



Unmanned Aerial Systems Current Challenges and Future Opportunities for Governments Around the World **Focus: Europe**

Snapshot: State of the Defence Market for UAS

UAS have become a key part of the armed forces across the world, as they are being extensively deployed in war zones, counter-terrorism operations, and for functions such as border patrol, maritime surveillance, and search & rescue as force multipliers. Furthermore, UAS can lead the way into high threat environments by reducing risks for manned aircraft while challenging next-generation air defence systems.

This paper offers an indication, by region, of some of the uses of UAS identified over the past few years. Across all three regions there are some common challenges, with changeable dynamics over time and location:

- **Globalization** requiring national governments and regional intergovernmental agencies to efficiently track movements, secure identity and automate decision-making.
- **Porous long borders** that require advanced technology such as surveillance drones, infra-red cameras, ground and subterranean sensors, border patrol vehicles, digital fencing and more.
- **Economic growth challenges** often leading to an increase in localized or regional crime, such as the smuggling of illicit goods, drugs, and people.
- **Terrorism and espionage** which requires the careful and timely coordination between government agencies, with external sources of information to develop a common operating picture of movements within and beyond borders.



Focus: Europe

European Union

The EU market holds a much more advanced position in the UAS arena – both strategically and tactically. However, there have been a number of key challenges raised that are currently being reviewed by the UN and the European Commission, as will be highlighted later in this document.

Three priorities under the European Digital Decade are to build European data and cloud initiatives, foster European technology, and focus on infrastructure, both 5G and 6G, with rural connectivity as a feature. From this, the priorities are data, connectivity, and fostering technology development across the EU.

The EU has a diverse and well-funded R&D landscape and a lower TRL (technology readiness level) investment approach that continues to deliver individual hardware or standalone software innovation but does not readily translate into a wider system-of-systems implementation or recognize that most real-world implementations are iterative and continuous, not programmatic or stand-alone.

A strong regulatory structure that includes governmental and industry stakeholders is periodically reviewed and updated, providing a framework for safe operation of UAS in European skies, adopting a risk-based approach.

This is borne out through the 2017 establishment of the European Commission's Directorate-General for Mobility and Transport setting up an informal group of experts on drones. In mid 2021, a second call for applications for potential members for this group was released, to select members of the group other than EU agencies and other public entities. And in the Sustainable and Smart Mobility Strategy, the Commission announced its intention to adopt a Drone Strategy 2.0 in 2022 to reap the full potential offered by drones to a well-functioning single market.

The EU paper, Strategic Research and Innovation Agenda for EU-funded Space Research Supporting Competitiveness, reflects the need for an integrated approach, with acknowledgement of the need for end-to-end systems, ground segment, as well as the 'space' component, and should be reflected in the upcoming Action Plan.

In October 2020, the European Border and Coast Guard Agency (Frontex) awarded a contract to Airbus Defence and Space Airborne Solutions (ADAS), and its long-term partner Israel Aerospace Industries (IAI) to operate a Medium Altitude Long Endurance (MALE) RPAS for Maritime Aerial Surveillance services. The service will be delivered in Greece, and/or Italy and/or Malta within a Framework Contract.

Member states of the EU are also involved in the UAS sector – as manufacturers and users. Of a recently released list of the top 10 companies in the UAV market, 9 have a geographic presence in Europe. Some examples include:

France

In January 2017, the Spy Ranger UAV by the Thales Group was selected by the French Defence Procurement Agency to equip the country's armed forces with surveillance and reconnaissance UAVs. The country is home to well-established market players, and is also providing a suitable environment for a number of start-ups in this space to make a name for themselves.

Italy

Leonardo is the only company in Europe providing complete dual use UAS solution for Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) missions. They also work with universities, institutes and research centres, customers, suppliers, and start-ups to develop new technologies and products.

Turkey

The Turkish UAV Bayraktar TB2 is receiving interest from a number of countries, including Albania. After visiting the Bayraktar production facility in Istanbul in July, Çuçi signalled that his country would likely purchase the drone. "We are evaluating the possibility of using Turkish UCAVs for civilian and military purposes in Albania," he said.

In May 2021, it was reported that Poland will purchase 24 Bayraktar TB2 armed UAVs from Turkey, Polish Defense Minister Mariusz Blaszczak told Polish Radio Saturday.

This first sale of Turkish Drones to a NATO country breaks the monopoly of U.S. and European UAVs that NATO partner countries have previously acquired.

