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Türkiye's Rise in Aerospace Industry and Cooperation with Italy

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Introduction

The Turkish defence and aerospace industry has experienced significant growth since the early 1980s. This progress, driven by a strong emphasis on indigenous development programs, has led to an increase in both the number of firms and the workforce active in the sector. A key objective of this strategy has been to maximize the use of local solutions to meet the requirements of the Turkish Armed Forces (Türk Silahlı Kuvvetleri; TSK), with export sales initially considered a secondary priority.

The localization process has led to a close, symbiotic relationship between the defence sector and its primary end user, the TSK. As a result, the research and development, innovation, and technology management capabilities of Türkiye’s defence and aerospace firms have been shaped directly by military needs. Over time, the operational success of domestically developed systems and platforms has fueled export growth, as demonstrated by the rising global demand for Turkish drones—particularly armed models like the Bayraktar TB2.

Aerospace is arguably the cornerstone of Türkiye’s defence and aerospace ecosystem and has been in the spotlight for the past two decades due to its ambitious programs and rapid advancements. Flagship projects such as the Turkish national fighter jet *Kaan*, the Bayraktar *Kızılelma* combat drone, the *Gökbey* helicopter, and space initiatives symbolize Türkiye’s growing influence in the global aerospace market. These developments not only reinforce the country’s technological capabilities but also serve as valuable assets in Ankara’s foreign policy.

The evolution of Turkish-Italian aerospace cooperation reflects a multifaceted and enduring relationship rooted in both strategic necessity and mutual benefit. Since the Cold War, Türkiye and Italy have maintained close defense and industrial ties as NATO allies, gradually expanding their collaboration from simple platform procurement to advanced joint development programs and strategic industrial partnerships. This cooperation has gained further significance in the 21st century, as Türkiye pursues greater technological autonomy while Italy consolidates its role as a European

aerospace power. Both nations have identified aerospace collaboration as a key area for political, technological, and industrial alignment.

The scope of this bilateral partnership encompasses a broad spectrum of projects, including fixed-wing aircraft, helicopters, and space systems. From licensed production of basic trainer aircraft and maritime patrol platforms to the co-development of advanced rotary-wing systems such as the T129 ATAK, the Turkish-Italian relationship has matured into one marked by joint innovation and deep technology transfer. In parallel, cooperation in satellite technologies and space systems has enabled Türkiye to expand its strategic space capabilities with crucial support from Italian firms. More recently, direct business-to-business partnerships, including joint ventures and cross-border acquisitions, have propelled the partnership into a new era of integrated industrial cooperation.

1. Background

The Turkish aviation industry was established in the early years of the Republic. One of the first steps toward a national aviation sector was the founding of the TOMTAŞ (Turkische Flugzeug und Motoren AG) aircraft manufacturing plant in 1926, with support from the German government. Although short-lived, this company produced several German-origin designs under license. Additional investments followed, including the Kayseri Tayyare Fabrikası (KTF), Eskişehir Uçak Fabrikası (Eskişehir Aircraft Factory), and Nuri Demirağ Gök Okulu (Nuri Demirağ Sky School), backed by both government and private investors. The facilities of Türk Hava Kurumu (THK; Turkish Air Association) continued these efforts from the late 1930s to the early 1950s, manufacturing civilian training, sports, and cargo aircraft, as well as gliders. THK even achieved limited export success, delivering aircraft to Jordan and Denmark. However, this early momentum came to a halt after Türkiye joined the North Atlantic Treaty Organization (NATO) in 1952. From that point on, military and civilian aviation needs were primarily met through Western procurement, often in the form of surplus, second-hand aircraft. The aviation sector was largely confined to maintenance and repair operations, with Türkiye's First Five-Year Development Plan prioritizing the establishment of infrastructure dedicated solely to these activities.¹

A turning point came when it became clear that self-sufficiency in critical sectors was essential not only for economic and technological progress but also for national security. The Cyprus crisis and the subsequent U.S. arms embargo (1975–1978) were key catalysts, prompting strategic decisions to lay the groundwork for a national defence and aerospace industry. During this period, the *Türk Silahlı Kuvvetleri'ni Güçlendirme Vakfı* (TSKGV; Turkish Armed Forces Foundation) was established, alongside major defence and aerospace companies: *Türk Uçak Sanayii A.Ş.* (TUSAŞ; Turkish Aircraft Industries) in 1973, ASELSAN in 1975, İŞBİR in 1979, ASPİLSAN in 1981, and HAVELSAN in 1982. Nationwide fundraising and awareness campaigns, such as *Kendi Uçağımı Kendin Yap* (“Build Your Own Aircraft”), also emerged to support these efforts.²

The Turkish aerospace industry reached a major milestone in 1983 with the establishment of TUSAŞ Aerospace Industries (TAI) in Ankara. This joint venture between TUSAŞ and the United States-based General Dynamics was launched to manufacture F-16 fighter jets for the Turkish Air Force (Türk Hava Kuvvetleri, TurAF). Soon after, an engine manufacturing facility was established in Eskişehir under the name TUSAŞ Engine Industries (TEI), in partnership with General Electric.

¹ Arda Mevlütoğlu, ‘Türk Savunma Sanayiinin Dönüşümü’, *Perspektif Online*, 17 April 2020 <<https://www.perspektif.online/turk-savunma-sanayiinin-donusumu/>>.

² Arda Mevlütoğlu and others, *From Client to Competitor: The Rise of Türkiye's Defence Industry* (International Institute for Strategic Studies (IISS), 1 May 2024) <<https://www.iiss.org/research-paper/2024/05/from-client-to-competitor-the-rise-of-turkiyes-defence-industry/>>.

Together, these two companies formed the foundation of Türkiye's modern aerospace sector, supported by contributions from ASELSAN, HAVELSAN, Alp Havacılık, and others.³

2. Leap Forward

Beginning in the 1990s, TAI initiated a series of new programs based on risk-sharing and joint development models with European and U.S. partners. Türkiye's participation in the European A400M transport aircraft project, as well as its designation as a sole-source supplier for certain structural components for Airbus and Boeing, reflect the deepening involvement of Turkish firms in global aerospace supply chains. These advancements were further enabled by strong diplomatic and military relations with Western countries in the 2000s. Meanwhile, in 2005 TUSAŞ bought the shares of Lockheed Martin in TAI, nationalizing the company under the TUSAŞ name.⁴

