ANALYSIS

APRIL 2017 NO: 26

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PROSPECTS & CHALLENGES

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Dr. Merve SEREN worked in the Grand National Assembly of Turkey as a Parliamentary Advisor, between 2005 and 2015. She holds a B.A. in Political Science and Public Administration from Bilkent University and an M.A. in European Union Studies from Başkent University while pursuing her Erasmus Scholarship at Rheinische Friedrich Wilhelms Universität Bonn, Germany. She entered the Ph.D. program of the Department of International Security and Terrorism at the Turkish Military Academy and completed the program, then moving to the Turkish Police Academy as a Ph.D. candidate where she defended her doctoral dissertation on "Strategic Intelligence and National Security". Seren was accepted to the U.S. Legislative Fellows Program in 2011 which is co-sponsored by Freedom House and the National Democratic Institute and funded by U.S. Department of State. She was selected as a member of the Atlantic Council's Young Atlanticist NATO Working Group in 2012 and attended GLOBSEC Bratislava as well as NATOs Young Atlanticist Summit held during the NATO Summit in Chicago. In 2013 she was chosen for the First Middle-East Generational Ambassadors Summit hosted by the Richardson Center and co-sponsored by the Aspen Institute and in 2015 to the Youth Ministerial Meeting, organized by the Atlantic Treaty Association in collaboration with NATOs Public Diplomacy Division. Furthermore, she has been chosen to attend the Munich Young Leaders in 2017, a joint initiative of the Körber Foundation and Munich Security Conference. As of February 2015, Seren has been working as a researcher in the Security Studies Department of SETA Foundation. She is responsible for conducting research on issues related to security, defense and intelligence such as air and missile defense systems, UAV technology, cyber security and military expenditure.

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ABSTRACT

Turkey's new policy in defense and aviation technologies, which has received concerted attention since the start of the millennium, is no longer based on only foreign direct procurement of weapons via import. The strategic target of this new orientation is, by virtue of local production, to prioritize technology transfer, have a greater share of the global market through export, and meet current and future domestic defense needs, therefore, to implement a defense policy which will in itself contribute to the development of the country. In the last decade critical projects have been initiated and developed through national R&D in order to increase the country's competitiveness in the world defense market and to reduce dependency on external sources in the procurement of high-tech products and services.

This focus for the defense and aviation industry of Turkey will strengthen the military readiness of the Turkish Army which is especially crucial during the current turbulent era in the Middle East following the Arab Spring. In this context, Ankara has endeavored to change the mindset on missile defense that was solely based on her conventional security cooperation with NATO and is now adhering strictly to her new strategy of eliminating 'security deficit' by overcoming one-sided dependency. Successful test launches have already been conducted for the low and medium altitude air defense missile systems 'HİSAR' and the long range surface-to-surface missile system 'BORA', national products designed and developed indigenously by Turkish defense companies. However the main theme of this study is in response to Turkey's desire to build a systemic and high-tech integrated national air-missile defense system against perceived risks and potential threats.

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INTRODUCTION

During the Cold War Turkey followed a defense strategy, under the security umbrella of the U.S. in specific and NATO in general, in order to fulfill her defense and security needs in relation to the elimination of threats defined rather statically. In fact, this de facto situation directly affected Turkey's defining position vis-à-vis the military defense and security sectors. However, the new security environment that has emerged in the post-Cold War era has dramatically changed the nature, origin, speed of spread, feature, identity and scope of the threats. The 'security paradigm' which Turkey previously had along the axis of the threat perception shaped by the Cold War and in terms of the strategies imposed by conjunctural conditions has evolved into a 'security vulnerability' in the period following. In other words, the 'security deficit' which resulted from the need for NATO, to a large extent due to 'compulsory trust' and a kind of 'strategic preference', has gradually evolved into a 'security vulnerability' in conjunction with the change in the definition and perception of threats of high-priority risk.

It is possible to say that awareness about this transformation has increased more in the period of time following the early years of the post-Cold War –especially since the early 2000s. Transformation of Turkey's strategic landscape and the emerging threats has introduced several factors which has compelled Turkey to rethink her national security and defense strategy in the near future. Foremost among them are: increasing regional instability and ethnic/sectarian conflict in near/neighboring states, more visible "asymmetric" threats of state/non-state actors who are particularly involved in the development of Weapons of Mass Destruction (WMD), manufacturing, transport and use of supplies; sui generis threats other than the perception of threat imposed by international organizations that she is in alliance with, such as NATO, and the need for questioning, even if partially, the trust relation that she has with her alliances in the struggle with these threats.

That being the case, Turkey has endeavored for breakthroughs in the defense industry in order to have a more independent, national, strong, modern and effective defense system within the frame of the new understanding of security and strategy. The leading dynamics behind Turkey's leap-forward are the quest to boost her emerging power profile and numerous threats caused by the geopolitical chaos on a regional scale. Therefore, the emergence of new kinds of threats and the need to develop the country's defense capability to the maximum against both conventional and WMD warhead ballistic missiles through her own means, have played a determining role in Turkey's tendency towards developing her own national missile defense system.

Looking at the situation from Ankara's viewpoint Turkey, although playing a key role in NATO's Missile Shield Project, still does not have her own indigenous "systemic and high-tech integrated national missile defense system"; but she has strongly determined to build this system as of 2002 in order to increase her air defense capability. In this connection, the tender for the Project entitled "Turkish Long-Range Air and Missile Defense System (T-LORAMIDS)"[1] symbolized a critical step forward in the efforts to update

1. SETA has already published a comprehensive report on T-LORAMIDS entitled "Turkey's Missile Defense System: The Bidding Process, Main Dynamics and Actors". Report is available in Turkish, see. Merve Seren, "Türkiye'nin Füze Savunma Sistemi: İhale Süreci, Temel Dinamikler ve Aktörler", *SETA Raporu*, Ankara, 2015, http://file.setav.org/Files/Pdf/20150916125435_fuze-rapor-16-9-15.pdf

the development of Turkey's air defense capacity and systems. Although the whole tendering process for T-LORAMIDS was cancelled by the Defense Industry Executive Committee's final decision on 13 November 2015, the project was not canceled; rather the approach was changed to meet the goals, so still committing to the aim of the project constitutes a crucial parameter for the modernization and nationalization of the defense industry policy of Turkey.

Transformation of Turkey's strategic landscape and the emerging threats has introduced several factors which has compelled Turkey to rethink her national security and defense strategy in the near future.

Indeed, Turkey faced severe criticism and a strong reaction from other NATO members during the bidding process of the T-LORAMIDS project, due to the potential choices for setting alternative strategies to develop her own national air and missile defense system.[2] More specifically, the possibility of Turkey awarding the contract to a Russian or a Chinese firm rather than to a U.S. or an Italian-French consortium seemed to be the conflict that Ankara experienced while considering the options. Turkey was faced with the dilemma of harmonizing her national interests with those of her allies and of the Alliance as a whole, namely under NATO's 'common interests'. Turkey's decision-making process, to announce the cancellation of the T-LORAMIDS tender, could have been determined by her relations with NATO and the U.S. on one side or independently from this, on the other side, the alternative reason was relying on her own rational preferences shaped by the rapid-growth and development in the national defense industry.

Despite the driving factors on each side, Turkey's choice and attitude in any given set of circumstances has revealed two things. First, Ankara has sought a balance between the responsibility incurred by her conventional strategic security cooperation with NATO and the choices and needs based on her own national interests. Second, even though Turkey faced the pressure of "otherization" and was accused of an 'axis shift' in response to several new preferences and inclinations in her foreign policy; she did not abandon the plans and projects, quite the reverse, she continuously supported and funded the ongoing research and development facilities run by national defense firms.

For instance indigenously developed by TUBITAK-SAGE and produced by a major Turkish weapons manufacturer and defense contractor ROKETSAN, the new generation air-to-surface stand-off missile 'SOM-J' and also being developed by ASELSAN and ROKETSAN, the low and medium altitude air defense missiles 'HİSAR', both of which are continuing milestone programs designed to meet the defense requirements of the Turkish Armed Forces (TAF). Certainly, a long range surface to surface missile 'BORA' is another great production success of ROKETSAN which was recently declared by the Undersecretariat for Defense Industries (SSM). Against this background, the aim and main theme of this study is to reveal in detail the driving factors as well as the decision-making mechanism to pursue a national missile defense system that Turkey is advocating against existing and potential threats and risks.

2. The factors affecting Turkey's decision process can be grouped under three main headings: (i) the strategy of eliminating security deficit: overcoming one-sided dependency; (ii) the need for the nationalization of the air defense industry and (iii) being part of NATO Alliance. Certainly the contradicting factor that affected Turkey's missile tender was NATO membership and the potential problems which could occur if a non-member NATO country would be awarded for the T-LORAMIDS project. Within this context, the tender became a technical, commercial and political issue beyond being a military one. Arguments and assessments that were made in the discussions, both inside and outside the country in this regard were as follows: (a) integration to NATO BMD system (Greece's S-300 exemption); (b) espionage polemic; (c) loss of prestige and (d) long-term technical & financial dependency.

TURKEY'S MISSILE THREAT PERCEPTION: A NEW STRATEGY TO ELIMINATE SECURITY DEFICIT BY OVERCOMING ONE-SIDED DEPENDENCY

The 'security deficit' that Turkey was compelled to adopt by relying on NATO during the Cold War era, and perhaps as a 'strategic preference' with the exception of a U.S. arms embargo on Turkey in 1974 to 1978 because of the Cyprus Peace Operation, began to turn into a "security vulnerability" in the following period. Turkey has been aware of this since the 1990s and this became more evident with the outbreak of the First Gulf War.

