



TB2 Bayraktar Big Strategy for a Little Drone

Léo PÉRIA-PEIGNÉ

► Key Takeaways

- Baykar Makina's TB2 Bayraktar—meaning “standard-bearer” in Turkish—tactical unmanned aerial vehicles (UAVs) became famous after they were used by Azerbaijan and Ukraine in 2020 and 2022.
- Despite its considerable media exposure, the TB2 remains a drone with average performance, which is offset by a limited unit cost and a range of specialized munitions that make it a system suited to the constraints of high-intensity combat.
- Bayraktar is the result of a strategy launched fifty years ago to autonomize the Turkish defense industry. It represents a solid foundation towards projects such as the more technologically and politically ambitious Akıncı and Kızılelma UAVs.
- Turkish drones are also used by Ankara in its diplomatic strategy towards new partners in Africa and Central Asia, or to stabilize its strained relations in the Middle East as well as in Europe.

Introduction

Since 2016, the tactical drone TB2 *Bayraktar*—“standard-bearer” in Turkish—has received considerable media attention, particularly during the conflict in Nagorno-Karabakh in 2020. Thanks to Azerbaijan’s victory over its neighbor Armenia, the drone, manufactured by Baykar, is now a proven combat system with increasing numbers of export clients. These sales are encouraged by the Turkish government, which is anxious to promote the products of its defense industrial base (DIB). The TB2 enjoys a reputation as an efficient and inexpensive platform and serves as a springboard for the Turkish defense aeronautics industry, which continues to make new announcements about future drone projects.

The Turkish drone has also played an important role in the conflict in Ukraine, where the Ukrainian forces have used it for strategic communications, further strengthening its reputation. Presented as a key factor in several Ukrainian military successes, including the halting of the Russian advance from Belorussia or the destruction of the *Moskva* cruiser, the TB2 has become one of the symbols of the early stages of the conflict, partly thanks to its distinctive shape. Baykar has also exploited the positive publicity around its flagship product to intensify its own marketing and spotlight its industrial accomplishments.

Beyond this media success story, which the Turkish government has capitalized on to promote its own achievements, it would be useful to put the TB2’s technical performance into perspective in terms of its endurance, capacity, and range. Examination of its military and commercial history enables a more impartial view of this weapons system and its integration into Ankara’s industrial trajectory and strategic plans.

Short legs and small arms in a integrated ecosystem

The use of the TB2 in the Ukrainian conflict has earned the system much praise, with observers describing it as a “game changer”,¹ a “strategic turning point”, or a “miracle weapon”. Nevertheless, detailed analysis of its performance reveals a different reality: a capable but limited system, priced in line with its performance, with a set of specially adapted munitions. It can efficiently perform ISR (intelligence, surveillance, and reconnaissance) and tactical strike missions. Its low cost makes it easily replaceable, a useful feature given that a tactical drone in Ukraine has a lifespan of around ten sorties.

1. “Turkish Drones a ‘Game Changer’, Says UK DM”, Middle East Monitor (MEMO), October 27, 2022, available at: www.middleeastmonitor.com.

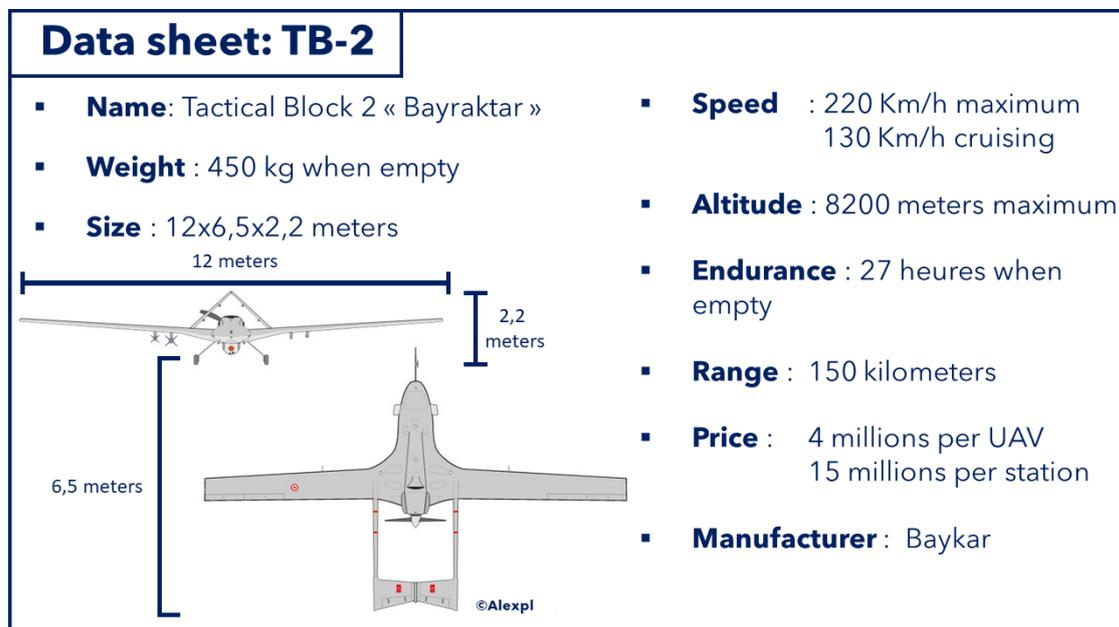
Mediocre performance at a reasonable price