A key milestone in this era of international cooperation was Türkiye's involvement in the F-35 Joint Strike Fighter program. Türkiye formally joined during the Concept Demonstration phase in 1999, followed by the System Development and Demonstration phase in 2002 as a Level III partner. The Production, Support, and Follow-on Development phase began in 2007. Throughout these stages, the TurAF based its modernization roadmap on the F-35, while Turkish companies—particularly TUSAŞ—gained significant roles within the program. TUSAŞ was selected as the sole non-U.S. producer of the center fuselage, one of the aircraft's most intricate structural components, and invested heavily in cutting-edge manufacturing infrastructure to fulfil this responsibility. Additionally, TUSAŞ became one of two global suppliers for composite parts, air intakes, and external pylons. By 2016, TUSAŞ's business volume under the F-35 program had reached \$4.5 billion. However, Türkiye's participation was abruptly halted. In response to Türkiye's procurement of the Russian S-400 air defence system, the United States removed Türkiye from the program and cancelled the delivery of six completed aircraft intended for the TurAF.⁵

From the mid-2000s onward, Türkiye's aerospace sector began pursuing indigenous aircraft and drone development programs. Following the cancellation of a planned off-the-shelf attack helicopter acquisition, a joint development initiative was launched in 2007, selecting the AgustaWestland (now Leonardo) A-129 International as the base model. Around the same time, TUSAŞ initiated the Anka unmanned aerial vehicle (UAV) and the Hürkuş trainer aircraft programs. Meanwhile, Baykar rose to prominence with the development of the Bayraktar Mini and Bayraktar TB2 drones, marking a new chapter in Türkiye's UAV capabilities.

3. Türkiye's 5th Generation Combat Aircraft, Kaan

Undoubtedly, the most ambitious and technologically advanced initiative in the history of the Turkish aerospace industry is the National Combat Aircraft program (Milli Muharip Uçak, MMU), also known as the "Kaan." Launched in 2011 under the "TX/FX" designation, the program aims to design, develop, test, and produce an indigenous fifth-generation fighter jet that will form the backbone of the TurAF starting in the 2030s. The MMU is designed to replace the aging F-16 fleet and complement the next-generation air combat strategy of Türkiye, ensuring air superiority in future battlefields.⁶

³ Çağlar Kurç and others, 'Balancing Aspiration and Reality: Autarky in Turkish Defence Industrial Policy', *Defence Studies*, 25.1 (2025), pp. 1–24, doi:10.1080/14702436.2025.2472705.

⁴ Kurç and others, 'Balancing Aspiration and Reality'.

⁵ Arda Mevlütoğlu, 'Milli Muharip Uçak ve Türk hava gücünün dönüşümü', *Yetkin Report*, 26 November 2022 <<https://yetkinreport.com/2022/11/26/milli-muharip-ucak-ve-turk-hava-gucunun-donusumu/>>.

⁶ Arda Mevlütoğlu, 'The Future of Turkey's Airpower: The Fifth Generation Challenge', *Insight Turkey*, 22.3 (2020), pp. 131–59, doi:<https://doi.org/10.25253/99.2020223.09>.

The conceptual design phase was completed between 2011 and 2013, followed by the preliminary design phase, which began in 2016. TUSAŞ leads the development of MMU, with significant contributions from ASELSAN for avionics, TÜBİTAK SAGE for advanced munitions, and TEI for indigenous engine development. The aircraft incorporates advanced stealth technology, supercruise capability, and artificial intelligence-assisted avionics, aligning with the capabilities of other fifth-generation fighters such as the F-35 and Su-57. MMU's modular open architecture allows for continuous upgrades, ensuring long-term operational relevance. The first prototype successfully completed its maiden flight on February 21, 2024, marking a historic milestone for Türkiye's aerospace sector. With a projected maximum takeoff weight of around 27,000 kg, MMU will be equipped with AESA radar, high-performance electronic warfare systems, advanced data fusion capabilities, and a diverse array of air-to-air and air-to-ground weapon systems. It is expected to be fully operational by the 2030s, solidifying Türkiye's position as one of the few nations capable of developing a fifth-generation fighter jet from the ground up.⁷

The MMU program has galvanized Türkiye's entire defence and aerospace ecosystem, driving forward a wide range of R&D initiatives and encouraging close cooperation between industry and academia. Except the F-35 Lightning II, which is in serial production, MMU is the only 5th generation combat aircraft development program in the Western hemisphere that has passed the maiden flight milestone.

4. Gökbey

TUSAŞ has recently started the deliveries of the T625 Gökbey light multipurpose helicopter. The Gökbey is Türkiye's first domestically designed and produced utility helicopter, developed to meet the diverse operational needs of both military and civilian users. The program was initiated in 2013 to reduce dependence on foreign platforms and enhance Türkiye's rotary-wing capabilities. Gökbey is designed as a versatile, high-performance helicopter capable of performing missions such as personnel transport, search and rescue (SAR), medical evacuation (MEDEVAC), law enforcement, and VIP transport.⁸

The first prototype of Gökbey completed its maiden flight on September 6, 2018, and the program has since advanced rapidly. The helicopter features a modern avionics suite, high maneuverability, and a fully composite airframe optimized for high-altitude and extreme weather conditions. Gökbey is powered by twin TS1400 turboshaft engines, developed indigenously by TUSAŞ Engine Industries (TEI), providing enhanced performance and operational independence. It has a maximum takeoff weight of around 6,050 kg, a cruise speed of approximately 306 km/h, and an endurance of over 5 hours.⁹

One of Gökbey's standout features is its modular and open architecture design, allowing for seamless integration of new mission systems and equipment. Its advanced flight control system, combined with state-of-the-art avionics developed by ASELSAN, enhances situational awareness and pilot assistance, making it suitable for complex operational environments. The helicopter has already attracted interest from international buyers, reflecting Türkiye's growing competitiveness in the global aerospace market.

⁷ Arda Mevlütoğlu, 'Milli Muharip Uçak (MMU) ve Türkiye'nin Sınavı', *Yetkin Report*, 16 November 2021 <<https://yetkinreport.com/2021/11/16/milli-muharip-ucak-mmu-ve-turkiyenin-sinavi/>>.

⁸ TUSAŞ, 'T625 GÖKBİY', *TUSAŞ Official Web Page* <<https://www.tusas.com/en/products/helicopter/indigenous-development/gokbey>>.

⁹ Göksel Yıldırım, 'Turkish Multirole Utility Helicopter T625 Gokbey Powered by Aselsan's Locally Produced Systems', *Anadolu Ajansı*, 29 October 2024 <<https://www.aa.com.tr/en/turkiye/turkish-multirole-utility-helicopter-t625-gokbey-powered-by-aselsan-s-locally-produced-systems/3378672>>.