The first incident, a breaking-point-to-be, occurred when Turkey requested missile batteries from NATO in 1991. NATO allies resisting the request delayed the delivery for a long time. In addition to this, Ankara was disappointed that a part of the equipment sent was not functional. Besides, NATO envisaged a bare 19-million USD donation to Turkey for over 500,000 Iraqi Kurdish refugees who appeared on its doorstep overnight during the Gulf War, whereas the expenditure by Turkey for the refugees was nearly 300-million USD. Thus, with the experiences of the Gulf War, breaking out right after the Cold War, Ankara was compelled to review the country's dependency on the West and NATO, and to abandon the strategy of deliberately allowing a security deficit.

At the start of the 21st century the second breaking-point followed and the NATO missiles incident compounded with strained U.S.-Turkey relations. First, some of the Western allies of Turkey, questioning the legitimacy of the military intervention in Iraq by the U.S.-led multi-national coalition forces on the eve of the Second Gulf War in 2003, evaded NATO-related obligations. Therefore, there was an attempt to conveniently refuse in advance Ankara's possible request of guarantee in the scope of NATO. On the other side, the tragic "sacking incident" following the March 1, 2003 Resolution of Turkey deepened this fracture.[3] Thus, Turkey was more convinced that she must consolidate her air defense system (a plan that had been in the works since the 1990s) by her own national means. Insufficient and low support of Turkey's NATO allies in addition to the U.S.' unfulfilled promise for "co-production" played a critical role in the matter.

The new strategic landscape and newly emerged threats in the post-Cold War era, notably Turkey's experience during both Persian Gulf Wars, necessitated Turkey to review her geopolitical position and the relationship with her alliances. Recent incidents have also proven that the strategy of deliberate security deficit that Turkey, as a NATO country, preferred by absolutely relying on the Alliance has resulted in a large security risk and weakness. First of all, it should be remembered that the U.S.-origin Patriot missiles that Turkey deployed to strengthen her air defense within the scope of NATO most of the time missed targets during the First Gulf War (so much so that a success rate of below %10 even down to 0% was claimed[4]) and again failed to exhibit a satisfactory

3. On March 1, 2003, the Turkish Grand National Assembly rejected a resolution authorizing the deployment of U.S. forces to Turkey in order to open a northern front in a war against Iraq. Turkish Parliament's decision signalized not only the 'position' of Turkey through the Iraq War, but also framed the beginning phase of a process that was increasingly forcing Ankara to make fundamental changes in domestic and foreign policies, namely a critical reflection of a complex process leading to both positive and negative outcomes. For more information on this issue, see. Carol Migdalovitz, "Iraq: Turkey, the Deployment of U.S. Forces, and Related Issues", U.S. Congressional Research Service (CRS), May 2, 2003; Ramazan Gözen, "Causes and Consequences of Turkey's Out-of-War Position in the Iraq War of 2003", *The Turkish Yearbook of International Relations*, Vol.36, 2005, pp.73-99; Murat Yeşiltaş, "Soft Balancing in Turkish Foreign Policy: The Case of the 2003 Iraq War", *Perceptions: Journal of International Affairs*, Volume.14, Spring-Summer 2009, pp. 25-51.

4. See Statement of Theodore A. Postol, "Optical Evidence Indicating Patriot High Miss Rates During the Gulf War", Committee on Government Operations, U.S. House of Representatives, April 7, 1992; Representative John Conyers' article: "The Patriot Myth: Caveat Emptor", Arms Control Today, Vol. 22, No. 9, November, 1992. Also see "Performance of the Patriot Missile in the Gulf War", Activities of the House Committee on Government Operations, One Hundred Second Congress, First and Second Sessions, 1991–1992, http://www.turnerhome.org/jct/patriot.html, (Access date: February 22, 2017)

performance in the Second Gulf War. Crucially, during the Second Gulf War, Patriot missiles were involved in three "friendly-fire" incidents resulting in the downing of British Royal Air Force's Tornado GR4 killing both airmen aboard on March 22, 2003; and two days later, U.S. Air Force's F-16CJ pilot fired a missile at a Patriot battery, hence Patriot's radar had locked onto and prepared to fire on his Fighting Falcon. Again, soon after this on April 2, 2003, the Patriot system shot down a U.S. Navy F/A-18C Hornet killing Navy Lieutenant Nathan D. White.[5]

It is an undisputable fact that Turkey is surrounded by tactical and strategic ballistic missile depots and is under a significant potential threat. The radar site located at a military installation in Kürecik, in the province of Malatya, eastern Turkey as part of NATO's Missile Shield Project, is solely for the protection of European territory through early warning, detection and tracking; moreover, it does not operate around the clock. On the other hand; when it comes to short-range ballistic missiles in particular, a potential threat against Turkey is likely to come from short and middle-range ballistic missiles launched from the immediate vicinity like Syria, rather than Europe; and Turkey experiences difficulties in countering such missiles.

The fact that one of the main sources of such a threat is Syria has become more evident with the latest developments. There were growing concerns when Syrian missiles dropped into Turkish territory and an RF-4E Phantom training and reconnaissance fighter jet was shot down by Syria on June 22, 2012.[6] In addition shells fired by the Syrian regime forces killed five Turkish civilians and injured many in the town of Akçakale, in the southeastern Turkish province of Şanlıurfa, on October 3, 2012.[7]

Subsequently, Turkey requested, on November 21, 2012, the deployment of NATO Patriot missiles on Turkish territory to bolster her national air defense against ballistic missile threats along the border with Syria and to protect her territory. In response to Turkey's request, NATO gave an affirmative answer during NATO Ministers of Foreign Affairs meeting on December 4, 2012. The deployment of the first Patriot missile battery in Turkish territory took place in January 2013, however, the total number of missile batteries remained limited to six, due to the lack of availability of batteries in NATO's own inventory.[8] Against potential threats from ballistic missiles of the Russian ally Syria, Ankara considered itself to be under the guarantee of NATO as it was during the Cold War period, and took the threats lightly. But, those days are over. Syria continues to produce and develop different variants of Scud missiles, and Turkey must seriously and meticulously track these missiles; inasmuch as there is a possibility that Scuds, referred to as the "Kalashnikovs of missiles"[9] can carry WMD

5. "Patriot in new 'friendly fire' incident", *The Guardian*, April 4, 2003, http://www.theguardian.com/world/2003/apr/04/iraq.rorymccarthy4

6. Levent İçgen, "Suriye, Türk Savaş Uçağını Düşürdü!", *Vatan*, June 23, 2012.

7. "Suriye'den Akçakale'ye Ölümcül Top Atışı: 5 Ölü", *BBC Türkçe Servisi*, October 3, 2012.

8. NATO Deployment of Patriot Missiles to Turkey, (September 29, 2014), http://www.aco.nato.int/nato-deployment-of-patriot-missiles-to-turkey.aspx

9.This analogy is made in respect of several specifications of SCUD missiles. "Kalashnikovs" are the most extensively used infantry rifles in the world and SCUDS have similarities such as low production cost, ease of production and use, reliability, and durability. Plus, one should keep in mind that Syria has produced its own SCUD missiles with Russia's support since 1993. In this context, it should also be noted that some writers claimed during the T-LORAMIDS bidding process that Israel's Arrow system is the most effective and suitable system to meet Turkey's missile defense need and counter the threats of Syrian SCUDs. At this point, it should be considered that the Israeli-origin Arrows system is not an export item (here, one must remember that the U.S. owns 40 percent share and the remaining 60 percent belongs to Israel); that is to say, Arrows are not sold abroad and the possibility should be considered that the claimed capabilities of the system may be, in fact, exaggerated, and presented for the purpose of deterrence and show of power. Another point asserted on the matter is that successful performance of Arrows is due to the conditions of the terrain; in other words, Israel is located on a plain with desert conditions; therefore, the system's performance would differ in the geographical environment of Turkey, which is located on a rugged terrain with chains of high mountains. Consequently one should consider the uncertainty of success of Arrows in Turkey which also has vast geographical borders compared to Israel. However, there are some expert views that Turkey's topographical structure will not negatively affect Arrows' performance, but the extensive borders of Turkey, compared to Israel, should be considered with regard to the effectiveness of these missiles.

warheads. Considering that the neighboring country Syria owns the third largest missile arsenal in the region, after Iran and Russia; it is imperative that Turkey fortify her national defense capabilities against myriads of attack missiles in the inventories of surrounding countries.

Furthermore, critical developments experienced recently have made it necessary to seriously question whether the reliability and functionality of Patriot batteries deployed on the Turkey-Syria border are at the required level. For instance, on March 25, 2015 the Iranian-made short-range, road-mobile and solid-propellant ballistic missile Fateh A-110, the upgraded variant of basic Fateh-110 which was developed as an improved version of the Zelzal[10], fired by Syria dropped into the town of Reyhanlı, in the southern province of Turkey.[11] It should be noted here that it is likely that it was the Fateh-110 missiles (more accurate than the older Scud variants) which the Assad regime launched at opposition groups in the country in December 2012, that prompted NATO to deploy Patriot missiles in Turkey in order to augment Turkey's air defenses.[12] As was evident in the March 2015 incident, Turkey has been continuously under serious threat from her immediate surroundings, and the existing system fails to provide adequate defense. As they remained out of radar coverage, none of the Patriot missiles deployed by NATO in the Turkish provinces near the Syrian border (Adana, Kahramanmaraş and Gaziantep) detected or destroyed a missile fired from a distance of 185 km to the border. From this perspective, it may be concluded that the Patriots deployed by the U.S., Germany and the Netherlands are insufficient to provide protection along the 911 km-long Syrian border. Crucially they are deployed in cities rather than on the border, subsequently the operational capabilities of these missiles are inadequate to counter low and medium altitude missiles. Most recently in 2016 Turkey was on the receiving end of many short-range Katyusha rocket attacks, short-range and insensitive but still dangerous, fired by multiple-rocket launchers mounted on mobile platforms from the ISIS-controlled areas in Syria.[13]

It is an undisputable fact that Turkey is surrounded by tactical and strategic ballistic missile depots and is under a significant potential threat.