With a payload of under 100 kg, a cruising speed of 130 km/h, and a theoretical autonomy of 27 hours, the TB2 is a small, medium-altitude drone with limited capacity. Its low speed makes it vulnerable on a battlefield saturated with anti-air defense systems, although it also makes it less detectable by radar. Its autonomy is also constrained by its lack of satellite link, forcing it to remain within a 150 km radius of its control station. These limitations are offset by its relatively light weight—450 kg when empty—and a foldable wingspan of 12 meters, making it easily transportable overland.

Moreover, the TB2's capabilities form part of a consistent ecosystem: its small payload is compensated by a range of light munitions developed by a partner Turkish firm, Roketsan, including laser-guided “smart micro munitions” (Mini Akıllı Mühimmat, or MAM) and light anti-tank and anti-personnel missiles developed in the early 2010s, initially designed for arming helicopters.²

There's nothing exceptional about the TB2's performance

Diagram 1: Theoretical performance statistics of the TB2 Bayraktar



Source: French Ministry of the Armed Forces.

Costing less than \$5 million per drone,³ the TB2 is presented as good value for money. With its development costs apparently already recouped by export contracts,

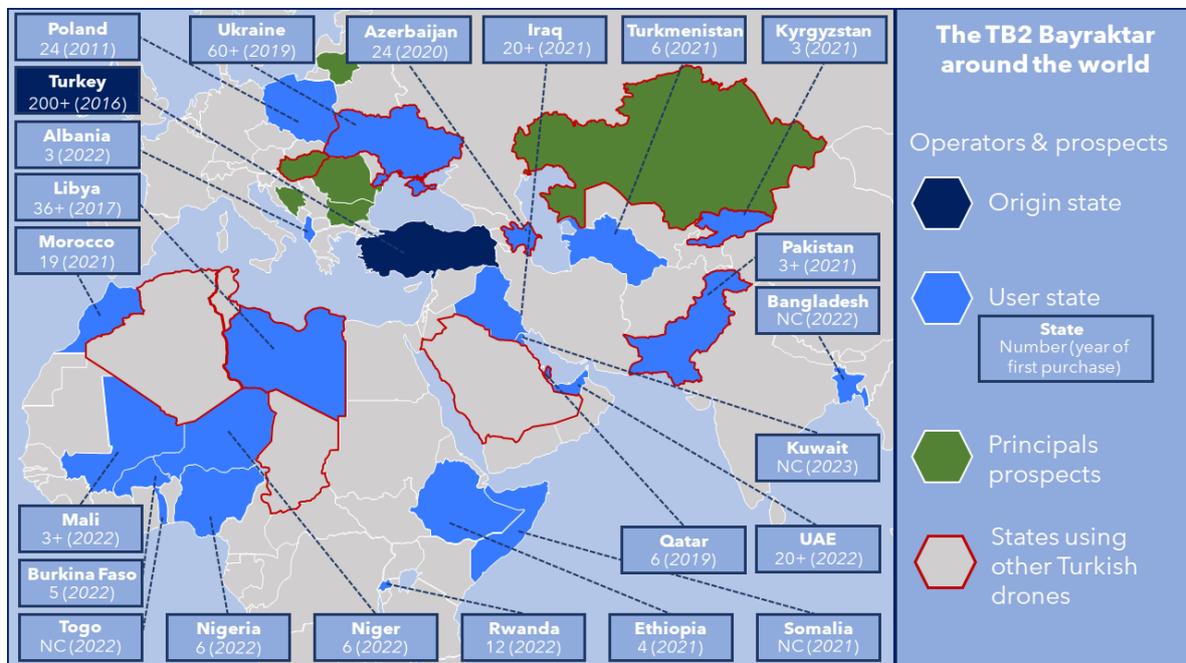
2. “MAM-T, The New Member of Roketsan’s MAM Family”, *MSI*, May 28, 2021, available at: www.savunmahaber.com.

3. Interview with industrial actors, spring 2023.

Baykar has announced its plan to increase its production capacity from 300 to 500 units per year in 2023, suggesting a possible reduction in the unit price.⁴

Finally, the TB2's popularity has also been boosted by the Turkish government's substantial political support, including against rival Turkish companies, for Baykar, which is run by President Erdoğan's son-in-law. Several officers who dared to criticize the reliability of the TB2's command link during operations were removed on direct government orders during the purges that followed the attempted coup in 2016, although their involvement in the coup was highly dubious.⁵

Map 1: Exports and prospects of the TB2 Bayraktar



Source: *Military Balance*, *OPEX 360*, *Oryxspioenkop*.

The Bayraktar in combat: From counterinsurgency to high intensity

The TB2 was first used against Kurdish independence movements in Türkiye in 2016. It was deployed in many of the series of Turkish operations in northern Syria, where it supported the advance of ground forces, maintaining a constant armed presence above areas of operation while being covered by combat aircraft that remained in safety on the other side of the border.