5. Hürjet

The Hürjet is Türkiye's first domestically developed jet trainer and light combat aircraft, designed by TUSAŞ to meet the advanced training needs of the TurAF and international customers. The program was initiated in 2017 to replace the aging T-38 Talon trainer fleet and provide a modern platform for training pilots who will transition to next-generation fighter jets such as the Milli Muharip Uçak (MMU) Kaan and the F-16 Fighting Falcon. In addition to its training role, Hürjet is also developed as a light combat aircraft, capable of conducting close air support, border patrol, and air policing missions.¹⁰

The first Hürjet prototype successfully completed its maiden flight on April 25, 2023, marking a major milestone for Türkiye's aerospace industry. The aircraft features a single-engine, tandem-seat configuration with fly-by-wire flight controls, advanced avionics, and an integrated mission system. It has a maximum speed of Mach 1.4, a service ceiling of 45,000 feet, and a range of 2,222 km. Powered by the GE F404-GE-102 turbofan engine, Hürjet offers high maneuverability and supersonic capabilities, making it suitable for both training and combat roles. Hürjet is equipped with a glass cockpit, an advanced radar system, and modern electronic warfare capabilities. Its modular design allows for the integration of various weapons and sensor systems, including air-to-air and air-to-ground munitions, smart bombs, and guided missiles.¹¹

On December 20, 2024, Spain and Türkiye signed a memorandum of understanding (MOU), that forms the basis of bilateral co-operation on the Jet Training Aircraft Project for the Spanish Air Force. This development might lead to the first export success of the Hürjet, representing a major breakthrough for the Turkish aerospace sector.¹²

6. The Turkish Drone Revolution

In May 2004, the Defence Industry Executive Committee (*Savunma Sanayii İcra Kurulu*, SSİK) approved the launch of a national drone program, aiming to build upon the existing expertise and infrastructure. Following this decision, in December 2004, the Undersecretariat for Defence Industries (*Savunma Sanayii Müsteşarlığı*, SSM¹³) awarded TAI a contract to develop a medium-altitude, long-endurance (MALE) surveillance drone, later named Anka. Anka completed its maiden flight on December 30, 2010. A serial production contract was signed in 2013 for ten Anka-S drones equipped with satellite communications (SATCOM) capability. The Anka-S first flew on September 25, 2016, and entered service with the TurAF in 2018. Following the Anka project, the SSM launched a Mini Drone development program to meet the Turkish Army's short-range surveillance and reconnaissance needs. In October 2006, a contract was signed with the Kale-Baykar joint venture for the production of Bayraktar Mini drones, with deliveries beginning in 2007. This marked the first indigenous drone delivery to the Turkish Armed Forces (TSK).¹⁴

As part of a contract signed between SSM and Baykar in December 2011, the Bayraktar TB2 was developed for tactical-level reconnaissance and intelligence missions. The drone completed its first flight on April 29, 2014, and entered service with the Turkish Army in November of the same year. Soon after their introduction, Anka and Bayraktar TB2 became the core of the TSK's and Turkish

¹⁰ TUSAŞ, 'HÜRJET', *TUSAŞ Official Web Page* <<https://www.tusas.com/en/products/aircraft/indigenous-development/hurjet>>.

¹¹ Daily Sabah, 'Türkiye's Hürjet Aircraft Completes First Supersonic Flight Test', *Daily Sabah*, 21 October 2024 <<https://www.dailysabah.com/business/defense/turkiyes-hurjet-aircraft-completes-first-supersonic-flight-test>>.

¹² Stefano D'Urso, 'Spain Signs Memorandum of Understanding with Turkey to Procure Hurjet - The Aviationist', *The Aviationist*, 20 December 2024 <<https://theaviationist.com/2024/12/20/spain-procures-hurjet/>>.

¹³ The name of the institution was changed to Secretariat of Defence Industries (*Savunma Sanayii Başkanlığı*; SSB) in 2018

¹⁴ Mevlütoğlu and others, *From Client to Competitor*.

security forces' drone capabilities. Equipped with high-resolution sensors, these systems significantly improved real-time aerial intelligence, reconnaissance, and surveillance operations.¹⁵

The Bayraktar TB2 was followed by the Bayraktar Akıncı, a much larger drone with substantial payload and weapons-carrying capabilities. This twin-turboprop engine drone made its maiden flight on December 6, 2019, and entered TSK service in 2021. Akıncı is deployed in operational and strategic-level reconnaissance, surveillance, intelligence, and precision strike missions. With a maximum takeoff weight of approximately 6,000 kg, Akıncı is the largest aircraft designed and developed in Türkiye. It is powered by two turboprop engines supplied by Ukrainian engine manufacturer Ivchenko Progress. Akıncı can carry around 1,500 kg of payload, including various guided bombs, missiles, an electro-optical camera, radar, and electronic intelligence/signals intelligence (ELINT/SIGINT) sensors. One of Akıncı's key features is its long-range and endurance, enabling cross-border deep penetration missions.¹⁶

Meanwhile, TUSAŞ developed a larger, twin-engine version of the Anka, designated as Aksungur. Aksungur is a medium-altitude, long-endurance (MALE) drone capable of remaining airborne for over 40 hours. Designed as an advanced version of the Anka series, Aksungur features twin engines, which enhance endurance and payload capacity. The drone performed its maiden flight on March 20, 2019, and has since been actively used for both military and civilian missions. With a maximum takeoff weight of approximately 3.3 tons, Aksungur can carry up to 750 kg of payload. It can reach an altitude of 40,000 feet and, depending on the mission configuration, boasts an endurance of over 50 hours. Aksungur is capable of conducting a wide range of missions, including intelligence, surveillance, reconnaissance (ISR), maritime patrol, and precision strike operations. It can be equipped with electro-optical and infrared (EO/IR) sensors, synthetic aperture radar (SAR), and various weapon systems, including guided munitions and air-to-surface missiles. Its ability to operate in both day and night conditions, as well as adverse weather, makes it a versatile and reliable platform. Aksungur strengthens Türkiye's drone capabilities by providing extended operational reach and multi-mission flexibility, making it a valuable asset for national defence and strategic operations.¹⁷

These four UAV systems—Bayraktar TB2, Bayraktar Akıncı, Anka, and Aksungur—form the backbone of Türkiye's drone fleet. They have significantly enhanced tactical, operational, and strategic reconnaissance, surveillance, and intelligence capabilities. Their effectiveness in counterterrorism, border surveillance, and precision strike missions, along with their performance in Syria, Iraq, Libya, Ukraine, and Nagorno-Karabakh, has led to remarkable export success. As of January 2025, the Turkish aerospace industry has exported more than 770 drones of various types to over 50 countries, making Türkiye the leading exporter of drones, particularly large armed platforms.

7. The Kızıl Elma

The Kızıl Elma (Red Apple), currently in the flight-testing phase, represents a significant technological advancement for Türkiye's aerospace industry. Designed and developed by Baykar, the Kızıl Elma is a jet-powered unmanned combat aircraft. The aircraft features a delta wing and canard configuration, with small forewings (canards) mounted forward of the triangular main wings. Its

¹⁵ İbrahim Sünnetçi, 'Transformation of UAVs from a Reconnaissance Surveillance Platforms to a Force Multiplier in Turkey', *Defence Turkey*, November 2020 <<https://www.defenceturkey.com/en/content/transformation-of-uavs-from-a-reconnaissance-surveillance-platform-to-a-force-multiplier-in-turkey-4231>>.