Ultimately, as part of a NATO mission to provide defense support to Turkey, Germany provided two Patriot batteries for 3 years in the southeastern province of Kahramanmaraş from January 2013 until January 31, 2016. The U.S. deployed two Patriot batteries in the southeastern Turkish province of Gaziantep until October 15, 2015. The duty term of the Dutch Patriots in the southern Turkish province of Adana ended on January 15, 2015 and the mission has been transferred to Spain. Spanish troops

10. Iran's basic Fateh-110 (Conqueror) missile was developed as an improved version of the Zelzal (Earthquake), with additional guidance from an onboard set of gyroscopes. Iran has later designated two improved variants of the Fateh named as A-110A/ Fateh 2 and the A-110B/Fateh 3. Although Iran has yet to use the Fateh-110 in combat; Tehran is supposedly engaged in transferring Fateh-110 missiles to Syria and Hezbollah. See Anthony H. Cordesman, Iran's Rocket and Missile Forces and Strategic Options, (Washington, DC: Center for Strategic & International Studies, December 2014), p. 72; "Fateh-110 Variants", Missile Threat-CSIS Missile Defense Project, https://missilethreat.csis.org/missile/fateh-110/ ; "Fateh-110", Missile Defense Advocacy Alliance (MDAA), http://missiledefenseadvocacy.org/missile-threat-and-proliferation/todays-missile-threat/iran/fateh-110/

11..See. Gökçer Tahincioğlu, "185 km'den Reyhanlı'ya İsabet Etti", *Milliyet*, March 26, 2015.

12. Barbara Starr, "U.S. officials: Syria using more accurate, Iranian-made missiles", CNN, December 28, 2012, http://edition.cnn.com/2012/12/28/world/meast/syria-missiles

13. Kilis case shows the mortal threat of ISIS' rockets, see. "Two rocket attacks hit Turkish town on Syria border, one dead, dozens injured", *RT News*, April 24, 2016, https://www.rt.com/news/340787-kilis-turkey-isis-rockets/

joined NATO's Patriot anti-ballistic missile deployment in Adana on 26 January 2015, replacing a Dutch unit which had been stationed there since January 2013. Briefly, Spain has provided one PAC-2 battery since 26th January 2015, the Spanish unit is still operational and protecting the south-eastern city of Adana.[14] While the U.S. Air Force Base in İncirlik, Adana, has played a critical role in the deployment of Patriots in Adana, population density has been a factor for deployments in Gaziantep and Kahramanmaraş. However, two points should not be forgotten: the first is that despite the fact that the operational performances of Patriots placed in Turkey are far from meeting her security needs, they carry a psychological and symbolic message as a protection umbrella provided by NATO over Turkey. The second is that as part of NATO's missile defense system to defend the country, the Patriot batteries deployed in Turkey are controlled by the U.S. Air Force Base near the town of Ramstein, Germany, which is operated by "man in the loop" system under the U.S. command. Thus, in the case of a potential missile attack against Turkey, although radar tracking and the early warning systems are on, the determination of trajectories of the missiles and of their destination/impact points, and the locations and times of interceptions by the defense missiles are at the discretion of Ramstein.

Most significant is the fact that both Germany and the U.S. previously announced that they would not extend the services of the Patriots in Turkey, and the batteries would be removed at the end of their terms, circa at the end of 2015.[15] It was stated that the level of missile threat from Syria on Turkey had diminished, and furthermore, the US system was due a re-inspection and revision, and the system could be redeployed should the need arise in the future.[16] All these, however, inevitably bring the following questions to mind: What was the level of threat at the time of deployment, and how was it evaluated then? At this time, as the chaos in the region south of the Turkish border has increased and there is much more military activity on the ground and in the air, how and in what regards has a decrease in the level of

14. See. "NATO Support to Turkey: Background and Timeline", *NATO*, (February 19, 2013), http://www.nato.int/cps/en/natohq/topics_92555.htm? (last updated 03 February 2015); "German Government Agrees to Keep Patriot Missiles in Turkey Until 2016", Reuters, January 7, 2015, http://www.reuters.com/article/2015/01/07/us-germany-turkey-patriots-idUSKBN0KG1OS20150107; "Spanish Replace Dutch missile Batteries on NATO's PATRIOT Deployment in Turkey", NATO News, 27 January 2015, http://aco.nato.int/spanish-replace-dutch-missile-batteries-on-natos-patriot-deployment-in-turkey

15. See statements of Germany and U.S. about the deployment and withdrawal of Patriot Missiles, "Einsatz der Bundeswehr in der Türkei (AF TUR)", Bundeswehr, 12.02.2015 http://www.einsatz.bundeswehr.de/portal/a/einsatzbw/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP3I5EyrpHK9pPKU1PjUzLzixJIqIDcxu6Q0NScHKpRaUpWql5hWUlqkl1-QWpRYol-Q7agIAKpc8tU!/; "German PATRIOT detachment update from Kahramanmaras", NATO AC News, 20.07.2015, http://www.ac.nato.int/page5931922/german-patriot-detachment-update-from-kahramanmaras; "German army to withdraw Patriot missiles from Turkey border", Deutsche Welle, 15.08. 2015, http://www.dw.com/en/german-army-to-withdraw-patriot-missiles-from-turkey-border/a-18650837 See also. "Joint Statement from the Government of the Republic of Turkey and the Government of the United States", 16 August 2015, http://turkey.usembassy.gov/pr_160815.html ; Eric Schmitt, "After Delicate Negotiations, U.S. Says It Will Pull Patriot Missiles From Turkey", New York Times, 16 August 2015, http://www.nytimes.com/2015/08/17/world/europe/after-delicate-negotiations-us-says-it-will-pull-patriot-missiles-from-turkey.html?_r=0 ; "Turkey urges NATO to keep up its Patriot defenses", Reuters, 08 October 2015, http://www.reuters.com/article/us-mideast-crisis-syria-nato-idUSKCN0S20HJ20151008

16. On the other hand, the statement by NATO Secretary General Stoltenberg on 14th June, 2016 about NATO's decision to have different kinds of assurance measures to Turkey might have been regarded as positive steps taken by Allies to strengthen Turkish sovereignty and defence. For example, the Italian deployment of SAMP/T missile defense system as well as AWACS surveillance planes, air policing and an increased naval presence in the Mediterranean and in the Black Sea counted in the package of assurance measures for Turkey to support her military and defense capabilities. (See. NATO Secretary General Jens Stoltenberg at the start of the meetings of NATO Defence Ministers, 14 June 2016, http://www.nato.int/cps/en/natohq/opinions_132351.htm) However just considering the 'confidence crisis' which arose following the rejection of the Resolution on March 01, 2003 or the recent developments and events such as how US-Turkey relations have been strained due to the accusations following the 15th July coup attempt, underlines once again that Turkey needs to be much more aware of future implications and consequences of her decisions relating to security and defence policy.

threat to Turkey been assessed? Who has discerned and decided this reduction in the threat level, and on what parameters and relative to what criteria? Certainly, Turkey is intent on eliminating the voluntarily imposed 'security deficit', which was based on relinquishing her security into the hands and decisions of others, and striving to plug all security vulnerabilities in her national defense to have full control over her own national interests. Therefore such unilateral actions exemplified by the withdrawal of the Patriots by the members of the Alliance simply reinforces Turkey's motivation to seek every means to ensure an indigenous national missile-defense system over which she would have ultimate and complete control.

Without doubt, Turkey must unconditionally take urgent and active measures against the threats of attack by ballistic and cruise missiles of varying ranges and with the capability of maneuverability to avoid air defenses, not to mention the ability to carry conventional and WMD warheads. Evidently, the radar and Patriot batteries deployed by NATO in Kürecik, Malatya, are not reliable enough to fully meet Turkey's air defense needs. Because, what is expected from air defense systems is to track the launch of a missile, determine its type and nature if possible, and its trajectory; then crucially to fire and guide defense missiles for the destruction of the target. NATO's missile shield in Malatya, however, is simply a radar system with the capacity of tracking and threat detection only. As for the system's method of operation, following the detection of threats in Kürecik, information is transferred to Germany, the center of the air defense missile system, and a command is sent from Germany to Romania, from where the threating missiles are targeted by defense missiles fired from Romania. However, in the face of risk assessment and threat perception in her region, Turkey needs an air defense system with more and faster "real-time" intelligence signals and faster response time for interception in comparison to other NATO members. Thus, evidently it is critical for Turkey to have her own radar system and destruction capacity against a potential long-range air threat at low, medium and high altitude.

In this scope, it must be underlined in bold that Turkey's new policy for defense and aviation technologies, which has been implemented since the start of the 2000s, is no longer solely based on foreign direct procurement of weapons via import. The strategic aim of this new orientation is, by virtue of local production; to prioritize technology transfer, have a greater share in the global market through export, and meet domestic defense needs; therefore, to implement a defense policy which in itself contributes to the development of the country. In the last decade critical projects have been prepared and developed through national R&D in order to increase Turkey's competitiveness in the world defense market and to reduce dependency on external sources in the procurement of high-tech products and services for the domestic defense and aviation requirements.