4. P. Sykes, "Türkiye's Drone Powerhouse to Double Capacity on Foreign Demand", *Bloomberg*, September 1, 2022, available at: www.bloomberg.com.

5. A. Bozkurt, "Türkiye's Military Reported that Failures with Bayraktar Drones Hampered Operations", *Nordic Monitor*, May 12, 2019, available at: <https://nordicmonitor.com>.

Between 2016 and 2019, Türkiye conducted several operations in northeast Syria during which it refined a practice linking reconnaissance and strike capabilities with a more systematic kinetic deployment than in the Western use of this type of drone.⁶ Thanks to its combination of ISR and strike capabilities, it can immediately engage a detected target. With more than 200 TB2s in service in the Turkish armed forces—Land Forces, Naval Forces, Gendarmerie, Coast Guard Command, security forces, and intelligence service⁷—, the systematic use of drones in its Syrian operations has also allowed Türkiye to compensate for the mass purge of pilots following the attempted coup in 2016. Almost half of its 600 operational pilots⁸ and a number of its top-ranking officers were removed, depriving the Air Force of experienced staff officers and undermining its conventional interservice combat capabilities.

In 2019, the Libyan theater emerged as the principal arena for deployment of the TB2 by an actor other than the Turkish forces, in this case the “government militias”, based in Misrata and Tripoli, who were fighting the forces of General Haftar. Used to destroy enemy anti-air defenses, particularly the *Pantsir* supplied by the UAE, it also compensated for the weakness of the Libyan artillery by conducting numerous interdiction missions.⁹ Nevertheless, the significant number of drones lost, both in the air and on the ground, testifies not just to the intensity of the engagement but also the vulnerability of the system itself.¹⁰ Although not a strategic game changer, Turkish drones in Libya posed a sufficiently serious threat for Russia to decide to reinforce its Libyan partner’s anti-air defense capacity.¹¹

It was in 2020, during the conflict in Nagorno-Karabakh, that the TB2 started to receive attention from more mainstream media. Azerbaijan deployed around 20 TB2s acquired shortly before the conflict, suggesting the possible involvement of Turkish operators. The TB2s were deployed alongside a set of systems ranging from the Israeli loitering munition *Harop* to radio-controlled civil aircraft used as decoys against Armenian anti-air defenses.¹² Once again, the TB2s were used on missions to destroy enemy air

TB2s operate alongside drone systems, from Israeli rocket-propelled munitions to civilian radio-controlled aircraft.

6. Interview with the researcher P. Gros at the Fondation pour la recherche stratégique (FRS), winter 2023.

7. “Baykar Savunma Genel Müdürü Haluk Bayraktar: ‘Dünya harp literatüründe değişiklikler yapılmasına sebep olan Bayraktar TB2’ler, sahadan aldığımız geri bildirimlerle her geçen gün daha da geliyor ve etkili olmaya devam ediyor””, *MSI*, November 2020, available at: www.savunmahaber.com.

8. “Turquie : l’armée d’Erdogan au pas mais affaiblie”, *Le Journal du Dimanche*, February 26, 2017, updated December 21, 2022, available at: www.lejdd.fr.

9. *Ibid.*

10. A. Bozkurt, “UN Experts Found Turkish Bayraktar Drones in Libya Were Easily Destroyed”, *Nordic Monitor*, February 21, 2022, available at: <https://nordicmonitor.com>.

11. A. I. E., Makarenko S. I., P. S. V., and A. A. Privalov, “Analysis of Experience in the Combat Application of Unmanned Aerial Vehicle Groups to Defeat Air Defense Systems in Military Conflicts in Syria, Libya and Nagorno-Karabakh”, *Systems of Control, Communication and Security*, No. 4, 2020, p.163-191, available at: <https://sccs.intelgr.com>.

12. S. Shaikh and W. Rumbaugh, “The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense”, *CSIS*, December 8, 2020, available at: www.csis.org.

defenses as well as strike and interdiction missions against ground forces once the airspace became less contested. The TB2's contribution must, therefore, be considered alongside that of other systems, but it highlighted the relative absence of countermeasures in Western inventories.¹³

The TB2, culmination of a long-term strategy

The current success of the Turkish defense industry is the result of a policy to autonomize its military procurement that dates back 50 years. After a steady rise in power, Türkiye is now in a position to meet most of its own needs and is seeking to develop the more sophisticated components that it still lacks. The success of the *Bayraktar* makes it a springboard for a rapidly growing military drone sector, with projects in the pipeline for drones that are faster or longer lasting, have a higher payload, or can operate from a helicopter carrier.

Fifty years of strategic industrial autonomization

Following the occupation of Northern Cyprus in 1974, the United States imposed a three-year arms embargo on Türkiye, the result of which was to make Türkiye aware of its extreme dependence on Western military materiel. It therefore decided to develop a local defense industry in order to give it as much autonomy as possible in the long term. Its increasing competence was boosted by an aggressive policy of industrial offsets that demanded a considerable return on investment in the form of technology transfers, development of local production, or partnerships with the big Western industrial groups.