¹⁶ Arda Mevlütoğlu, 'Akıncı and Turkey as a Drone Power', *Politics Today*, 30 September 2021 <<https://politicstoday.org/baykar-akinci-and-turkey-as-a-drone-power/>>.

¹⁷ Mevlütoğlu, 'The Future of Turkey's Airpower: The Fifth Generation Challenge'.

overall geometry aligns with contemporary stealth aircraft design, featuring minimal protrusions and body angles optimized to reduce radar cross-section (RCS).¹⁸

The "Kızıl Elma" is a significant concept in Turkish tradition, symbolizing an ultimate goal or aspiration for the nation or state. The aircraft's name reflects the importance of this ambitious project, both for Baykar and for Türkiye.

According to technical specifications released by Baykar, the Kızıl Elma will be capable of carrying 1.5 tons of payload and will have a maximum takeoff weight of 8.5 tons. The aircraft will have an operational radius of 500 nautical miles and will be equipped with a state-of-the-art radar and sensor suite. The first Kızıl Elma prototype successfully completed its maiden flight on December 14, 2022.

8. Anka-3: The Turkish Loyal Wingman

The Anka-3 is one of the most advanced platforms developed by Türkiye's aerospace industry. Designed by TUSAŞ, this armed drone features a flying wing design that minimizes its radar signature. Anka-3 successfully performed its maiden flight on December 28, 2023. As a jet-powered platform, it stands out with its high speed and long-range capabilities. With a maximum takeoff weight of approximately 7 tons, Anka-3 has a payload capacity of 1.2 tons. It can reach a maximum altitude of 40,000 feet and has an endurance of over 10 hours.¹⁹

Anka-3 is a multi-role aircraft designed for a variety of missions, including reconnaissance, surveillance, intelligence gathering, electronic warfare, and both air-to-air and air-to-ground attacks. In addition to internal weapon bays, it features underwing hardpoints, enabling the integration of various munitions and electronic systems. Its stealth design reduces radar detectability, giving it an advantage against enemy air defence systems. Anka-3 is also designed to operate in "loyal wingman" missions alongside the Kaan fighter, serving as the "tip of the spear" in a manned-unmanned teaming (MUM-T) strategy.

9. Advancing Manufacturing Capabilities

Turkish aerospace industry has comprehensive capabilities in providing aerostructure solutions, with many companies specialized in the design, manufacturing, assembly, and testing of both metallic and composite structures for the global aerospace industry. With nearly five decades of experience, TUSAŞ has established itself as a reliable partner for major aerospace original equipment manufacturers (OEMs). TUSAŞ has formed an ecosystem of small and medium sized enterprises (SME), most of them based in Ankara. There are notable companies such as Alp Havacılık and Kale Aero being critical partners to leading global aerospace companies such as Boeing, Airbus, Pratt & Whitney, and General Electric.²⁰

The Turkish aerospace sector's strategic initiatives focus on participating in new programs as a global or risk-sharing partner, achieving vertical integration within major OEM supply chains as a first-tier supplier, investing in research and development, collaborating with OEMs on mergers and acquisitions, advancing technologies, and enhancing supplier base and processes. The sector's capabilities encompass design work packages for various aircraft components—including wings, fuselages, empennages, nacelles, and pylons—and life cycle product management, covering design and analysis, verification and validation, manufacturing engineering, testing and certification, and aftermarket support. Additionally, many Turkish aerospace firms emphasizes automation through

¹⁸ Arda Mevlütoğlu, 'Turkey's Kizilelma Armed Drone and Beyond', *Politics Today*, 17 May 2022 <<https://politicstoday.org/turkey-kizilelma-mius-bayraktar-drone-by-baykar-technology/>>.

¹⁹ TUSAŞ, 'ANKA-III', *TUSAŞ Official Web Page* <<https://www.tusas.com/>>.

²⁰ Mevlütoğlu and others, *From Client to Competitor*.

artificial intelligence and robotic manufacturing processes, alongside competitive pricing achieved via cost optimization and efficient supply chain management.

10. Space Programs

Türkiye has significantly advanced its indigenous space capabilities over the past two decades, reflecting its broader ambition to become a regional leader in high technology and strategic autonomy. The country's national space agenda, under the coordination of the Turkish Space Agency (TUA) and supported by organizations such as TÜBİTAK Space Technologies Research Institute (UZAY) and Roketsan, encompasses a wide array of projects including Earth observation satellites, communication satellites, and satellite launch systems. Central to this effort is the development of domestically produced satellite platforms, including the successful deployment of the Göktürk and İMECE series, which provide high-resolution imagery for both civilian and military applications.

Türkiye has been developing several satellites for its civilian and military requirements. The Göktürk and Türksat satellite programs are the two major initiatives within this context.

The first member of the Göktürk earth observation satellite family is the Göktürk-1, which was developed by Telespazio of Italy and Thales Alenia Space from France as the main subcontractor. This project is also a critical milestone in Turkish - Italian aerospace cooperation. Launched on December 5, 2016, from the Guiana Space Center aboard a Vega rocket, Göktürk-1 is equipped with a very high-resolution electro-optical camera and can capture images with a ground sampling distance of less than 1 meter.

Göktürk-2 is Türkiye's first high-resolution Earth observation satellite, developed indigenously to enhance the nation's capabilities in space technology and reconnaissance. Jointly designed and built by TUSAŞ and TÜBİTAK Space Technologies Research Institute (TÜBİTAK UZAY). The satellite was successfully launched into a sun-synchronous orbit at an altitude of approximately 700 kilometers on December 18, 2012, from the Jiuquan Launch Center in China. Göktürk-2 is equipped with an electro-optical camera capable of capturing images with a ground sampling distance of 2.5 meters. It supports various imaging modes, including spot, strip, wide area, and stereo, catering to diverse observation requirements. The satellite's design life is five years, and it has a mass of around 400 kilograms.²¹

The development of Göktürk-2 involved comprehensive in-house engineering efforts by TUSAŞ, encompassing the design, analysis, manufacturing, assembly, integration, and testing of critical subsystems such as the structural, thermal control, and attitude and orbit determination and control systems. Additionally, the project facilitated the establishment of essential infrastructure and the cultivation of expert human resources, laying the groundwork for future advancements in Türkiye's space endeavors. Göktürk-2 serves multiple applications, including military reconnaissance, urban planning, environmental monitoring, disaster management, and agricultural assessment. Its successful deployment and operation mark a significant milestone in Türkiye's pursuit of self-reliance in space technologies and contribute to the nation's strategic autonomy in satellite reconnaissance.