Besides, the missile threat landscape is becoming more challenging not least as a result of the continuing conflicts in the Middle East region. In fact Turkey's neighbors have long been pursuing the acquisition of cruise missiles while already in possession of a ballistic missile arsenal. In this context Greece, Armenia, Ukraine, Syria, Iraq, Iran, Israel and Russia can all be considered as potential security threats with their growing missile capabilities. However, the level of risk arising from these states differs with respect to their inventories. For instance, Iran has both the largest and most diverse ballistic missile arsenal in the Middle East. On the other hand, ballistic missiles pose a much greater threat if they are equipped with high explosive warheads, namely carrying multiple nuclear warheads or chemical and biologic ones.

Selected neighboring countries' ballistic and cruise missile inventories by system & type, warhead & payload capacity, range and status are listed in Table 1. According to the data in the table, it could be stated that three countries in the list have wider and more capable arsenals than Turkey in terms of range and type of warhead; Syria, Iran and Russia. Israel might also be counted as a potential threat, albeit with a limited number of missile types, however, under the current political situation Turkey prefers to call Israel a friend.

TABLE 1. BALLISTIC AND CRUISE MISSILE INVENTORY IN TURKEY'S NEIGHBORS[16]

COUNTRY	MISSILE SYSTEM & TYPE	WARHEAD & CAPACITY	RANGE	STATUS
GREECE	SCALP EG/Storm Sahdow/Black Sahheen Cruise Type	400 kg	250-400 km	Operational
	MGM-140/-164/-168 ATACMS SRBM	Single Warhead, 560 kg	165 km	Operational
ARMENIA	OTR-21A/-21B (SS-21) SRBM	Single Warhead, 482 kg	70 km	Operational
	R-11/-17 (SS-1 SCUD A/B/C/D) SRBM	Single Warhead, 600 kg	190 km	Operational
UKRAINE	OTR-21A/-21B (SS-21) SRBM	Single Warhead, 482 kg	70 km	Operational
	R-11/-17 (SS-1 SCUD A/B/C/D) SRBM	Single Warhead, 600 kg	190 km	Operational
SYRIA	M-600 SRBM	Single Warhead, 500 kg	210 km	Operational (Estimated)
	OTR-21A/-21B (SS-21) SRBM	Single Warhead, 482 kg	70 km	Operational
	R-11/-17 (SS-1 SCUD A/B/C/D) SRBM	Single Warhead, 600 kg	190 km	Operational
	R-65 (FROG-7) SRBM	Single Warhead, 200-457 kg	68 km	Operational
	'Scud D'Varyant (Hwasong 7) SRBM	Single Warhead, 500 kg	700-800 km	Operational
	'Scud C'Varyant (Hwasong 6) SRBM	Single Warhead, 700-770 kg	500 km	Operational
	'Scud B'Varyant (Hwasong 5) SRBM	Single Warhead, 770 kg	300 km	Operational
IRAQ	Ababil Cruise	?	500 km	Terminated
	Condor 2 IRBM	Single Warhed, 450 kg	900 km	Unknown
	IRBM	?	900-3000 km	Terminated
	Al Samoud 1/-2 SRBM	Single Warhead, 300 kg	150 km	Terminated
	Badr 2000 SRBM	Single Warhead, 450 kg	900 km	Terminated
	Ababil-100 SRBM	Single Warhead, 300 kg	150 km	Terminated
	Al Hussein IRBM	Single Warhead, 280 kg	630 km	Terminated
	Al Abbas IRBM	Single Warhead, 225 kg	900 km	Terminated
	Al Aabed IRBM	Single Warhead, 750 kg	2000 km	Terminated
	R-65 (FROG-7) SRBM	Single Warhead, 200-457 kg	68 km	Operational
ISRAEL	Delilah Cruise	Single Warhead, 30 kg	250-400 km	Operational
	LORA SRBM	Single Warhead, 440-600 kg	280 km	Operational
	Jericho 1/2/3 IRBM/MRBM/SRBM	Single Warhead, 450 kg	500 km	Out of Service

IRAN	Ra'ad Cruise	?	150 km	Operational
	Meshkat ?	?	2000 km	Development Stage
	R-11/-17 (SS-1 SCUD A/B/C/D) SRBM	Single Warhead, 600 kg	190 km	Operational
	'Scud B'Varyant (Hwasong 5) SRBM	Single Warhead	300 km	Operational
	Shahab 2 ('Scud C'Varyant) SRBM	Single Warhead, 770 kg	500 km	Operational
	Tondar 69 SRBM	Single Warhead, 250 kg	150 km	Operational
	Gadhr-1 MRBM	Single Warhead, 800 kg	1950 km	Unknown
	Shahab 4 MRBM	?	2000-4000 km	Unknown
	Shahab 3 Varyant IRBM	Single Warhead, 800 kg	1500-2500 km	Operational
	Shahab 3 IRBM	Single Warhead, 1200 kg	1300 km	Operational
	Shahab 1 SRBM	Single Warhead, 985 kg	300 km	Operational
	Sejil 1/2/3 IRBM	Single Warhead, 500-1500 kg	2000 km	Operational (Estimated)
	M-9 Varyant SRBM	Single Warhead, 320 kg	800 km	Unknown
	Musudan (BM-25) IRBM	Single Warhead, 1200 kg	2500-4000 km	Unknown
	M-11 Varyant SRBM	Single Warhead, 490 kg	290 km	Unknown
	Fateh A-110 SRBM	Single Warhead, 500 kg	200-210 km	Operational
RUSSIA	RK-55 (SS-N-21/SSC-X -4) Cruise	Single Warhead	2400 km (Sub. Launched) 3000 km (Con. Launched)	Operational
	Kh-101/-102 Cruise	Single Warhead, 400 kg	2000-3000 km	Development Stage
	Kh-55/-55SM/-555/-65SE Cruise	Single Warhead, 410 kg	2500 km	Operational
	Kh-90 (AS-X-19) Cruise	Single Warhead, 450 kg	3000 km	Cancelled
	3M-14AE Cruise	?	300 km	Development Stage
	Meteorit ?	?	5000 km	Cancelled
	3M51 Alfa ?	<300 kg	200 km	Unknown
	BrahMos Cruise	SSM 300 kg ASM 200 kg	300 km SSM 500 km ASM	Operational
	R-29RM (SS-N-23) SLBM	4 MIRV Warhead, 2800 kg	8300 km	Operational
	R-39M (SS-NX-28) SLBM	?	?	Terminated
	R-29 (SS-N-8) SLBM	Single Warhead	9100 km	Out of Service
	R-27 (SS-N-6) SLBM	Single Warhead, 650 kg	2500 km	Out of Service
	R-21 (SS-N-5) SLBM	Single Warhead, 1180 kg	1420 km	Out of Service
	R-13 (SS-N-4) SLBM	Single Warhead, 1598 kg	560 km	Out of Service
	R-39 (SS-N-20) SLBM	10 MIRV Warhead, 2550 kg	8300 km	Operational
	R-29R Mod 1/-2/-3 Volna (SS-N-18) SLBM	3 MIRV Warhead, 1650 kg	6500 km	Operational
	R-31 (SS-N-17) SLBM	Single Warhead, 450 kg	3900 km	Out of Service

	RT-20 (SS-X-15) ICBM	Single Warhead, 545 or 1410 kg	6000 km	Out of Service
	RT-1 (SS-X-14) IRBM	Single Warhead	2500 km	Out of Service
	GR-1/UR-200 (SS-X-10) ICBM	Single Warhead	8000 km	Out of Service
	R-9 (SS-8) ICBM	Single Warhead, 1650 - 2100 kg	10300 - 16000 km	Out of Service
	RS-12M1 Topol-M (SS-27) ICBM	Single Warhead, 1200 kg	10500 kg	Operational
	Iskander (SS-26) SRBM	Single Warhead, 480-700 kg	400 km	Operational
	RS-12M Topol (SS-25) ICBM	Single Warhead, 1000 kg	10500 km	Operational
	RS-22 (SS-24) ICBM	10 MIRV, 4050 kg	10000 km	Out of Service
	OTR-23 (SS-23) SRBM	Single Warhead, 372 kg	500 km	Out of Service
	OTR-21A/-21B (SS-21) SRBM	Single Warhead, 482 kg	70 kg	Operational
	R-11/-17 (SS-1 Scud A/B/C/D) SRBM	Single Warhead, 600 kg	190 km	Operational
	RSD-10 Mod 1/-Mod 1 (SS-20) IRBM	3 MIRV Warhead	4700 km	Terminated
	R-2 (SS-2) SRBM	Single Warhead, 1500 kg	600 km	Out of Service
	R-1 (SS-1A) SRBM	Single Warhead, 1076 kg	270 km	Out of Service
	R-16 (SS-7) ICBM	Single Warhead, 1475 – 2200 kg	11000 km	Out of Service
	R-7 (SS-6) ICBM	Single Warhead, 5400 kg	8000 km	Out of Service
	R-12 (SS-4) IRBM	Single Warhead, 1630 kg	2000 km	Out of Service
	R-14 (SS-5) IRBM	Single Warhead, 1300 – 2155 kg	4500 kg	Out of Service
	R-5 (SS-3) IRBM	Single Warhead 1500 kg High Explosive HE 1350 kg Nuclear	1200 km	Out of Service
	RS-18 Mod 1/-Mod 2 (SS-19) ICBM	6 MIRV 3355 kg	9000 km	Operational
	R-65 (FROG-7) BSRBM	Single Warhead, 200-457 kg	68 km	Operational
	RS-10 Mod 1/-Mod 2/-Mod 3 (SS-11) ICBM	Single Warhead, 1208 kg	12000 km	Out of Service
	RS-24 ICBM	3 MIRV 1200 kg	10500 km	Operational
	OTR-22 (SS-12) SRBM	Single Warhead, 1250 kg	900 km	Out of Service
	RS-14 (SS-16) ICBM	Single Warhead, 1000 kg	9000 km	Out of Service
	RS-20A/-20B/-20V (SS-18) ICBM	4 or 10 MIRV 7825 kg	10500 km	Terminated
	RS-16A/-16B (SS-17) ICBM	4 MIRV 2250 kg	10200 km	Out of Service
	Bulava (RSM-56) SLBM	1 or 6 MIRV 1150 kg	8300 km	Development Stage

17. "Missiles of the World", Missile Threat, http://missilethreat.com/missiles-of-the-world/ Abbreviations used in the list: SRBM: Short Range Ballistic Missile; IRBM: Intermediate Range Ballistic Missile; MRBM: Medium Range Ballistic Missile; SSM: Surface to Surface Missile; ASM: Air to Surface Missile; SLBM: Submarine Launched Ballistic Missile; ICBM: Intercontinental Ballistic Missile; MIRV: Multiple Independently Targetable Reentry Vehicle.