From the first decade of the twenty-first century onward, the emphasis was on the development of aviation capabilities, with the national flagship company, Turkish Aerospace Industries (TAI), enjoying a rapid rise in competence thanks to a series of projects:

- the *Hürkus*, a propeller-driven trainer aircraft developed from 2006;
- the T-129 *Atak*, an attack helicopter developed at the beginning of the first decade of the twenty-first century;
- the *Hürjet*, a light attack and trainer aircraft from 2017;
- the TF-X, a modern combat aircraft slated to become the principal platform of the Turkish Air Forces once completed.

While in more established defense industries the drone sector developed after aviation, the younger Turkish DIB is developing both sectors at the same time. The

13. V. Eicker, “‘Das ist alles keine Science-Fiction mehr’, Oberstleutnant Michael Karl über moderne Kriegsführung und neue Technologien”, German Institute for Defence and Strategic Studies (GDIS), June 12, 2021, available at: <https://gids-hamburg.de>.

Turkish armed forces noted the potential of drones early on, acquiring Israeli models from the middle of the first decade of the twenty-first century. Subsequently, several local manufacturers offered their own drones, often inspired by Israeli systems: TAI with the *Anka*, Lentatek with the *Karayel*, and finally Baykar with the TB2. The current success of the latter has made Baykar the principal actor in the drone sector, while TAI concentrates on manned aviation and Lentatek works on new versions of the *Karayel* rather than developing new models.

Founded in 1984 by Ozdemir Bayraktar, later joined by his son Haluk, Baykar initially specialized in the production of car parts. Following the company's media success, it was Selçuk Bayraktar, the founder's second son and now technical director of the company, who shifted the focus toward drones with the *Bayraktar Mini-UAV*, a small, hand-launched observation drone developed in 2004. In 2007, when the Turkish forces started a tactical drone program, Baykar won the tender with its TB1, which was used for observation missions. The latter formed the basis for the TB2, which also had strike capacity and was launched in 2012, with its first flight in 2014.¹⁴ More effusive than his brother Haluk and presented in the Turkish press as a brilliant inventor, Selçuk Bayraktar has developed a charismatic persona and is extremely active in the media and in representing his company, particularly after his marriage in 2016 to one of President Erdoğan's daughters.¹⁵

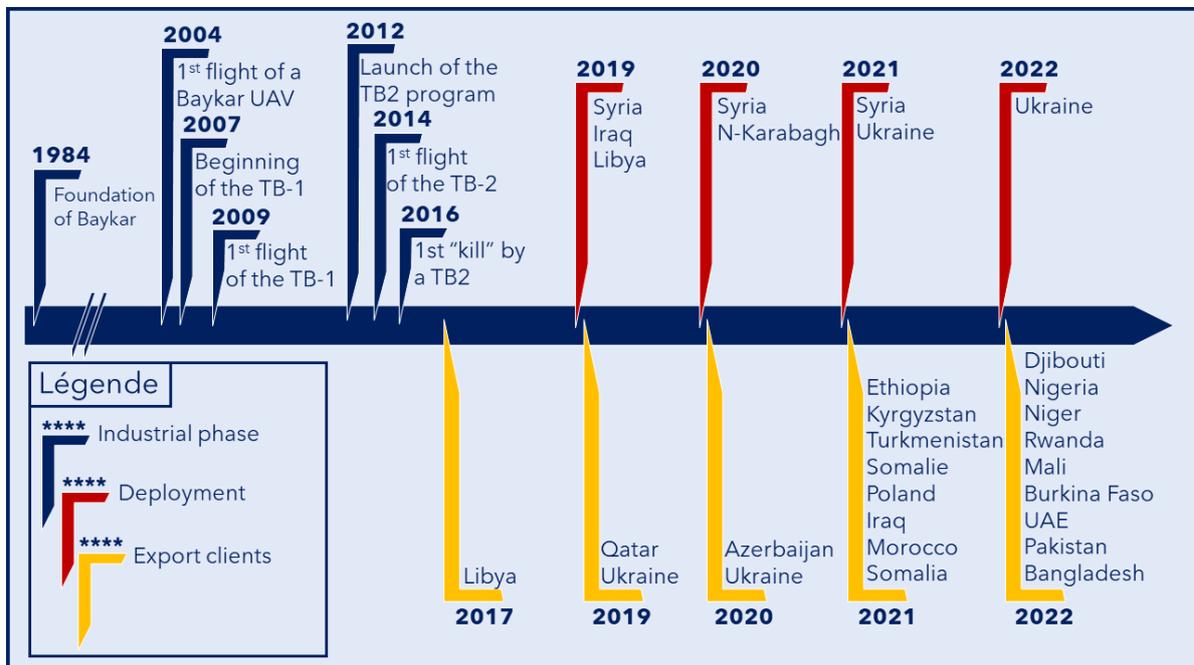
Initially incorporating foreign components¹⁶—optics, motor, electronics—, the TB2 has developed over the years in line with diplomatic reversals and now includes more local elements. When Canada banned the export of its optronic pod to Türkiye after the conflict in Nagorno-Karabakh in 2020, the Turkish company Aselsan was tasked with developing a replacement, which was deployed at the end of 2021. This rapid design process is a sign of the resilience acquired by the Turkish DIB after fifty years of development. Nevertheless, this apparent success is qualified by the inferior performance of the Turkish substitute. In any case, the TB2's export clients prefer solutions purchased separately in order to escape sanctions.¹⁷

14. "Baykar Bayraktar TB.1/TB.2", *Avionslegendaires.net*, July 30, 2021, available at: <https://avionslegendaires.net>.