The Göktürk-2 is followed by the Göktürk-3, a synthetic aperture radar (SAR) satellite, which is developed to provide high-resolution imagery of any region on Earth under all weather conditions, day or night. This capability is intended to meet the needs of both military and civilian applications. The Göktürk-3 SAR Satellite System Development Project encompasses the development of the satellite, fixed and mobile ground stations, launch services, early orbit operations, and integrated logistics support. The project was structured in two phases. Phase I focused on preliminary design

²¹ TUSAŞ, 'GÖKTÜRK-2', *TUSAŞ Official Web Page* <<https://www.tusas.com/en/products/space/earth-observation-reconnaissance-satellites/gokturk-2>>.

activities and was successfully completed in May 2016 under a contract between the SSB and TUSAŞ, the prime contractor.²²

TUSAŞ is also working on the Göktürk-Y, a replacement satellite for the Göktürk-1. The Göktürk-Y project comprises of development of a Low-Earth-Orbit very high-resolution electro-optical satellite and corresponding ground stations along with the launch and early orbit operations, commissioning activities, and engineering and integrated logistics support. The contract was awarded by the SSB to TUSAŞ in June 2021.²³

Türksat 6A is Türkiye's first domestically developed communication satellite, marking a significant milestone in the nation's space and technology sectors. The project commenced with a contract signed on December 15, 2014, under the coordination of TÜBİTAK to address the needs of TÜRKSAT, the country's satellite telecommunications operator. The satellite's development is a collaborative effort involving TUSAŞ, TÜBİTAK Space Technologies Research Institute (TÜBİTAK Uzay), ASELSAN, and CTech Bilişim Teknolojileri, each contributing their specialized expertise. TUSAŞ is responsible for developing the satellite's structural, thermal, and chemical propulsion subsystems, as well as the mechanical ground support equipment and cable design and production. Additionally, in collaboration with TÜBİTAK Uzay, TUSAŞ has worked on satellite data recovery, command and control software, and the assembly, integration, and testing activities. These processes were conducted at the Space Systems Integration and Test Center (USET) located within TUSAŞ facilities.²⁴

Türksat 6A was launched on July 8, 2024, from Cape Canaveral, Florida, aboard a SpaceX Falcon 9 rocket, and it is designed to provide communication services for over 15 years, covering regions including Türkiye, Asia, the Middle East, North Africa, and Europe. The deployment of Türksat 6A significantly enhances Türkiye's secure data communication capabilities and reduces reliance on foreign technology in the satellite communication sector. This achievement not only demonstrates the country's growing proficiency in space technology but also positions Türkiye among a select group of nations capable of developing and operating indigenous communication satellites.

ROKETSAN's Micro-Satellite Launching System (MSLS) represents a significant advancement in Türkiye's pursuit of independent access to space. Initiated in 2012, the project gained momentum with the establishment of the Satellite Launch, Space Systems and Advanced Technologies Research Center in 2015. By 2017, Türkiye achieved its first independent space access, and in 2018, ROKETSAN successfully completed flight tests, demonstrating capabilities in stage separation and controlled flight beyond the atmosphere. ROKETSAN has domestically developed and verified several critical technologies for the MSLS, including solid-propellant rocket motors with thrust vector control, aerodynamic hybrid control systems, and liquid-propellant engines capable of multiple firings in space. ROKETSAN plans to utilize sounding rockets to test Micro-Satellite Launch Vehicle (MSLV) technologies, aiming to deliver 100-kilogram payloads to altitudes of 300 kilometers. The ultimate goal is to develop an MSLV capable of placing microsatellites weighing up to 100 kilograms into Low Earth Orbit at altitudes of at least 400 kilometers by 2026. Achieving this would position Türkiye among a select group of nations with indigenous satellite launch capabilities, bolstering its strategic autonomy in space technology²⁵.

²² TUSAŞ, 'GÖKTÜRK-3', *TUSAŞ Official Web Page* <<https://www.tusas.com/en/products/space/earth-observation-reconnaissance-satellites/gokturk-3>>.

²³ TUSAŞ, 'GÖKTÜRK-Y', *TUSAŞ Official Web Page* <<https://www.tusas.com/en/products/space/earth-observation-reconnaissance-satellites/gokturk-2>>.

²⁴ TUSAŞ, 'TÜRKSAT 6A', *TUSAŞ Official Web Page* <<https://www.tusas.com/en/products/space/telecommunication-satellites/turksat-6a>>.

²⁵ ROKETSAN, 'Micro-Satellite Launching System (MSLS)', *ROKETSAN* <<https://www.roketsan.com.tr/products/micro-satellite-launching-system-msls>>.

Collectively, these space projects are not only technological endeavors but also instruments of strategic policy, supporting Türkiye's objectives in defense, telecommunications, disaster monitoring, and scientific research. They are emblematic of the country's drive toward greater autonomy in critical technologies and a more prominent role in the global space community. As Türkiye continues to integrate its space ambitions with broader national development and security strategies, its indigenous space program is poised to become a central pillar of its technological future.

11. Turkish – Italian Aerospace Cooperation

Over the past decades, Türkiye and Italy have developed a robust aerospace partnership characterized by practical results and forward-looking initiatives. In the aircraft sector, Italy's training planes and patrol aircraft have flown in Turkish colors, sometimes built on Turkish soil under license. In helicopters, the relationship produced one of Türkiye's most prized defense products – the T129 ATAK – through joint design and production, alongside many Italian-built rotorcraft in Turkish service. In space, Italian expertise has enabled Türkiye's entry into the satellite club, creating lasting infrastructure and know-how transfers. Furthermore, the recent flurry of direct company partnerships – from drone production ventures to cross-border acquisitions – indicates that the cooperation is not only historical but very much alive and adaptive to new technology areas. Both nations have leveraged each other's strengths: Türkiye tapping Italian technological foundations to jump-start its capabilities, and Italy finding in Türkiye a willing partner and emerging innovator bridging Europe and Eurasia.

Turkish-Italian aerospace cooperation spans several decades and encompasses a wide range of projects in aviation and space. Over time, Türkiye and Italy have engaged in off-the-shelf procurement of aircraft and helicopters, licensed production of Italian designs in Türkiye, joint development of new platforms, and growing business-to-business (B2B) partnerships between their aerospace industries. Key organizations include Türkiye's aerospace firms like TUSAŞ and Italy's Leonardo S.p.A. (formerly Finmeccanica, which incorporated AgustaWestland), among others.

