprus issue. This trend continued in the 1998–1999 period, as evidenced by the 2006 SIPRI report, which indicates that Turkey's defense expenditures rose from $5 billion in 1998 to $12 billion in 1999, then declined to $8 billion in 2004.

At the beginning of the 2000s, Turkey ranked seventh ($7,792 million) globally in terms of its defense spending, sixth in the number of soldiers (820,000), 25th in terms of its GDP ($193,500 million), 41st in defense burden (4%) and 50th in per capita defense spending ($123).[47] While Turkish defense expenditures were 6,248 million Turkish liras in 2000, this figure increased to 65,566 million liras as of 2017—an almost tenfold increase in only 17 years.

Turkish defense industry expenditures increased by an average of 9.7% during the ten years between 2007 and 2016, and its defense spending reached $14.8 billion as of 2016. With new incentives and additional resources, the defense budget in 2017 increased to $18.2 billion. This total includes the budget of the Ministry of National Defense as well as the expenditures of other security forces. According to SIPRI data, Turkey's defense spending in 1998 was $7,703 million, almost doubling to $15,084 million in 2017.[48] By 2018, Turkey had become one of the top

fifteen countries of the world with $19 billion in defense spending.[49]

In the 2017–2018 period, Turkey acquired a large share of its arms imports—totaling $7,679 million—from the U.S., which held the first place among all states in terms of its defense spending. In 2017, Turkey's total arms imports were $410 million, while Turkey made the highest total of arms imports in 2014.[50] According to the 2020 SIPRI report, when the 2011–2015 period is compared with the 2016–2020 period, Turkey's arms imports decreased by 59 percent. The U.S., Italy, Spain and Russia have been Turkey's top import partners in the last five years, with warplanes and missiles among the top military products imported by Turkey.

Especially in the 2010s, greater emphasis was placed on original design programs under the guidance of the country's primary national contractors with the purpose of developing critical technologies from domestic sources. The SSM's 2012–2016 Strategic Plan aimed to make Turkey a leading country in terms of defense and security technologies; industrialization, technology and procurement programs were planned in the field of defense and security. By initiating these programs, the SSM sought to prepare the TAF for the future combat environment, enhance competence in defense and security technologies and support the development of platforms and systems required for technological superiority, and Turkey's dependence on other countries was reduced significantly.[51]

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The number of projects launched by the Turkish defense industry increased almost tenfold between 2004 and 2018, and the production of new military equipment such as unmanned aerial vehicles (UAVs), tanks, helicopters and rockets played an important role in reducing Turkey's dependency on foreign sources, while helping Turkish defense companies take their place among the top 100 defense companies in the world. The achievements of the Turkish defense industry have expanded far beyond the national borders, and Turkish expenditures in

this sphere have increased exponentially. While a total of $5.5 billion was spent on the defense industry in 2002 with the initiation of new investments and projects aiming to reduce dependence on other countries, this figure reached $60 billion in 2018. The ratio of meeting defense needs from national sources, which was around 25% in 2002, reached 60% in 2018. Finally, the production capacity of the defense industry rose from $1.3 billion in 2012 to $6 billion in 2018.[52]

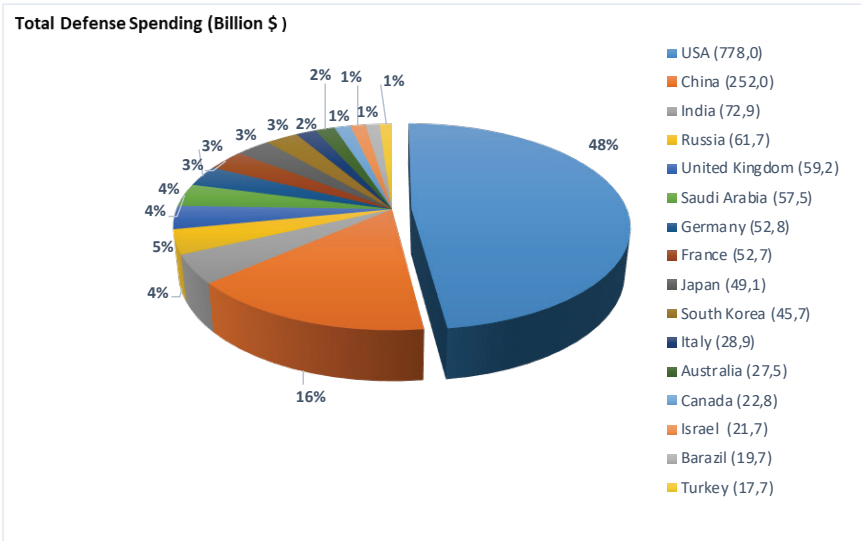
Turkey's MİLGEM corvettes, Altay tanks, Atak attack helicopters, Anka and Bayraktar UAVs, Hürkuş training airplanes, Göktürk-1 surveillance satellite, newly designed patrol boats, rapid intervention boats, national infantry rifles, mine-proof vehicles and air defense and missile systems are the results of projects that have reduced Turkey's dependency in the defense industry. The TAF and SSB are currently among the world's leading institutions in their fields. Resources allocated by Turkey to its defense from the national budget as well as other funds now consist of around $6 billion annually; $2.5–3 billion are allocated to the purchase of defense equipment and services when one excludes personnel costs and other running expenditures.