To elaborate on the data given in Table 1, Syria, Iran and Russia could launch their missiles either from their borders or indeed from deeper into their territory and the missiles would be capable of reaching to the most strategic points of Turkey. In this respect, the adversary's operational and strategic depth as well as Turkey's territorial depth in terms of defense advantages and disadvantages plays a crucial role. Furthermore, Turkey has many vulnerable targets such as industrial zones (like Gebze), bridges (on the Bosphorus), dams (especially in southeastern region), highly populated cities (İstanbul, İzmir, Ankara), seaports (İzmir, İstanbul, etc), petrochemical and storage facilities (Aliağa, Gebze, Yumurtalık) not to mention the many other well-known military bases, factories, facilities, airbases, supplies and locations.

Accordingly, Turkey's vulnerability to any tactical ballistic missile attack negates Turkey's advantage of having a considerable land mass. A significant point to keep in mind is the range and warhead capabilities of the missile arsenal surrounding Turkey; the shortest range is 68 km with 200 kg high explosive warhead and the longest range is 10,500 km with a 1,200 kg Multiple Independently Targetable Reentry Vehicle (MIRV) warhead. This means Turkey's missile defense should have an anti-missile capacity to cover both threats between 68 km to 10,500 km in range and from a 200 kg high explosive to a 1,200 kg MIRV warhead.

TABLE 2. EVALUATION MATRICE A

Countries	Total # Systems	CRUISE	SRBM	IRBM	SLBM	ICBM	MRBM
Greece	2	1	1				
Armenia	2		2				
Ukraine	2		2				
Syria	7		7				
Iraq	10	1	4	5			
Israel	3	1	2				
Iran	16	1	8	5			2
Russia	45	6	9	6	10	14	

TABLE 3. EVALUATION MATRICE B

Countries	Total # Systems	Operational	Terminated	Cancelled	Out of Service	Development Stage	Unknown
Greece	2	2					
Armenia	2	2					
Ukraine	2	2					
Syria	7	7					
Iraq	10	1	8				1
Israel	3	3					
Iran	16	10				1	5
Russia	45	14	3	2	22	3	1

Analysis of Matrice A and B allows the following inferences to be made: First, more than 80% of systems are Russian made. For this reason, Russia, a neighbor of Turkey, holds the most serious and well equipped potential of threat. Second, despite the fact that only one-third of Russia's arsenal possesses operational status, its level of activity, that is, access and the capability of warheads[18], poses the most dangerous threat. Finally, according to the range and guidance abilities, most of the systems could reach to any strategic target in Turkey. All in all, it is a fact that Turkey's territorial depth reflects her disadvantageous defense position and therefore she urgently needs a comprehensive missile defense system that must cover the wide geographical areas of her homeland.

TURKEY'S MISSILE DEFENSE CAPABILITIES: PROSPECTS-CHALLENGES & SURPRISING CASE OF 'BORA'

After confronting the challenges Turkey started to seriously question her defense policy objectives, hence the new air and missile defense posture of the country. Thus two reasons lay behind Turkey's decision to call for a long-range air and missile defense system tender. The first was to find an answer to the question of "Where is the world heading to in missile technology and defense?" and the second was "to determine the state of Turkey's air defense system" in the frame of the answers to the first question.

Reviews performed have concluded that it is a requirement for Turkey to strengthen its domestic defense industry and modernize the Turkish Armed Forces (TSK). In fact, on examining Turkey's capability, it was clear that the only high altitude air defense missiles Turkey possessed were the U.S.-origin "Nike-Hercules", dating from 1959, against enemy aircraft and missiles, which had already undergone two or three life extension processes to stay operational. After the retirement of the aging Nike-Hercules system (a small number of Nike-Hercules units are still being deployed at critical locations, the remaining Hercules are waiting to be replaced by IHAWKs), Turkey's air defense against tactical ballistic missiles has been supported by Improved Hawk (MIM-23A/B-IHAWK) missiles and Air Force F-16s. However, despite the replacement of more advanced I-HAWKs, this system also might not function very well to meet the threat as defined by Turkey.

As a matter of fact, Turkey signaled her intention to establish a national missile defense system in 1991. However, Turkey's desire to replenish its inventory remained inconclusive due to the difficulties encountered in the internal/domestic procurement system in that period. Financial deficiencies rooted in the country's economic conditions, uncertainty about the new international system in the post-Cold War period, and the PKK issue making itself evident played a critical role in this. Turkey exerted efforts to realize her desire in the following period and made a move to purchase PAC-2 missiles from the U.S. through Foreign Military Sales (FMS). However during this time there was an economic crisis, challenges by the coalition governments and a problematic February 28th 1998 process in the public agenda which ensured that this attempt failed. With the arrival of the 21st century the Turkish Ministry of Defense brought the issue back to the agenda again, updating the progress made until then. The driving force behind this is the political stability provided by single party governments following the political and economic crisis in 2001. The new opportunities and possibilities

18. Every type of warheads can be of conventional, nuclear, biological or chemical nature, namely missiles equipped with NBCR warheads.

that have been facilitated have strengthened economic conditions and this dynamism has contributed to the momentum. To summarize Turkey has overcome the political and economic negativities of the 1990s, to forge forward with new plans.

To outline Turkey's missile defense capabilities since the Cold War era; as a member of NATO and depending on the capabilities of the Alliance, Turkey had NIKE Hercules, after the retirement of which she took possession of IHAWK. Thereafter, in the 2000's a project entitled "Turkish Long-Range Air and Missile Defense System (T-LORAMIDS)" was developed in response to the aforementioned security questions. The launch of T-LORAMIDS project was decided at the "Defense Industry Executive Committee (DIEC)" Meeting on June 30, 2006; preparations began for the feasibility and invitation to tender document in the same year.

Following the completion of these preliminary works, Turkey reached the decision to issue an invitation to tender as of 2008 and released the "Request for Proposal (RFP)" document containing the technical requirements, in 2010. Firms from the U.S., France-Italy Partnership (The European Consortium), Russia and China participated in the T-LORAMIDS tender through the method of foreign direct procurement. The Chinese bidder topped the technical point/FOM ranking in 2012. Following the DIEC's meeting on September 26, 2013, the DIEC announced that China was top in the ranking of the bidding process and requested the three other bidders to extend the bidding periods, due on October 31, 2013, to January 31, 2014 and renew their offers. In this period, Turkey continued talks with the representatives of the firms and at the last meeting of DIEC in December 2014, the Executive Committee notified the bidders that Turkey absolutely requires (domestic) work-packages in the direct procurement.

The U.S., as one of the three countries short-listed in the bidding process, had its own peculiarity. The U.S. laws prohibit direct sale of weapon systems, in contrast to other commercial products being marketed to other countries. Therefore, the U.S. conducts arm sales to a country in the frame of "Foreign Military Sales (FMS)" program applied through direct government-to-government sales agreement which defines specific financial credits and procurements methods. From Turkey's viewpoint, the U.S. offer could not be compared to the offers of other bidder countries for it is not a commercial offer. The U.S. Congress had approved the PAC-3 missile system sale through the FMS program. In this regard, U.S.' agreement and partnership with major contractors of DoD and world's leading makers of missile defense systems Lockheed Martin and Raytheon, offered a significant advantage. The U.S. Government being a guarantor of the FMS was also an important asset and in this sense, the transparency of the FMS process yielded another advantage.

Despite the above advantages, however, one must not forget about disadvantages most notably that maintenance, repair, modernization and purchase of spare parts are subject to permission of the U.S. Government in post-sale operations. In this frame, in case of any legal conflicts, procedures to be followed must be clearly determined. For instance, it must be elucidated which legal instruments will come into play vis-à-vis political preferences of the U.S. administration. Despite the fact that the document referred to as the "Green Book", revised annually and released by the Defense Institute of Security Assistance Management (DISAM) affiliated with the U.S. military, contains the most comprehensive and detailed technical, financial and legal procedures in the FMS system, the source material is simply a guide and not legally binding. Therefore, outside the

realm of the FMS system, i.e. government-to-government sales, any possible conflicts to occur with vendors may be resolved through international arbitration laws and that may, perhaps, create a more advantageous situation. It is particularly evident that in the case of the U.S., a mechanism that bypasses the will of the Congress would be unacceptable. In addition to all these, the U.S. made a sales proposal of the PAC-3 system as a package and has never come close to technology transfer and limited local contribution to 10-12 percent. Besides, the U.S. offered 4.5 billion dollars for the sale and did not guarantee a delivery timeframe. As may be recalled, although Turkey had paid 1.5 billion dollars in advance for the AWACS purchased through FMS program from the U.S. a decade ago, the U.S. delivered them after a five-year delay.