In the late 20th century, Türkiye began modernizing its Air Force training fleet with Italian help. A notable example was the purchase and local production of the SIAI-Marchetti SF.260 basic trainer aircraft. In 1990, the TurAF ordered 40 SF-260D aircraft; the first six were built in Italy and the remaining 34 were produced under license by TAI in Türkiye. These Italian-designed trainers have since been used by TurAF, exemplifying licensed-production cooperation. Earlier, during the Cold War period, Türkiye had also operated Italian-built utility helicopters such as AB-204 and AB-205 as well as naval helicopters such as AB-204ASW and AB-212ASW, but U.S.-sourced aircraft dominated this era. A notable exception is Türkiye's order for 40 F-104S combat aircraft to fulfill the operational gap caused by U.S. arms embargo started in 1975. Overall, direct fixed-wing combat aircraft procurement from Italy was limited – Türkiye's fighters came mainly via the U.S. or multinational programs – but collaborative links grew through joint international projects (for instance, Türkiye and Italy both joined the F-35 Joint Strike Fighter development consortium in the 2000s).

A major Turkish-Italian aircraft collaboration has been in maritime patrol aviation. In 2005, SSM signed a contract with Italy's Alenia Aermacchi (now part of Leonardo) to provide 10 maritime patrol aircraft under the Meltem III program. The platform selected was the ATR 72, a Franco-Italian twin turboprop airliner, to be modified for Anti-Submarine Warfare (ASW) and maritime surveillance roles. An amendment in 2012 updated the order to include six ATR 72-600 Maritime Patrol Aircraft (designated ATR 72-600 TMPA in Türkiye) plus two utility transports, replacing the earlier ATR 72-500 plan. This project involved significant industrial cooperation: Alenia Aermacchi handled overall design and systems integration, while TAI performed the modifications in Ankara (installing mission systems and sensors). The first modified ATR 72-600 TMPA, locally called "P-72", was delivered to

the Turkish Navy in 2017, and all six P-72 maritime patrol aircraft were delivered by 2018. The Meltem III program provided Türkiye with modern maritime patrol capabilities (including Thales AMASCOS mission systems and anti-submarine torpedoes) and further cemented the partnership between TAI and Italy's aerospace industry.²⁶

Helicopters have been a cornerstone of Turkish-Italian defense cooperation, starting with off-the-shelf purchases. During the 1970s–80s, Türkiye obtained several utility helicopters derived from U.S. designs but built under Italian license by Agusta (now part of Leonardo). The Turkish Army and Navy operated models like the Agusta-Bell AB-205 and AB-212, Italian-built versions of the UH-1 Huey series, for transport and search-and-rescue roles. By the late 1990s, Italy became a key supplier for Türkiye's coast guard and naval rotary-wing needs. Under a program code-named "MARTI", Türkiye's Coast Guard ordered Agusta-Bell AB-412EP helicopters (an advanced twin-engine Huey variant) in several batches: 5 helicopters in 1998, 4 more in 1999, and another 5 in 2004. These off-the-shelf procurements provided Türkiye with modernized search-and-rescue and maritime patrol helicopters, and were complemented by training, spare parts, and support from the Italian side. The AB412 EPs, delivered between 2000 and 2006, significantly improved Turkish coast guard aviation and demonstrated effective government-to-company collaboration (with Agusta as the contractor).²⁷

The flagship joint development project between Türkiye and Italy in the rotorcraft field is the T129 ATAK attack helicopter. In March 2007, Türkiye announced it would negotiate with Italy's AgustaWestland to co-develop and produce a new attack helicopter based on the Agusta A129 Mangusta platform. A \$1.2 billion contract was signed in September 2007 for 51 helicopters (with options for 40 more). Under the agreement, TAI was the prime contractor and AgustaWestland the main subcontractor, reflecting Türkiye's desire to build domestic capability. The deal included extensive technology transfer: TAI developed indigenous mission computers, avionics, weapon systems, and self-protection suites for the T129, and Turkish engine maker TEI licensed production of the LHTEC CTS800 turboshaft engines. The first T129 prototype flew in Italy in September 2009, and by 2013 the first units were being assembled in Türkiye. The T129 ATAK entered Turkish Army service in 2014 after local testing and integration. This helicopter is a tandem-seat, twin-engine attack helicopter optimized for hot-and-high conditions and armed reconnaissance. It retains the Italian airframe design but features Turkish mission equipment (e.g. Aselsan electronics and guided missiles). Crucially, Türkiye obtained full marketing rights for the T129 (with certain export restrictions), enabling it to promote the ATAK internationally. As of the mid-2010s, over 50 T129s were delivered to Türkiye's armed forces, and TAI has secured export orders (e.g. to the Philippines) – a tangible outcome of the Turkish-Italian partnership. The T129 program is widely seen as a "success story" that combined Italian rotorcraft expertise with Turkish production and customization, significantly boosting Türkiye's defense industry know-how.²⁸

Italy's AgustaWestland (now Leonardo Helicopters) has continued to engage with Türkiye on various helicopter needs. In the late 2000s, AgustaWestland was one of the contenders for Türkiye's General Purpose Helicopter program, offering the AW149 utility helicopter; however, in that competition Türkiye selected the U.S. Sikorsky Black Hawk for licensed production (the T-70 project). Still, cooperation persisted in specialized areas. Italian-made naval helicopter technology was present in Turkish service: for example, the Turkish Navy operated a number of AB-212 ASW helicopters (anti-submarine warfare variants of the Bell 212) obtained from Italy, which served on board frigates for maritime patrol alongside U.S.-made Seahawks. Additionally, Leonardo and Turkish industry

²⁶ Naval Technology, 'ATR 72 ASW (Anti-Submarine Warfare) Aircraft', *Naval Technology* <<https://www.naval-technology.com/projects/atr-72-asw-anti-submarine-warfare-aircraft/>> [accessed 13 April 2025].

²⁷ Ian Frain, 'Turkish Tactical Utility Helicopter Programmes - European Security & Defence', *European Security Defence*, 7 January 2022 <<https://euro-sd.com/2022/01/articles/exclusive/24472/turkish-tactical-utility-helicopter-programmes/>>.