Determining Turkey's defense spending parameters and the allocation of related resources are decision processes carried out within the framework of the Planning, Programming and Budgeting System (PPBS). Planning includes the process of determining military strategy, strategic goals and force structure for the intermediate (10 years) and long term (11–20 years). Programming involves projecting how the goals determined by the planning branch will be achieved based on the available resources in a specific time frame. Budgeting is the process of deciding where, with what purpose and how much of the possible resource allocations specified in the ten-year procurement program will be made in a specific budget year.[53]

Defense expenditures may have positive and negative effects on production. The positive effect emerges as an increase in the defense budget, which also contributes to economic growth, especially in cases where the underemployment percentage is high. Expenditures related to scientific research for military purposes and technical developments also contribute positively to production, and encourage further scientific research and technical progress.

Globally, the highest defense spending occurs in America, Asia, and Europe, while the highest increase in defense spending was measured in the U.S. and Asia between 2000 and 2009. Comparatively, the increase was quite low in Western and Central European countries. In the Middle East, defense expenditures increased by 40% during the 2000–2009 period. In 2009, defense expenditures increased in Syria, Bahrain, Lebanon and Jordan. Oman, Bahrain, Kuwait, Saudi Arabia and the United Arab Emirates (UAE) are responsible for almost 60% of the defense expenditures in this region.[54] In 2017, the share of Saudi Arabia's defense expenditures in public expenditures was approximately five times higher than Turkey's, while the same figure for Oman was four times higher.

Figure 1: Global Defense Expenditures (2020)

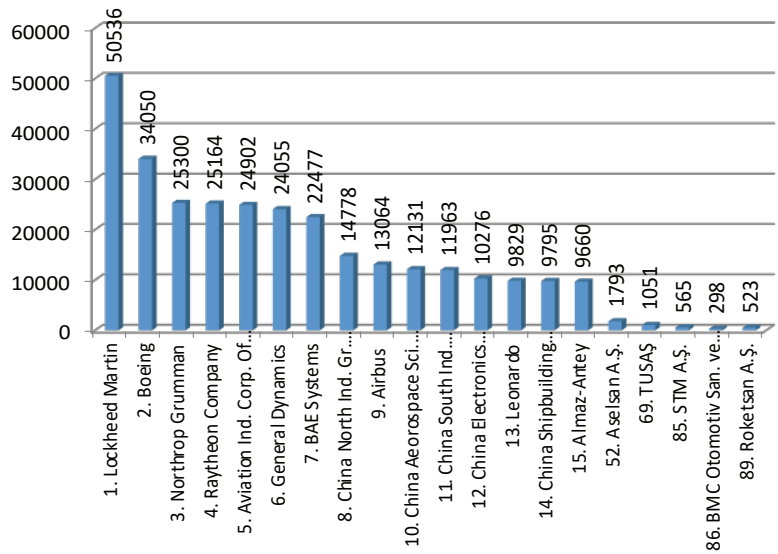


Source: SIPRI Military Expenditure Database 2020

In 2010, the 73 companies responsible for the majority of global arms sales were based in the U.S. and Western Europe—accounting for approximately 90 percent of total arms sales. The U.S.-based Lockheed Martin topped the list, and Britain's BAE Systems came second. U.S. Boeing, Northrop Grumman and General Dynamics were the other notable companies. In 2015, the ranking was almost the same, with

Lockheed Martin first, Boeing second and BAE Systems third.[55] In 2020, Lockheed Martin still ranked first, while Boeing ranked second and Northrop Grumman ranked third. It should be noted that three Chinese companies (AVIC, NORINCO and CETC) entered the top ten for the first time in 2020, and the number of Turkish companies in the list increased to seven as of 2020: ASELSAN A.Ş. at 48, TAI at 53, BMC at 89, ROKETSAN at 91, STM A.Ş. at 92, FNSS at 98 and HAVELSAN at 99.[56] The latter two companies entered the list in 2020 for the first time.