BORA is the third phase of joint missile systems production which has been accomplished with Chinese cooperation, after the first phase 'KASIRGA' and the second phase 'YILDIRIM'.

Therefore, the first of the aforementioned "airborne early warning and control system (AWACS)" aircraft, referred to as Peace Eagle, was not entered into TAF's inventory or put into service until February 2014. Similarly, it should not be forgotten that the U.S. Congress disapproved the sales of an unmanned aerial vehicle, Reaper, and Cobra helicopters which Turkey planned to buy from the U.S. in the 2000s. In fact, the U.S. Congress turned down the donation of three FGG-class guided-missile frigates, retired from the U.S. Navy, and the sale of a warship at a low price, in January 2015. The Congress, however, approved the sales and the donations of the above frigates to non-NATO members Mexico and Taiwan. Other than these restrictive implementations concerning the procurement of weapon systems, it was seen that the U.S. did not provide technology transfer to Turkey and more perilously, does not grant permission to use software programs written by Turkey.

The Italian-French consortium "Eurosam" went neck and neck with China in the T-LORAMIDS tender, offering the SAMP/T system that uses Aster 30 Block 1 missiles, with a 4.4-billion USD bid. However the Eurosam consortium adopted a negative attitude on co-production even though Turkey expressed sensitivity on the subject, and limited local content to 10-12 percent, as the U.S. did, as well as failing to offer know-how technology transfer. However, the Turkish government continued talks with the European bidders, and offered a new consortium in which Thales, MBDA, ROKETSAN and ASELSAN firms would be partners with equal rights. Eurosam SAMP/T is a theatre anti-missile system designed to protect the battlefield and sensitive tactical sites (such as airports and sea ports), in the same vein as Turkey's T-LORAMIDS which did not aim for a regional air defense rather intended to protect specific areas of particular importance. While Aster-30 Block-1 seemed to fulfill at least the minimum requirements cited in the project, this would however depend on the operational capabilities of the missile system as well as the number of missile batteries to be deployed. But the fact remains that like the Patriot family, the Aster-30 Block-1 system is said to be effective against Scud-based missiles that are likely to be a primary threat against Turkey. Though Aster-30 Block-1 has never encountered Scud missiles in the real theater of war, unlike the Patriots, it is noted that the system successfully intercepted and destroyed Israel-made "Black Sparrow" ballistic target missiles which

simulate unitary short-range theater ballistic missiles such as the SCUD-B. From this viewpoint, it was asserted that the Aster-30 Block-1 model could provide an effective defense system against the Scud-B, SS-21, Shahab-1 and Fateh-110 missiles, all of which may target Turkey from its immediate vicinity. Additionally it is worth recalling that the U.S. Missile Defense Agency (MDA), presented the "Technology Pioneer Award" to Eurosam SAMP/T, at its annual multinational conference on ballistic missile defence, in October 6, 2015.

Eurosam acquired a striking reputation by receiving an international award which recognized the success of live firing tests conducted on 6 March 2013 with an Aster 30 Block 1 missile against a target representing a SCUD-type tactical ballistic missile, in liaison with the NATO command chain. This award does not only confirms SAMP/T's anti-ballistic capabilities but also demonstrates the achievement of its interoperability with NATO system via Link 16 which is crucial in allowing it to be integrated into joint force and inter-allied operations. This system offered by Eurosam, in contrast to its contenders in the bidding, provides a tactical and strategic opportunity that should not be missed. The opportunity is that it would constitute an infrastructure for the missile systems that Turkey might require after completion of the "Anti-air Warfare Ship (TF 2000)", the modern air defense frigate project to carry aircrafts, helicopters and anti-ballistic defense missiles. If Turkey preferred the Aster-30 Block-1 model, by changing the software, the system could be integrated to a newer and advanced version providing sea-based self-defense, an Aster-30 Block-2 model capable against 3000 km-range Intermediate-range Ballistic Missiles (IRBM). Thus, frigates that are products of the TF-2000 project would be able to use Aster-30 Block-2 missiles without seeking new missile systems.

Russia participated in the bidding contest with the Antey-2500 (upgraded version of the Almaz S-300VM) missile defense system for the T-LORAMIDS project. Although there were reports in the media that Russia offered the S-300 and S-400 missiles for the bidding, the system which really represented Russia in the tender was the Antey-2500 model, meaning diamond in Russian. The S-300 missile system is said to be an old, discontinued system which had been acquired by Greece, the only NATO member that purchased the Russian-made S-300PMU-1 air defense system, in the mid-1990s. (Bulgaria and Slovakia are also two NATO members that possess S-300s in their inventories, however they acquired Russian systems when they were members of the Soviet-led Warsaw Pact, before joining NATO in 2004) At the NATO Missile Firing Installation in Crete, on December 2013, Greece carried out its first test firing of the missile as part of an operational live-exercise code-named "White Eagle".

Although S-400 is a new generation anti-aircraft missile system which has been in operation since 2007, it was crossed out for not yet being tested in a war environment; even though it is asserted that it is second to none in the world and recognized as the most advanced system of the kind, yet to be exported anywhere outside of Russia. Therefore Russia joined the bidding with Antey-2500, already part of the Russian portfolio tested successfully. An Antey-2500 system features high-tech attributes such as range performance, engine power, enhanced mobility; capability to destroy individual ballistic missile warheads and effectively counter both missile defense systems and conventional missiles. Russian-made Antey-2500 missiles are more advanced technology products compared to the U.S.-origin PAC-3 missiles; and in fact, they are the most advantageous articles to be included in an inventory. In fact, the Undersecretariat for Defense Industry ranked

Antey-2500 as number one, for its features, in technical FOM; however, the price required was too high, so the article was left out of the bidding. In the following period, Russia lowered the price to 5.2 billion USD by decreasing the number of missiles by almost a half. [19] During the Putin-Erdogan meeting held at the Kremlin on March 10, 2017, a wide range of issues were discussed, including the procurement of Almaz-Antey S-400 "Triumf", the powerful long-range surface-to-air missile (SAM) system. As stated by high level officials of both countries, Moscow and Ankara are still in the negotiation phase, which is actually a much more intense level and the crucial stage of the acquisition process of Russian S-400s.

While Turkey has already been criticized and warned by other NATO allies about purchasing and using Russian-made S-400 Triumf air missile defense systems, Ankara continues to remind the Alliance that other member states have long been Russian arms customers. However as a critical ally, Turkey should not be accused of acting negligently and deliberately ignoring her Alliance commitments solely because of searching for alternative sources of supply outside the confines of NATO. On the other hand, it must be underlined that Ankara's interest in buying one of the best advanced air and missile defense systems to date, the S-400 Triumf, should not be considered as a core indicator for Turkey's abandonment of a major national development project to build-up her own air defense system. Conversely, this ongoing deal process with Moscow and all other initiatives of Ankara must be regarded as the steps to have an integrated complex layered air and missile defense system which might be built up by national and foreign firms.[20]

Represented by China Precision Machinery Import and Export Corporation-CPMIEC at the T-LORAMIDS tender, China was the country that had been talked and discussed about the most during the project phase. CPMIEC submitted an offer for its HQ-9 series of the FD-2000 system; a system which is included in the Chinese People's Liberation Army (PLA) inventory. HQ-9 missiles offered in the bidding were almost equivalent to the U.S. Patriot system which was deployed in Turkey. Besides, China offered the lowest bid in T-LORAMIDS (3.4-billion USD) air and missile defense program. In addition to the price factor, what made China a more preferable bidder than others is that the Chinese agreed to "co-production", and unlike the others, increased the "local content" to 30 percent. As Turkey gives a great deal of importance to the nationalization of her arms industry, she demanded at least 50 percent local production in the T-LORAMIDS bidding process. Turkish officials underlined this on every occasion. Thereby, China's offer meant a 1.1-billion USD business volume for ROKETSAN, ASELSAN and AYESAŞ. Besides, a co-production opportunity was at issue through the transfer of know-how and technology. For instance, programming the IFF software in the

19. "Greece Tests Russian-Made S-300 Missile System for First Time", Sputnik News, December 14, 2013, http://sputniknews.com/russia/20131214/185536376/Greece-Tests-Russian-Made-S-300-Missile-System-for-First-Time.html See also the interview with Colonel Sergei Khatylev, former chief of Russian anti-aircraft missile forces , "U.S.'s Patriot system is pitiful semblance of Russia's S-300", Pravda, July 10, 2015, http://www.pravdareport.com/russia/politics/10-07-2015/131290-U.S._patriot_russia_s_300-0/.

20. For more information regarding this issue, see. "Ankara, Moscow continue negotiations over S-400 defense systems, gov't sources say", Daily Sabah, 25 January 2017, https://www.dailysabah.com/diplomacy/2017/01/25/ankara-moscow-continue-negotiations-over-s-400-defense-systems-govt-sources-say ; "Rostech: Rusya ve Türkiye, S-400 füze savunma sistemleri için görüşüyor", Sputnik, 20 Şubat 2017. http://sptnkne.ws/dAqq ; "Russian, Turkish presidents to discuss purchase of S-400 systems-Erdogan's adviser", Russian News Agency (TASS), 28 February 2017, http://tass.com/defense/933294 ; "Türkiye ile Rusya S-400'ler konusunda anlaştı", Bloomberg HT, 15 Mart 2017.http://www.bloomberght.com/haberler/haber/1994130-turkiye-ile-rusya-s-400ler-konusunda-anlasti; Can Kasapoğlu, "Why Turkey might buy Russia's S-400 defence system", Al Jazeera, 24 March 2017, http://www.aljazeera.com/indepth/opinion/2017/03/turkey-buy-russia-s400-missile-defence-system-170323131537509.html

Chinese system would be contracted to ASELSAN; therefore, Turkey would not be dependent on the supplier country inasmuch as the system that Turkey would purchase from China would be coded in a way to directly strike the target without involving IFF. Turkey would be in total control at this point. In fact, considering that Turkish engineers have cooperated successfully with their Chinese counterparts in the development stages of T-300 Hurricane (multiple launch rocket system) and J-600T Thunderbolt missiles (short-range tactical ballistic missile system), the importance of this detail becomes more evident.