²⁸ Defence Turkey, 'Agusta Westland: A Success Story in Turkey', *Defence Turkey* <<https://www.defenceturkey.com/en/content/agusta-westland-a-success-story-in-turkey-326>>.

explored co-development of future rotorcraft. In 2017–2018, as Türkiye conceived a heavy attack helicopter (the 10-ton class ATAK 2 project), Leonardo signaled interest in partnering or supplying subsystems, given its parallel development of the AW249 next-generation attack helo in Italy. Although ATAK 2 ultimately became an indigenous project, these discussions underscored the ongoing strategic dialogue. Moreover, Italian helicopter models have found a niche in Türkiye’s civilian and parapublic sectors – for instance, the Italian-designed AW139 is used by some Turkish agencies for search and rescue and VIP transport. The helicopter domain thus features a spectrum of collaborations: from straightforward purchases to full joint development (as epitomized by the T129), making it one of the strongest pillars of Turkish-Italian aerospace relations.²⁹

Türkiye and Italy have also cooperated in space and satellite technology, combining Türkiye’s ambition to build space capabilities with Italy’s established expertise. A landmark project is the Göktürk-1 Earth observation satellite. Göktürk-1 is a high-resolution (sub-meter class) optical imaging satellite for the Turkish Ministry of Defence, contracted in the late 2000s with an Italian-led industrial team. Following negotiations initiated in 2009, SSM signed an agreement with Telespazio S.p.A. (Italy’s space services company, a joint venture of Leonardo and Thales) as the prime contractor for Göktürk-1. The satellite was developed jointly by Telespazio and Thales Alenia Space (a Franco-Italian satellite manufacturer) with significant Turkish involvement. The contract included not only the satellite itself but also the construction of a Satellite Assembly, Integration and Test Center in Ankara and the delivery of a complete ground control segment in Türkiye. Turkish technology companies (Turkish Aerospace, Aselsan, TÜBİTAK BILGEM, Roketsan) contributed to subsystem development and ground infrastructure, reflecting a true collaborative approach. Göktürk-1 was launched in December 2016 from Kourou via an Italian-made Vega launch vehicle, providing Türkiye with an independent reconnaissance satellite capability. Leonardo and its space subsidiaries supplied critical components – for instance, Leonardo provided a high-tech inertial measurement unit (the SIREUS gyroscope) for Göktürk-1’s orientation control. The success of Göktürk-1 gave Türkiye access to satellite imagery from anywhere in the world without geographic restriction, fulfilling military intelligence and civilian mapping needs. It stands as a prime example of technology transfer and joint development in the space sector between Italy and Türkiye.³⁰

Beyond Göktürk-1, Italian companies have been involved in other Turkish space endeavors. Earlier Turkish communications satellites, such as Türksat 3A (launched 2008), were built by Thales Alenia Space, meaning Italian know-how was embedded in Türkiye’s telecom satellite fleet. Telespazio, after Göktürk-1, continued to deepen ties: it signed new cooperation agreements in 2023 with Turkish firms to support satellite imagery services and geoinformation solutions, highlighting that the relationship “began with the Göktürk-1 development” and is expanding in the commercial space sector. At the government level, Türkiye’s nascent Space Agency (established 2018) and the Italian Space Agency have held talks to collaborate on future missions. Areas of interest include lunar exploration and astronaut training, where Italy’s know-how (e.g. in ESA’s programs and habitat design) could support Türkiye’s ambitious National Space Program goals. In satellite manufacturing, cooperation is expected to continue: Italy’s role in the European space industry (through Leonardo and Thales Alenia) offers Türkiye access to advanced satellite technologies for upcoming projects (such as new Earth observation satellites or possibly Türkiye’s first synthetic-aperture radar satellite). In summary, the space domain – from Earth observation satellites and ground systems to future space exploration cooperation – has added a high-tech dimension to Turkish-Italian aerospace ties, moving the partnership literally into orbit.³¹

²⁹ Defence Turkey, ‘Agusta Westland: A Success Story in Turkey’.

³⁰ Telespazio, ‘Gokturk’, *Telespazio* <<https://www.telespazio.com/en/business/space-programmes/gokturk>>.

³¹ Ayhan İncirci, ‘Turkey’s Space Strategy: Stronger EU-Italy Collaboration for Tech Advancement and Economic Growth’, *Italian Institute for International Political Studies*, 24 November 2024 <<https://www.ispionline.it/en/publication/turkeys-space-strategy-stronger-eu-italy-collaboration-for-tech-advancement-and-economic-growth-191499>>.

Beyond specific procurements, Turkish and Italian companies have cooperated in various aerospace ventures. For example, Italian defense electronics (Leonardo's predecessor firms) supplied Türkiye with systems like air surveillance radars and avionics as part of NATO programs. Both nations also participated in multinational aircraft development consortia – Italy as an EU/NATO member and Türkiye often as the sole non-EU partner – facilitating indirect cooperation. Notably, Türkiye and Italy worked together in the A400M Atlas transport aircraft program (a European project in which Türkiye was a partner and Italy contributed initially) and in the F-35 program (Italy hosts an F-35 assembly line, while Turkish industries like TAI produced fuselage sections before Türkiye's later suspension). These joint efforts, though not bilateral in origin, underscored a mutual commitment to advanced aerospace development.

In recent years, the Turkish-Italian aerospace relationship has been marked by dynamic direct partnerships between companies, pointing to a future of deeper industrial integration. A significant development came in December 2024, Baykar completed the acquisition of Piaggio Aerospace, an Italian company with a 100-year legacy in aircraft and engine manufacturing. Piaggio, which is known for the P.180 Avanti aircraft and UAV prototypes, was in search of a new investor, and its purchase by a Turkish defense company is unprecedented. The Italian government approved this sale, underlining a mutual strategic interest. Through this acquisition, Baykar gains a foothold in Europe with an existing aerospace facility, while Italy secures the continuation of an important industrial player under new management. Such moves demonstrate that Turkish and Italian companies are jointly seeking global competitiveness.³²

Another headline example is Turkish investment in Italian aerospace firms. In March 2025, Italy's Leonardo and Türkiye's Baykar Technologies announced a joint venture to produce unmanned aerial vehicles (UAVs). This strategic B2B alliance aims to combine Leonardo's experience in advanced aerospace and EU market access with Baykar's proven drone technology, addressing Europe's capability gap in the UAV sector. The joint venture, to be headquartered in Italy, will initially work on adapting Baykar's high-end Akıncı UAV for European customers, leveraging the two companies' design and production strengths. This collaboration not only opens the door for Turkish drones in NATO/EU markets via an Italian partner, but also signifies Italy's confidence in Turkish tech – a notable shift from the traditional supplier-recipient dynamic to a partnership of equals in developing cutting-edge systems.³³

Conclusion

Türkiye's aerospace industry has undergone a profound transformation over the past four decades. What began as a modest maintenance and assembly capacity in the 1980s has evolved into a vertically integrated, innovation-driven ecosystem encompassing design, development, production, testing, and sustainment of a broad spectrum of aerospace platforms. The establishment of TUSAŞ (Turkish Aerospace Industries) and TEI (TUSAŞ Engine Industries), followed by the rise of indigenous system integrators such as ASELSAN, HAVELSAN, and ROKETSAN, laid the institutional foundations for national capability. Triggered by geopolitical events such as the 1974 Cyprus crisis and the ensuing U.S. arms embargo, Türkiye's strategic emphasis on technological self-sufficiency gained further momentum in the 2000s through a series of ambitious programs in combat aircraft, drones, helicopters, and satellites. The emergence of a competitive SME ecosystem and sustained government investment in R&D, infrastructure, and human capital further accelerated this trajectory.