15. S. Witt, "The Turkish Drone That Changed the Nature of Warfare", *The New Yorker*, May 9, 2022, available at: www.newyorker.com.

16. V. Sarukhanyan, "American Parts on Turkish Bayraktar Drones: U.S. Congressmen Urge Biden Administration to Examine the Evidence", *hetq*, August 26, 2021, available at: <https://hetq.am>.

17. "La nouvelle boule optique du turc Aselsan peine à convaincre à l'export", *Intelligence Online*, February 23, 2022, available at: www.intelligenceonline.fr.

Diagram 2: Timeline of the TB2 *Bayraktar*'s history

Sources: *Al-Monitor*, *Oryxspioenkop*.

The TB2, springboard to more ambitious projects

The success of the TB2 makes it an adaptable platform: Baykar has trialed incorporating a satellite link module that would increase the *Bayraktar*'s range, which is currently restricted by its radio link. Türkiye was intending to equip its future naval aviation service with vertical-landing American F-35Bs but was prevented from doing so by its exclusion from the program after purchasing Russian S-400 defense systems. This setback opened the door to the development of the TB3, a stronger version of the TB2 that is capable of operating from shorter runways,¹⁸ while other drones in development could also have versions designed for use in naval aviation.

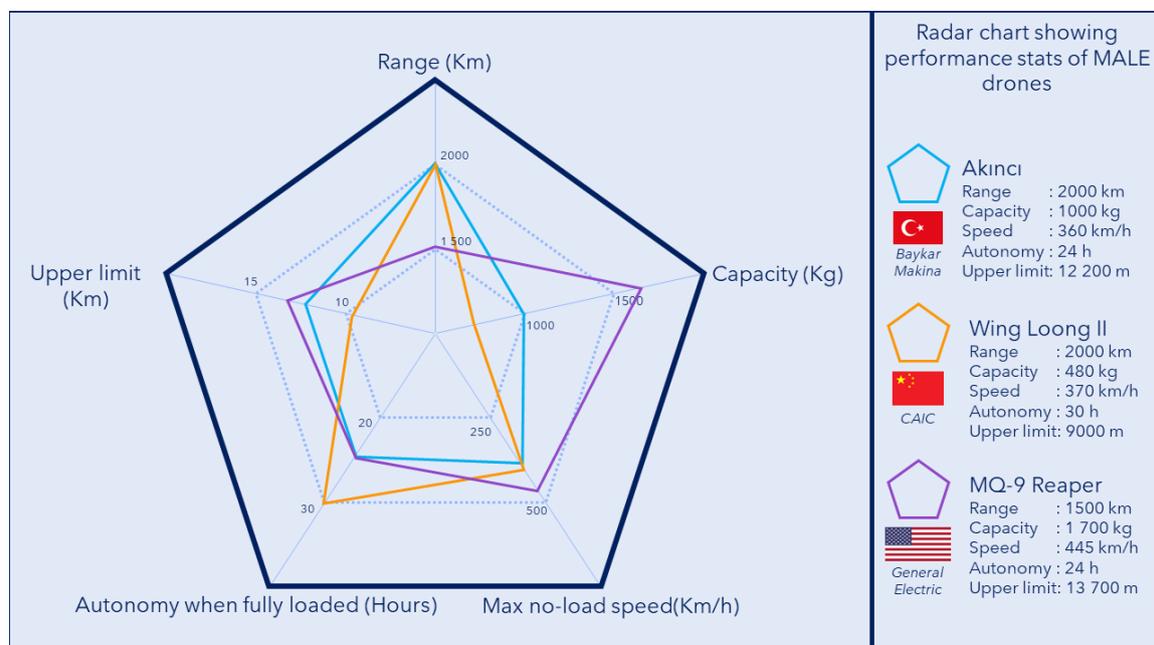
Revealed by Baykar in 2018, the *Akıncı* marks a new phase in the advancement of the Turkish drone sector. A proper MALE (medium-altitude long-endurance) drone, its propulsion system was initially Canadian, then Ukrainian, and finally Turkish, a symbol of the country's increased technological autonomy. The engine was developed astonishingly quickly: first flight at the end of 2019, firing tests and delivery in 2021, first combat mission in February 2022. It seems likely that some of the technologies developed for the *Akıncı* drew on experience gained from the TB2, particularly for the satellite link mentioned above. It should also be capable of carrying heavier and more powerful weapons, such as Roketsan's SOM-J cruise missile.¹⁹

18. M. Gurcan, "Türkiye's Ambitious Drone Carrier Project Dogged by Uncertainties", *Al-Monitor*, April 26, 2021, available at: www.al-monitor.com.

19. "The SOM-J Missile Can Be Used in MMU and AKINCI UAV", *Defence Türkiye*, Vol. 13, No. 94, September 2019, available at: www.defenceTürkiye.com.