Figure 2: Top 100 Arms Companies in the World (2019)



Source: Top 100 Defense News for 2019, https://people.defensenews.com/top-100/

Responsible for one-third of global arms sales, the U.S. was the largest exporter of arms in the 2011–2015 period. Its most important customers are Saudi Arabia, the UAE and Turkey. Russia ranks second in arms exports with a share of 25%; its most important customers are India, China and Vietnam. China, which ranks third, meets 5.9% of world arms sales; its main customers include Pakistan, Bangladesh, and Myanmar. Approximately half of the arms sales of the UK are made to Saudi Arabia, while Turkey is an important customer for Spain and Italy as their third largest market.[57]

Table 1: Global Defense Expenditures by Country by Year (Million USD)

Countries	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
U.S.	849,867	839,803	793,157	732,148	687,112	671,509	669,448	662,550	682,491	718,689
China	143,932	155,169	168,514	184,209	200,023	213,526	225,558	238,476	253,492	266,449
India	51,671	52,171	51,986	51,603	54,276	54,292	59,833	64,572	66,258	70,794
Russia	49,198	52,506	60,836	63,800	68,378	73,694	79,007	63,652	61,388	64,144
Saudi Arabia	54,713	55,456	62,761	71,925	84,772	90,409	64,698	72,136	74,400	62,525
France	50,482	48,981	48,229	47,916	48,750	50,084	52,026	52,710	51,410	52,229
Germany	44,468	43,275	43,646	41,980	41,032	40,888	43,784	45,340	46,512	51,190
UK	58,962	56,813	54,524	52,355	50,996	49,838	49,912	49,412	49,892	49,916
Japan	45,629	46,243	45,686	45,492	45,978	46,788	46,505	46,542	46,618	46,562
South Korea	33,957	34,422	35,298	36,368	37,798	39,267	40,251	40,991	43,070	46,281
Brazil	26,424	25,595	26,087	26,229	26,754	26,134	24,807	26,424	28,177	28,030
Italy	31,377	30,727	28,403	27,315	25,216	24,146	27,353	28,139	27,808	28,037
Australia	22,289	21,981	21,210	21,026	22,820	25,155	27,546	27,496	26,840	27,395
Canada	17,583	18,177	17,284	15,977	16,238	18,656	18,904	22,835	22,729	22,279
Israel	15,500	15,669	15,986	16,476	17,725	17,971	18,911	19,739	19,759	20,102
Turkey	11,184	11,280	11,556	11,868	11,955	12,302	14,423	15,480	19,649	20,796

Source: SIPRI Military Expenditure Database 2019

Conclusion

Turkey's geographical position—especially the location of the Turkish Straits, which allow passage from the Black Sea to the Mediterranean—and its links with the Balkans, Caucasus and Middle East, are the most important factors that influence its defense strategy. Due to its deep-rooted historical, socio-political and economic relations with the countries of its neighboring regions, it is appropriate for Turkey to possess a multidirectional foreign policy and defense concept.

Since the early years of the Republic, the efforts made by Turkey's military factories have been crucial for the development of its defense industry's infrastructure. The airplane factories, shipyards and arms factories founded in Turkey could be regarded as the country's most important early investments in this area. Since 1980, the year when the first foundations of Turkey's transition into the modern defense industry were laid, initiatives launched at both the national and international level have brought about impressive results in a relatively short time. This progress has led to the development of a new national defense industry

strategy and policy, which forms the foundations of Turkey's current defense concept.

Since the foundation of the Republic, Turkish governments have launched significant initiatives in the field of defense industry, although these efforts have hit occasional roadblocks due to the national and international problems experienced in some periods. Since the start of the 21st century, Turkey's defense industry has developed rapidly. Over the past decade alone, Turkish-made UAVs have become quite remarkable. Turkey is now closely following global technological developments and undertaking notable work in this sphere, producing swarm drones, quantum radars, pocket submarines and laser weapons. In addition, significant developments in electronic, information, communication and material technologies have enabled Turkey to make breakthroughs in the military field in recent years.

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