To summarize, despite the technical FOM ranking in 2012, Turkey considering her relations with NATO and Western allies, kept open the option for the bidding parties to make new offers and in return, received new bidding proposals. Therefore, during the bidding process Turkey on one side observed the potential political implications of the issue and postponed her final decision in order to have the upper-hand to bargain technically and financially. In the end regardless of all these alternative systems, DIEC decided to cancel the whole tendering process for T-LORAMIDS at a meeting held on November 13, 2015, almost immediately after the Committee's written notice, the cancellation of the tender was publicly announced during the G-20 Summit in Antalya, on 15-16 November 2015.

Beyond doubt, Turkey's decision to cancel the tender was shaped in accordance with not only one factor but with a multiplicity of parameters and interactions. For example, the fact that the current situation regarding the capability of Turkey's defense industry is quite different from the negative and pessimistic picture provided by the feasibility studies of the Undersecretariat for Defense Industries (SSM) in 2006. A key reason for this is the rapid technological progress by ASELSAN, ROKETSAN and HAVELSAN, key institutions in Turkey's defense sector. Breakthroughs that have been made in development and production in a very short period of time have helped the domestic defense industry to reach a much more satisfactory level when compared to the past. Furthermore, ASELSAN and ROKETSAN's emphasis that they have the capability and tools to build this project on home soil is a praiseworthy and proud development which should be supported.

One of the indigenous elements behind the successful performances in Turkey's defense industry, ROKETSAN, is currently implementing a number of state of the art projects and developing many more.[21] For instance, ROKETSAN is the prime/sub-contractor for the "Long-Range Anti-Tank Missile" (UMTAS) Project. As part of the program, moving target and target update scenarios were successfully performed by Guided Test Missiles from helicopters; and activities such as sub-system development, testing and system-level launcher qualification continue. A "Man-Portable Short-Range Fire-Forget Type Anti-Tank" Missile (MIZRAK-K) is still under development by ROKETSAN as a prime/sub-contractor with an RFP for the project being issued by ROKETSAN. In this context, ASELSAN and ROKETSAN, as the locomotives of the Turkish defense sector, have made a great leap forward in the development of "low-altitude and short-range" as well as "medium-altitude and medium-range" air defense capacity. For in-

21. Especially since the late 1980s, significant developments and researches have been made particularly in rocket technology and systems. Certainly, the establishment of ROKETSAN (founded in 1988) is the most apparent indicator of this situation. There have been further steps taken in acquiring better qualities, designs and production techniques for solid fuel burners, motors and router systems and other sub-systems. While proceeding from shoulder-fired missiles to 1,000 km range missiles, more serious researches have been made in a wide variety of systems. However, although these various attempts have been taken, they have not been made in accordance with a long-term strategy and planning. Another problem which needs to be stressed is that due to the involvement of too many companies, institutions and firms, a common strategy could not be established. Therefore, the desired outcomes for tasks and projects could not be achieved. In addition, there are still and will be many steps to take in order to produce the most critical sub-systems of missile systems such as INS, surveying systems, fuses and guidance within the domestic sphere.

stance, although there are some technical needs such as a scanning unit, vehicle and warhead for the medium-altitude, HİSAR-O is an indigenous medium-altitude air defense system. The system's radar, command-control and fire control systems are developed by ASELSAN and missile systems are developed by ROKETSAN. A ballistic test missile launch of HİSAR-O has been successfully performed.

In the fields of both technical hardware and software, ASELSAN and ROKETSAN have reached the capability to produce not only medium-altitude but also high-altitude domestically manufactured missiles.

To explain, HİSAR, a family of multi-purpose advanced technology surface-to-air missile systems being developed by ASELSAN and ROKETSAN, consists of the Low Altitude Air Defense Missile (HİSAR-A) and the Medium Altitude Air Defense Missile (HİSAR-O) system. HİSAR's specifications are as follows: low and medium-altitude missile fire control, multi-engagement and successive firing, midcourse guidance via RF data link, global positioning and navigation, fast deployment; operation in day, night and adverse weather conditions; remote control, tactical field mobility, automatic levering mechanism. Other technical details include: 65-km/hr speed, 15-km intercept range for HİSAR-A and 25-km intercept range for HİSAR-O, ability to climb 60/100 in tilt, and in 30/100 slant/lateral slope.[22] In order to provide long-range low/medium/high-altitude air defense, Turkey has preferred foreign direct procurement with T-LORAMIDS. However, in the fields of both technical hardware and software, ASELSAN and ROKETSAN have reached the capability to produce not only medium-altitude but also high-altitude domestically manufactured missiles. In fact, for foreign direct procurement, coordination and partnership particularly during the production phase have been prioritized in T-LORAMIDS technical requirements by developing capabilities at ASELSAN and ROKETSAN.[23] Indeed, in the light of current developments, significant steps for enhancing missile defense systems are being taken. For instance, HİSAR-O's first unarmed test was conducted in 2014, in Aksaray. Thereafter, the test launch of HİSAR-O was carried out on December 3, 2016, with the participation of the Minister for Defense Mr. Fikri Işık. HİSAR-A, a low-attitude version of the same defense system, initiated in 2011 is expected to be delivered to the Turkish Armed Forces by 2020.[24] According to a declaration made by Roketsan on July 7 2015, it was announced that Roketsan has successfully conducted test firings of HİSAR-A's (the National Low Altitude Air Defence Missile) Controlled Test Missile-1 (KTF-1) with its own autopilot and the Ballistic Test Missile-2 (BTF-2) with a dual pulse solid propellant rocket motor, which itself is a first in Turkey, in Aksaray between the 19th and 24th of June, 2015.[25] However,

22. See ROKETSAN's Brochure for HİSAR Air Defence Missiles' family integrity as well as tactical and technical features, http://www.roketsan.com.tr/wp-content/uploads/2012/09/HISAR-ING-TMMZ2015-PR.pdf

23. For Air and Missile Defense System projects, see. The Undersecretariat for Defense Industries, http://www.ssm.gov.tr/home/projects/Sayfalar/projeler.aspx?projeGrubuID=21

24. "Turkey tests mid-range air defense system", *Anadolu Agency*, 08 December 2016, http://aa.com.tr/en/science-technology/turkey-tests-mid-range-air-defense-system/701830 ; "Yerli Füze Hisar Test Edildi", NTV, 08 Aralik 2016, http://www.ntv.com.tr/galeri/turkiye/yerli-fuze-hisar-test-edildi,_HZJyzFOeESfzIroiAfGtQ/9_9Vl9dbrkKV0Pefcw--OQ

25. "The First National Air Defence Missile of Turkey, HİSAR Records Another First!", *Roketsan*, http://www.roketsan.com.tr/en/turkiyenin-ilk-milli-hava-savunma-fuzesi-hisardan-bir-ilk-daha/

the estimated delivery date of HISAR missiles might be postponed to a later date since Turkey is experiencing certain difficulties in procuring the necessary materials or subcomponents from United Kingdom and more importantly from Germany. Despite Turkey's efforts to enhance its military capabilities with regard to her new strategic outlook, there has not yet been any domestically designed and manufactured air defense missile system entered into the TAF's inventory. As a consequence, Turkey continues to rely on NATO's BMD capability and support against any potential ballistic missile attacks launched by adversarial states or non-state actors. In this sense, Turkey's air defense capability has taken a different direction with the deployment of Italian-made SAMP/Ts in June 2016 when Germany, as a member of NATO, took the same decision as the U.S.' to pull her Patriots back at the end of 2015.[26] Ultimately, these were the processes Turkey confronted on the way to establish a domestic defense industry and these systems have been developed to date in an attempt to meet her urgent needs.

At this point, a significant part of the development in the Turkish defense industry that needs to be highlighted is Self-Propelled Low Altitude Air Defence Gun System 'KORKUT' and its Counter Mortar Radar 'SERHAT' which are both domestically produced systems. In fact, German arms manufacturer Rheinmetall's (the project was initially based on the 35/1000 revolver gun land based air defense system) "The Oerlikon Millennium Gun"[27], supposedly served as a model for ASELSAN's KORKUT project which has been an ongoing development program for the last 7 years. Actually, during the development phase of Rheinmetall's Oerlikon Millennium system, ROKETSAN carried out Millennium's field firing tests which were then configured at Karapınar Shooting Range Command in Konya, in 2009. Starting from year 2010, ASELSAN has been developing new gun systems to fulfil the low altitude air defense requirements of the Turkish Army. Thus being developed for the effective air defense of mechanized troops and mobile units, the KORKUT system has firing on the move capability with the stabilized and unmanned gun turret. In addition to conventional type 35 mm ammunition, the KORKUT system has also the capability of firing 35 mm airburst ammunition which highly improves the effectiveness of ground based air defense against modern air threats including air-to-ground missiles, cruise missiles and UAVs.[28] However, considering TAF's performance to detect and/or destroy incoming artillery, rockets and mortars (such as for 107 mm and 122 mm Grad-series models) launched by ISIS militants from Syria, definitely KORKUT and its radar SERHATs' operational capabilities must be further developed for effective counter-rocket, artillery and mortar attacks.