³² Agnes Helou, 'Turkey's Baykar Acquires Italian Firm Piaggio Aerospace', *Breaking Defense*, 30 December 2024 <<https://breakingdefense.com/2024/12/turkeys-baykar-acquires-italian-firm-piaggio-aerospace/>>.

³³ Giulia Segreti, 'Italy's Leonardo, Turkey's Baykar to Set up Drone Joint Venture | Reuters', *Reuters*, 6 March 2025 <<https://www.reuters.com/markets/deals/italys-leonardo-signs-mou-with-turkeys-baykar-drone-joint-venture-2025-03-06/>>.

Today, Türkiye stands as one of the few countries with the capacity to design and manufacture fifth-generation fighter aircraft, advanced UAVs, military and civilian helicopters, communication and reconnaissance satellites, and space launch systems. Milestones such as the maiden flight of the Kaan fighter jet, the successful deployment of the Türksat 6A communication satellite, and the export of over 50 armed UAV systems to international clients reflect the scale and maturity of this capability. The sector not only fulfills national defense and technological autonomy objectives but also plays a critical role in Türkiye's foreign policy and export strategy. With programs like Hürjet, Anka-3, and Gökbey in serial production or advanced testing stages, and with new investments in hypersonics, AI-enabled mission systems, and space exploration, Türkiye is positioning itself as a rising aerospace power within and beyond its region.

Kaan arguably represents Türkiye's ambitions in aerospace industry. The development of a next-generation combat aircraft like the Kaan, demands strong strategic foresight, particularly in anticipating technological trends, military threats, and evolving operational requirements. The rapidly changing landscape in areas such as propulsion, mission systems, structural components, and weapon technologies makes it essential to establish and continuously upgrade national R&D, production, and testing capabilities. Achieving this depends on a coherent and forward-looking technology and industrial policy.

A major challenge lies in human resources. The Turkish aerospace sector has been significantly affected by brain drain, with many experienced professionals seeking opportunities abroad. While new hires can fill staffing gaps numerically, the loss of mid-level leaders—those with both technical expertise and project management skills—poses a critical risk. Their absence leads to inefficient trial-and-error cycles and increased dependency on foreign consultancy.

Industrial capacity and testing infrastructure also present structural limitations. While organizations like TUSAŞ and TEI have built core competencies in airframe and engine development, broader ecosystem gaps persist, particularly in mission systems and subcomponent supply chains. Moreover, a comprehensive testing and certification infrastructure is essential to support the development and validation of complex subsystems and complete air platforms.

Cost is another major constraint. Developing, producing, and sustaining such a technologically advanced aircraft requires multi-billion-dollar investments, not just in manufacturing but also in supporting infrastructure and talent retention. These expenditures must be planned for long-term sustainability rather than one-off spending cycles.

Lastly, international collaboration is critical. Due to the immense cost and complexity of fifth-generation fighter development, global practice increasingly favors multinational partnerships. Only a few countries—such as Russia and China—pursue these projects independently. Most others, including the UK, Italy, Germany, France, South Korea, and Japan, rely on cooperation to share financial, technological, and industrial burdens. For Türkiye, forming and maintaining stable international partnerships will be essential for reducing risks and ensuring the long-term viability of its national fighter program.

In this context, Turkish-Italian aerospace cooperation stands out as a model of long-term, adaptive, and strategically aligned partnership. What began as conventional procurement in the form of trainer aircraft and utility helicopters has matured into a robust framework encompassing co-production, joint development, technology transfer, and direct industrial investment. The evolution of this relationship demonstrates how bilateral defense ties can transition from transactional arms sales to deep, mutually beneficial strategic cooperation.

One of the most visible successes of this partnership is the T129 ATAK attack helicopter program, which not only equipped Türkiye with a critical combat capability but also enabled the development of national expertise in mission systems, avionics, and helicopter integration. This program remains

a flagship example of how international cooperation—when structured with balanced roles, effective technology transfer, and long-term vision—can yield indigenous platforms with export potential. Similarly, the modification and delivery of ATR-72 maritime patrol aircraft under the Meltem III project showcased effective industrial collaboration, with both design and system integration responsibilities shared between Italy’s Leonardo and Türkiye’s TUSAŞ.

In the space domain, Italy has played a pivotal role in enabling Türkiye's leap forward in satellite technology and ground segment infrastructure. The Göktürk-1 project laid the groundwork for Türkiye’s high-resolution reconnaissance capability and led to the establishment of indigenous satellite assembly and integration facilities in Ankara. Italian contributions—both technical and strategic—have shaped Türkiye’s ability to manage end-to-end satellite programs. The continued collaboration in space, such as shared ambitions for geoinformation services and future exploration missions, suggests that space technologies will remain a fertile ground for joint initiatives in the coming decade.

A particularly notable shift in the relationship is the emergence of business-to-business and equity-based industrial cooperation. The 2025 joint venture between Leonardo and Baykar to adapt Turkish unmanned aerial vehicles for the European market marks a major departure from traditional supplier-recipient dynamics. For the first time, a Turkish company is not only co-developing platforms with a major European defense firm but doing so on European soil with a shared production and market access strategy. Similarly, Baykar’s acquisition of Italy’s Piaggio Aerospace represents an unprecedented level of Turkish industrial presence within the European aerospace sector. These developments reflect a deepening of trust and the increasing interdependence of both countries’ defense ecosystems.

Moreover, the strategic logic behind Turkish-Italian cooperation remains strong. Both countries are Mediterranean powers with overlapping interests in NATO, regional stability, and defense modernization. As Türkiye accelerates its national aerospace programs—such as the Kaan 5th generation fighter, Aksungur UAV, and micro-satellite launch systems—it continues to seek partners who can complement its industrial capacity, share risk, and contribute advanced technologies. Italy, with its experience in multinational programs like the Eurofighter, GCAP, and ESA-led space missions, remains a valuable partner in this context. For Italy, Türkiye represents both a substantial defense market and a bridge to wider regions including Central Asia, the Middle East, and Africa—markets where Turkish platforms have already gained traction.

In conclusion, Turkish-Italian aerospace cooperation is not simply a historical artifact or tactical alignment—it is a living, evolving strategic partnership. It is underpinned by shared interests, complementary capabilities, and a track record of success in complex programs. As both countries confront emerging technological challenges, from artificial intelligence in combat platforms to dual-use satellite technologies and space situational awareness, their partnership offers a platform for co-innovation and global competitiveness. With sustained political will, industrial investment, and alignment of strategic objectives, the Turkish-Italian aerospace relationship is poised to remain one of the most dynamic and productive bilateral partnerships in the defense and aerospace domain.

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