The first combat stealthy jet combat unmanned aerial vehicle (UAV) developed in Türkiye, the *Kızılelma* program, debuted in 2013 and made its first flight at the end of 2022, a year ahead of schedule. A version for use in naval aviation is also planned. Intended as a potential loyal wingman for the future TF-X combat aircraft, its name makes a strong political statement: *Kızılelma*, or “red apple”, is used idiomatically to refer to a valuable but hard-to-achieve objective, and often specifically to Constantinople before its capture in 1453.²⁰ In modern Türkiye, the name represents another step toward the coming of the “Turkish century” (*Türkiye Yüzyılı*) often evoked in the AK Party’s official discourse.²¹

Diagram 3: Performance comparison of different tactical drone models

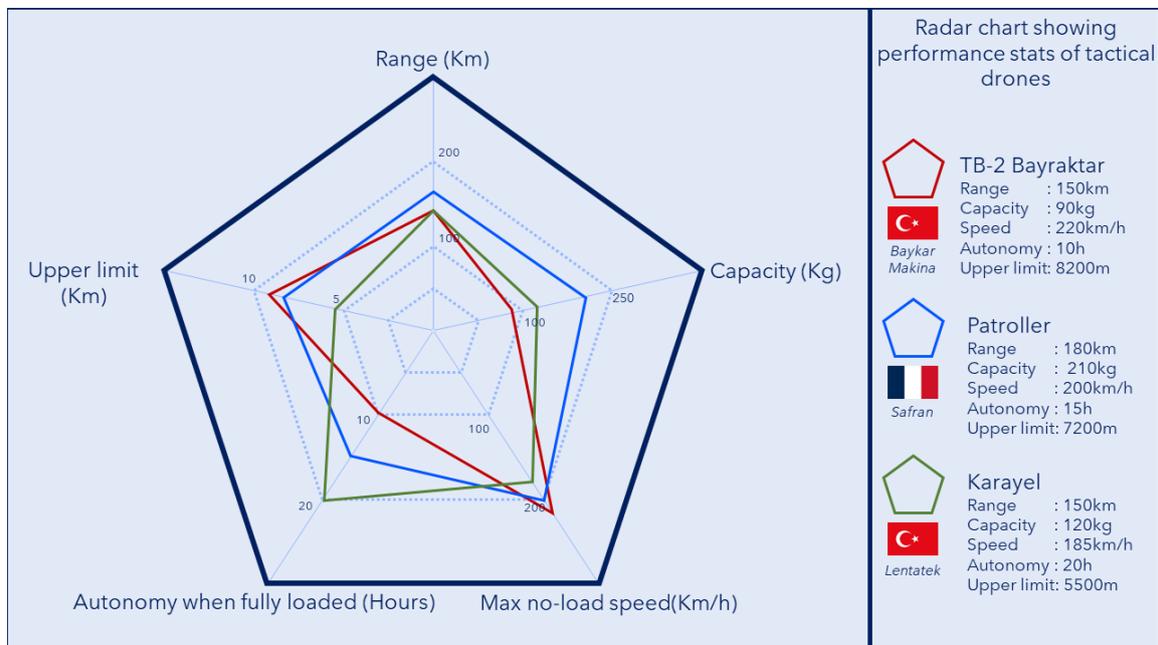


Source: French Ministry of the Armed Forces.

20. M. Copin, “Pour Faruk Bilici, l’histoire ottoman est avant tout une histoire européenne”, *Hypotheses*, July 13, 2007, updated June 24, 2015, available at: <https://ovipot.hypotheses.org>.

21. G-L. Raso, “La quête identitaire de l’État turc : États, Nations, nationalismes de 1839 à nos jours”, *COMUE Université Côté d’Azur*, 2017, available at: <https://theses.hal.science>.

Diagram 4: Performance comparison of different medium-altitude long-endurance UAVs



Source: French Ministry of the Armed Forces.

The TB2, standard-bearer of Ankara's diplomacy?

The *Bayraktar* has also been used by Ankara as a diplomatic tool to attract new partners in Africa and Central Asia. In the case of diplomatic tensions, meanwhile, it serves as a facilitator to restore damaged relationships in the Middle East and Europe.

The TB2, tool and mirror of Türkiye's diplomatic upheavals

A tool for influence in Africa

While Türkiye is developing a multi-faceted strategy for gaining influence in Africa—investments, cultural and academic exchange, development of airlines²²—, the TB2 has already been acquired by a dozen or so states on the continent, providing observation and strike capabilities at a cost suited to local budgets. After Morocco, Ethiopia, and Niger, Togo also purchased some for border-surveillance purposes.²³ The success of the TB2 quadrupled Türkiye's profits in the military aviation sector in Africa in just a

22. M. Bozdémir, "La Turquie, nouvel acteur majeur en Afrique ?", *The Conversation*, November 16, 2021.

23. The exact number was not reported.

year (from \$83 million in 2020 to \$288 million in 2021).²⁴

Türkiye's military exports strategy also benefits from its image as a "third way": politically less restrictive than Western systems, buying Turkish is also more neutral than buying Russian, Chinese, or Iranian, while still guaranteeing a satisfactory level of quality.²⁵