To come to the recent case of the 'BORA' missile system, the first national, long range and surface to surface missile, which indicates Turkey's transition from defensive to offensive capabilities, BORA is the third phase of joint missile systems production which has been accomplished with Chinese cooperation, after the first phase 'KASIRGA' and the second phase 'YILDIRIM'. The project BORA was decided upon under the administration of Yaşar Büyükanıt as the General Chief of Staff of the Turkish Armed Forces (TAF), between the years of 2006-2008. Afterwards, in

26. "SAMP/T Türkiye'de konuşlandı", C4Defence, 09 June 2016, http://www.c4defence.com/Arsiv/sampt-turkiyede-konuslandi/879/1

27. Rheinmetall Defence "35mm Oerlikon gun systems and Ahead ammunition from Rheinmetall: more than a match for contemporary threats", *Press Release*, 06 September 2016, https://www.rheinmetall-defence.com/media/editor_media/rm_defence/publicrelations/pressemitteilungen/2016/mspo/05_2016-09-06_Rheinmetall_MSPO_Medium_Calibre.pdf

28. KORKUT Self Propelled Air Defense Gun System, ASELSAN, http://www.aselsan.com.tr/en-us/press-room/Brochures/Air-and-Missile-Defense-Systems/KORKUT_SSA_ENG.pdf

2009, during the period of İlker Başbuğ's administration as the head of TAF, Turkey came to an agreement on jointly producing a missile system, which was later coined BORA, cooperating with China. In this process of joint-production, ROKETSAN contributed to the project as the Turkish representative and producer. Thereafter in 2014 first deliveries were made, with the project for the BORA missile system finally coming to light on 6 February 2017 when its existence was first revealed and publically declared. It's worth noting that ROKETSAN released an image of the export version of the short-range ballistic missile 'BORA' known as 'KHAN' at IDEX-2017, which was held from 19 to 23 February 2017, in Abu Dhabi. IDEX is one of the world's largest and most strategically important defence and security exhibitions as well as being the only international defence exhibition and conference in the MENA region demonstrating the latest technology across land, sea and air sectors of defence. Turkish defense company ROKETSAN reported that the KHAN missile has a diameter of 610 mm, a total weight of 2500 kg, and is equipped with a 470 kg high-explosive fragmentation warhead. Accordingly, BORA and its export version KHAN are able to hit targets located 80 to 280 km away with a 50-meter error possibility from its maximum range. [29]

BORA possesses an operational range of 300 km. Its range could have been developed much further; however, Turkey's partnership to the Missile Technology Control Regime (MTCR) has restrictions to be adhered to. For instance, according to this agreement, the possible quantity of import to be used to produce missiles was defined as one capable of delivering at least 500 kilograms (kg) to a range of 300 kilometers (km). Therefore, signing up to this regime makes it impossible to increase the range of BORA for now, until Turkey gets her own system and vehicles to produce a total missile system.

One thing to keep in mind about BORA is that even if it is the newest system which has a longer range than other systems used in Turkey, it is not certain whether this missile system might be used for a variety of purposes. This probably means that the BORA missile system could not be used as a part of a missile defense system which would take the responsibility of defending Turkey against ballistic missiles. Considering Turkey's current capability, it is clear that the BORA missile system is only useful for counteracting the first attack. In conclusion a significant point which needs to be emphasized is that BORA is a ballistic missile system however it is not a part of a missile defense system. To finalize, the case of BORA demonstrates change in the Turkish defense industry, it must be reiterated that the BORA missile system is significant in proving how far Turkey has progressed towards producing and designing its own missile systems as well as their sub-systems. Even the secrecy of BORA's production process indicates that Turkey has acquired the principles of conducting military researches as applied by the major global arms producers.

In conclusion, Turkey has to support and strengthen her defense industry in order to ramp up production based on the use of national resources, thus diversify domestically produced technologies and goods. This attitude is required not only to be more capable of countering potential missile threats, but also to develop military capabilities as well as unilaterally meeting the needs of the Army. As a matter of fact, Turkey needs to enhance existing research and development programs while evaluating the future conditions and impacts of alternative planning strategies, by calculating her long term goals, interests and objectives.

29. "Bora Khan on Abu Dhabi Campaign", *C4Defence*, 20 February 2017, http://en.c4defence.com/Agenda/bora-khan-on-abu-dhabi-campaign/3808/1 ; "Turkey Showcases New Khan Missile at IDEX 2017", Defence Blog, 20 February 2017, http://defence-blog.com/news/turkey-showcases-new-khan-missile-at-idex-2017.html

CONCLUSION

Turkey is going through critical structural and strategic arrangements in her military in accord with the requirements stemming from the developments both in the national and international security and strategic landscape. Therefore, it is quite rational for Turkey to set herself free of technological constraints in order to solve infrastructure and performance capacity related problems in her air defense system. However, it should be admitted that Turkey has her imperfections and made mistakes, whether it was missing the opportunities to develop a national defense industry or ignoring the existing/potential risk and threats that require both active and proactive measures.

Without doubt, the type of missile system Turkey should produce is linked to the elimination of the security deficit that was previously regarded as her strategic choice, and to the determination of security vulnerability with regard to potential threats. Turkey's endeavor to develop her national capability in the defense industry is related to finding a middle course in the existing conditions. To continue to be successfully economically depends on the support to be provided through "smart investments". For this reason, as Turkey plans defense investments, she must very well plan the scaling of defense expenditure items. Hence, instead of lagging behind the developments in ballistic missile defense technology by engaging in long-term projects, Turkey must make strategic choices which will help her catch up with the current technological momentum in a shorter term and which will facilitate her adaptation to possible new innovations. Besides, Turkey must consider the alternative strategic choices such as following a much more effective policy of deterrence by having a formidable missile system with the capacity to "attack", rather than adopting the understanding of a weak deterrence based on missiles to "defend". To put it more clearly, possessing a strong defense system may not always create an effective power of deterrence on the enemy.

Taking all positive and negative aspects into account, it should be stated that it does not seem so realistically possible for Turkey to develop her own indigenous 'systemic and high-tech integrated national missile defense system', in the near future. On the other hand, there are also some problems to cope with regarding the R&D programs carried out till now, in terms of investment and management phase, time of delivery, providing the qualified human resources, existing defense planning model, recognition of the military needs and the supply mechanisms. Not surprisingly, therefore, in the decades prior to the 2000s the desired outcomes for tasks and projects could not be achieved. To list some of the examples: First, the decisions are made only in terms of technical parameters and performances. Therefore, the political, economic and commercial aspects seem to be neglected. Second, the lack of coordination and dispensable competition among organizations in the field draws negative long-term impacts on the future of the defense industry. Finally, the most significant challenge that should be mentioned is that Turkey has been facing missile threats for a long time but has not yet developed a long-term strategy, a functioning plan under any circumstances, namely a feasible and sustainable road map.

To sum up, the ballistic and cruise missile threat covers a wide-range of security issues which links the traditional notions of deterrence, as well as the uncertainty and asymmetric risk from non-state actors. Unfortunately for many years, foreign supplied systems such as American Patriots or Russian S-300/400 systems have been perceived as unique solutions to counteract any kind of missile. However, instead of depending on these systems, it is very crucial to first and foremost create a total understanding of defense, then define the threats and analyze the possible

targets in the country. The technical part of these studies must contain clarification of required missile and radar systems and procurement of technological infrastructure. The determination of critical targets, the decision on reducing the numbers of these strategic targets, the evaluation of warheads' threat profile (namely velocity of approach, activity of warheads and so on), according to the specified threat profiles, the determination of convenient altitudes to hit the delivering target, the procurement of needed systems and the perpetuity of these systems must all be considered.

Herein, Turkey must act with the understanding of comparative advantage in the perception of threat or the approach of deterrence against an enemy. In the frame of this understanding, it seems rational for Turkey to concentrate on the production of anti-ballistic weapons systems which are more advanced than the technology of ballistic missiles in the inventories of the countries posing potential threats to Turkey, rather than simply developing a defense against them. Let us underline that with this argument, the development of new generation, effective weapons systems with high strike power has been decided upon however this does not mean that Turkey is making plans to produce ballistic missiles with WMD warheads - even for deterrence. In short, Turkey's intention for engaging in medium and long-range ballistic missile programs or endeavor to develop her own indigenous missile defense system must not create reservations or doubts that Turkey, a country with a strong commitment to international law on the issue of WMDs, may possibly be interested in nuclear arms. All of Turkey's efforts must not be interpreted beyond being part of her rightful goal to reinforce her national defense capabilities.

Turkey's new policy in defense and aviation technologies, which has received concerted attention since the start of the millennium, is no longer based on only foreign direct procurement of weapons via import. The strategic target of this new orientation is, by virtue of local production, to prioritize technology transfer, have a greater share of the global market through export, and meet current and future domestic defense needs, therefore, to implement a defense policy which will in itself contribute to the development of the country. In the last decade critical projects have been initiated and developed through national R&D in order to increase the country's competitiveness in the world defense market and to reduce dependency on external sources in the procurement of high-tech products and services.

This focus for the defense and aviation industry of Turkey will strengthen the military readiness of the Turkish Army which is especially crucial during the current turbulent era in the Middle East following the Arab Spring. In this context, Ankara has endeavored to change the mindset on missile defense that was solely based on her conventional security cooperation with NATO and is now adhering strictly to her new strategy of eliminating 'security deficit' by overcoming one-sided dependency. Successful test launches have already been conducted for the low and medium altitude air defense missile systems 'HİSAR' and the long range surface-to-surface missile system 'BORA', national products designed and developed indigenously by Turkish defense companies. However the main theme of this study is in response to Turkey's desire to build a systemic and high-tech integrated national air-missile defense system against perceived risks and potential threats.

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