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Interfering in Central Asia and exploiting Russian disengagement

Türkiye's diplomatic penetration into Central Asia has benefited from Russia's gradual loss of influence in the region. Turkish progress has led to, among other things, important export successes: Baykar and TAI drones have been acquired by Azerbaijan, Kyrgyzstan, Turkmenistan, and Kazakhstan, with the latter even making plans to open a factory to produce *Anka* drones.²⁶

Kyrgyzstan's use of Turkish drones against Tajikistan during border skirmishes in summer 2022 nevertheless caused tensions with Ankara, which was accused of supporting one or other of the combatants. As a diplomatic tool, the drone can also become an irritant for Turkish foreign policy, especially as the proliferation of export contracts increases Türkiye's potential exposure.²⁷

A tool of diplomatic resilience in Europe and the Middle East

After a difficult 2020 between Türkiye and the countries of the European Union, with tensions in the Mediterranean around Libya and how to manage the influx of migrants, Poland's announcement that it had purchased 24 TB2s in May 2021 represented an evolution in Ankara's European strategy.²⁸ Türkiye used the convenient match between Poland's desire to rearm and its own capacity to provide drones rapidly—the first batch was delivered less than a year later—in order to regain a foothold in Europe.

In the Middle East, Türkiye's relations with Saudi Arabia and the United Arab Emirates were damaged by Turkish support for the Muslim Brotherhood and Qatar.

24. E. Salin Calik, "Why Africa Needs Turkish Drones", *Middle East Monitor (MEMO)*, August 30, 2022, available at: www.middleeastmonitor.com.

25. A. Zaman, "Turkish Drones Boost Ukrainian Spirits Amid Fears of Russian Invasion", *Al-Monitor*, January 27, 2022, available at: www.al-monitor.com.

26. P. Iddon, "Türkiye Likely to Get Upper Hand in Central Asia's Drone Market", *Forbes*, December 22, 2022, available at: www.forbes.com.

27. F. Tastekin, "Are Turkish Drones Complicating Disputes in Central Asia?", *Al-Monitor*, September 26, 2022, available at: www.al-monitor.com.

28. F. Tastekin, "With Ties with West Strained, Türkiye Gets Lifeline from Poland", *Al-Monitor*, May 28, 2021, available at: www.al-monitor.com.

The gradual reconciliation process begun in 2021 led to the purchase of 120 TB2s by the UAE in September 2022, while rumors of a purchase by Riyadh resurface regularly.²⁹

In summer 2022, Finland planned to purchase Turkish drones as a way to smooth bilateral relations after Türkiye blocked its entry to NATO.³⁰ On March 17, 2023, the Turkish government announced that it had finally begun the process for ratifying Finland's membership after the latter had "taken concrete measures" regarding Ankara.

The TB2, backbone of Ankara-Kyiv relations

Ukraine and Türkiye became closer following Russia's annexation of Crimea in 2014, which Türkiye did not recognize. In 2016 the two countries signed a military cooperation treaty including provisions for the supply of Turkish arms to the Ukrainian forces. Türkiye has also granted numerous loans to support Kyiv's finances, and a trade agreement was on the cards.³¹ Anxious to maintain the equilibrium in the Black Sea, Türkiye maintains strong ties with Ukraine without, however, completely distancing itself from Russia, with which its relations remain open. Ankara has not imposed sanctions on Russia and continues to import Russian oil as well as to export goods that would otherwise be inaccessible to the Russian economy. This diplomatic balancing act has enabled Ankara to position itself as a viable intermediary between the two combatants.

Drones are thus just one aspect of relations between Ankara and Kyiv, but they are important for Türkiye given that its DIB needs Ukrainian skills in the aero-engine field. In 2019, Baykar and Ukrspecexport founded the joint venture Black Sea Shield,³² creating a relationship between the biggest producer of Turkish drones and Ukraine's state-owned arms trading company to develop drones used by both parties. The Motor Sich company, which specializes in designing aircraft engines, was supposed to become a shared entity before its nationalization in November 2022 as part of Kyiv's wartime economic measures. Nevertheless, Motor Sich remains critical for Türkiye and especially for Baykar, to which it supplies engines for the TB2, the *Akıncı*, and the new Turkish combat helicopter, the T929.³³ At the end of 2022, Türkiye granted refugee status to "around a hundred" Ukrainian aeronautical engineers fleeing the war.³⁴

29. "UAE Receives First Batch of Turkish Armed Drones", *Al-Monitor*, September 21, 2022, available at: www.al-monitor.com.

30. "Finland Hints at Buying Turkish Drones in Charm Offensive amid NATO Row", *Daily Sabah*, June 2, 2022, available at: www.dailysabah.com.

31. F. Deprez, "Turquie et Ukraine. Une amitié intéressée à l'ombre de la Russie", *Orient XXI*, December 3, 2020, available at: <https://orientxxi.info>.

32. A. Mevlutoglu, "Turkish-Ukrainian Defense Cooperation: Drones, Engines, and More", *Politics Today*, December 22, 2022, available at: <https://politicstoday.org>.

33. "Ukraine May Sell 50% Stake in Motor Sich to Turkish Firm: Report", *Daily Sabah*, April 13, 2021, available at: www.dailysabah.com.

34. "Comment Ankara attire dans ses rangs les têtes pensantes de l'industrie de défense de Kiev", *Intelligence Online*, April 11, 2022, available at: www.intelligenceonline.fr.

The delivery of TB2s to the Ukrainian forces was still ongoing when Russia attacked on February 24, 2022. Taking into account successive losses, only partially compensated by new deliveries, Ukraine has probably never had more than twenty drones operational and available at the same time. It remains very difficult to accurately estimate the actual number of Ukrainian *Bayraktar* drones lost, however, because the Ukrainian forces release no information on the matter and Russian statements contain fantastical figures. Although they played a part in the destruction of the Russian cruiser *Moskva*, where they acted as a decoy, as well as in the destruction of other smaller Russian ships³⁵ and in strikes on Snake Island, TB2s have become rarer since summer 2022, suggesting they may also have suffered considerable losses. The TB2 is, after all, vulnerable to both jamming and anti-air defenses, given its low speed and limited range.

Ukraine has never had more than twenty TB2s operational at any one time.

In these conditions, it would have been difficult for Ukraine's TB2s to play a strategic role, although they certainly helped to check the Russian attack and contributed to the success of operations conducted during the first half of the conflict, when they exploited the enemy's initial failure to coordinate terrestrial and anti-air maneuvers.³⁶ Their ubiquity in the media can be explained partly by the fact that observers have assumed all drones used by the Ukrainian forces are TB2s, and partly by the prominent place given to them in Kyiv's strategic communications.

Alongside the *HIMARS* rocket launcher and the *Javelin* missile, the TB2 has become a symbol of the Ukrainian resistance. Easily recognizable and used exclusively by Kyiv's forces, they have been celebrated in numerous videos, images, and even songs, contributing to their iconic status. Thanks to their ability to strike the Russian forces and bring back footage, they provided the Ukrainian government with numerous images that were widely disseminated and helped to boost the national mobilization effort. By showing that the Ukrainian forces were capable of inflicting damage on the invaders, these images also strengthened Kyiv's position in the eyes of international supporters who were unsure of Ukraine's capacity to resist and the appropriateness of supplying it with increasingly sophisticated arms. Baykar has also benefited from this considerable media exposure. When Ukrainians, Lithuanians, and Poles established crowdfunding initiatives to enable the purchase of drones, Baykar responded by saying it would donate the drones and use the money raised for maintenance and munitions, thus presenting a benevolent image at low cost.³⁷

35. "Ukraine Armed Forces Bayraktar TB2 UCAV Destroys Raptor Class Patrol Boats of Russia Navy", *DefenseWebTV*, YouTube, May 4, 2022, available at: www.youtube.com.

36. M. Zabrodskyi, Dr. J. Watling, O. V. Danylyuk, and N. Reynolds, "Preliminary Lessons in Conventional Warfighting from Russia's Invasion of Ukraine: February–July 2022", *RUSI*, November 30, 2022.

37. A charitable act celebrated by the Turkish and Dutch editors of the reference site *Oryxspioenkop*: S. Mitzer and J. Oliemans, "The Rarity of Idealism: Baykar's Aid to Ukraine", *Oryxspioenkop*, December 24, 2022, available at: www.oryxspioenkop.com.

Conclusion

The commercial and media success of the TB2 thus owes as much to its intrinsic capabilities, which are perfectly good without being exceptional, as to the support it has received from the Turkish government, which uses it as a diplomatic tool and to showcase the progress of its national DIB. The family ties between Baykar and the Erdoğan family have also played a role, although it is the TB2's use in recent conflicts that has gained it media coverage and attracted export clients in a capability segment where there is little competition from rival DIBs, which are focused on more high-end materiel.

The most similar French system is still Safran E&D's *Patroller*. But while the TB2 was designed from the start to combine observation and strike capabilities, the *Patroller* was initially conceived as an unarmed observation drone equipped with excellent sensors. Although the manufacturers advocated from an early stage for an armed version that would be attractive to export clients, France only overcame its reluctance to arm drones in 2017. This turnaround has made it possible to envisage the development of an armed *Patroller* in the near future, but this will take some time, especially because of administrative restrictions around the certification of modules.

While this delay seems regrettable given the multiplication of armed drones around the world, it would be unreasonable to expect manufacturers to have delivered a strike-oriented tactical drone when the official specifications have systematically ruled them out over the last twenty years, instead focusing exclusively on observation capabilities. The goal must not, however, be to produce a French equivalent of the TB2, a system that is in many respects already technologically outdated, but rather to anticipate the capabilities of its successors and to objectively assess the opportunities they offer. It should also be borne in mind that tactical drones used for high-intensity strike missions do not tend to last long, and so must be available at a reasonable price to ensure they can be easily replaced.

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Cover: Bayraktar TB2 UAV presented in the military parade marking the thirtieth anniversary of Ukraine's independence, Kyiv, August 24, 2021 © Ukrinform/Shutterstock



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