The Ukrainian Army deployed Turkey-made Bayraktar TB2 drones during July 2021 Sea Breeze exercises being held in the Black Sea. Ukraine and the US co-hosted the exercise that included 32 countries in total.

United Kingdom

In February 2021, the UK ordered the first 3 Protector RG Mk1 UAS (SkyGuardian), with an additional 13 aircraft and 4 ground control stations expected later this year, for service in the next few years. The MALE UAS will replace the RAFs Reapers, which the UK began using in 2007, and will bring enhanced armed ISTAR capability, with extended range, increased payload, and planned integration of UK weapons.

This follows from a Bilateral Statement of Intent (SOI) between the UK and Belgium in August 2020, when the two nations agreed to explore collaboration on the MQ-9B UAS that both nations were acquiring. The new aircraft needed to be certified against stringent NATO and UK Safety Certification standards that are equivalent to piloted aircraft, to allow flight in unsegregated civilian airspace. The SOI reflected the shared ambition for the new system, as the UK and Belgium work in partnership to tackle threats to national, NATO, and European security.

The Watchkeeper ISTAR has been in service for the past decade serving the British Army Royal Artillery. In 2020, Watchkeeper was used over the English Channel to spot refugees attempting to cross the sea.

In July 2019, the Ministry of Defence announced the development of a new UAV that would fly alongside or slightly ahead of larger military aircraft. Controlled by the larger aircraft, having a high degree of autonomy, the UAVs would undertake various tasks including surveillance, electronic warfare, laser-guiding weapons onto targets, or even carry out air-to-air or air-to-ground strikes. In January 2021, Spirit AeroSystems in Belfast won the contract to produce a full-scale test aircraft.

In October 2020, Italian company Leonardo, revealed that it had conducted a live trial of swarming drones in association with the RAF. During the demo, a number of small, remotely piloted Callen Lenz drones were equipped with an electronic decoy, allowing each drone to individually deliver a highly sophisticated jamming effect.

In October 2020, ministers informed parliament that the test programme for the Zephyr, a solar-powered HALE UAV was delayed by Covid-19. Built by Airbus and designed to linger at an altitude of 70,000 feet (21 kilometres) for months at a time for surveillance, the Zephyr can also provide a temporary boost to communications.

The UK also uses a number of much smaller drones, primarily for surveillance, from the battery-powered Desert Hawk III and Puma AE, down to Norway's FLIR Systems Black Hornet weighing less than 200 grams and UAVTek's 'Bug' nano-drone weighing 196 grams.

Challenges Defence Ministries are Facing Regarding UAS

With the maturity of the market in this region, and the active inter-governmental agencies many of the key players are involved with, the challenges facing nations in UK-Europe are different to Asia Pacific and MENA.

Concerns

Issues concerning the different ethical approaches that might exist between different national military working with partner agencies has been a challenge for the United Kingdom during the past decade.

In 2018, a report from the All-Party Parliamentary Group on Drones was provided to the UK government concerning "The UK's Use of Armed Drones: Working with Partners". As noted in the Foreword:

"Over the last two decades, the UK's use of military UAS has been highly constrained and was widely regarded by other countries,

and by the United Nations, as a model of responsible and ethical use. It was also regarded as different in some significant respects to the way lethal drones were used by the United States.

But the post-withdrawal campaigns that have been ongoing since in Iraq and Afghanistan in particular ... have diminished that record and raised some serious questions about the legality, efficacy and strategic coherence of the UK's use of drones.

In 2019, Amnesty International produced a report titled, Armed Drones in Europe with the Open Society European Policy Institute, to "provide European policy makers, industries, the public and the media with a comprehensive account of armed drones in Europe since the Open Society Foundations started working on the issue in 2015."

The report analyses the use of armed UAS in five European countries: Germany, the Netherlands, France, Italy, and the UK. It then covers developments at the EU level before providing a brief overview of the debate at the UN. For each country, it considers such areas as government commitments, legal view, actual and planned possession and use of military UAS, and civil society response.

These questions are not likely to simply disappear and will most likely be part of the discussions with national agencies as they consider their requirements moving forward.

Industry perspective

There are three factors that could impact the region:

- the strict EU regulations as limiters of growth of the market
- the concerns around the ethical use of UAS are on the verge of hindering growth prospects, and
- the strict airspace regulations in major countries may suppress interest.

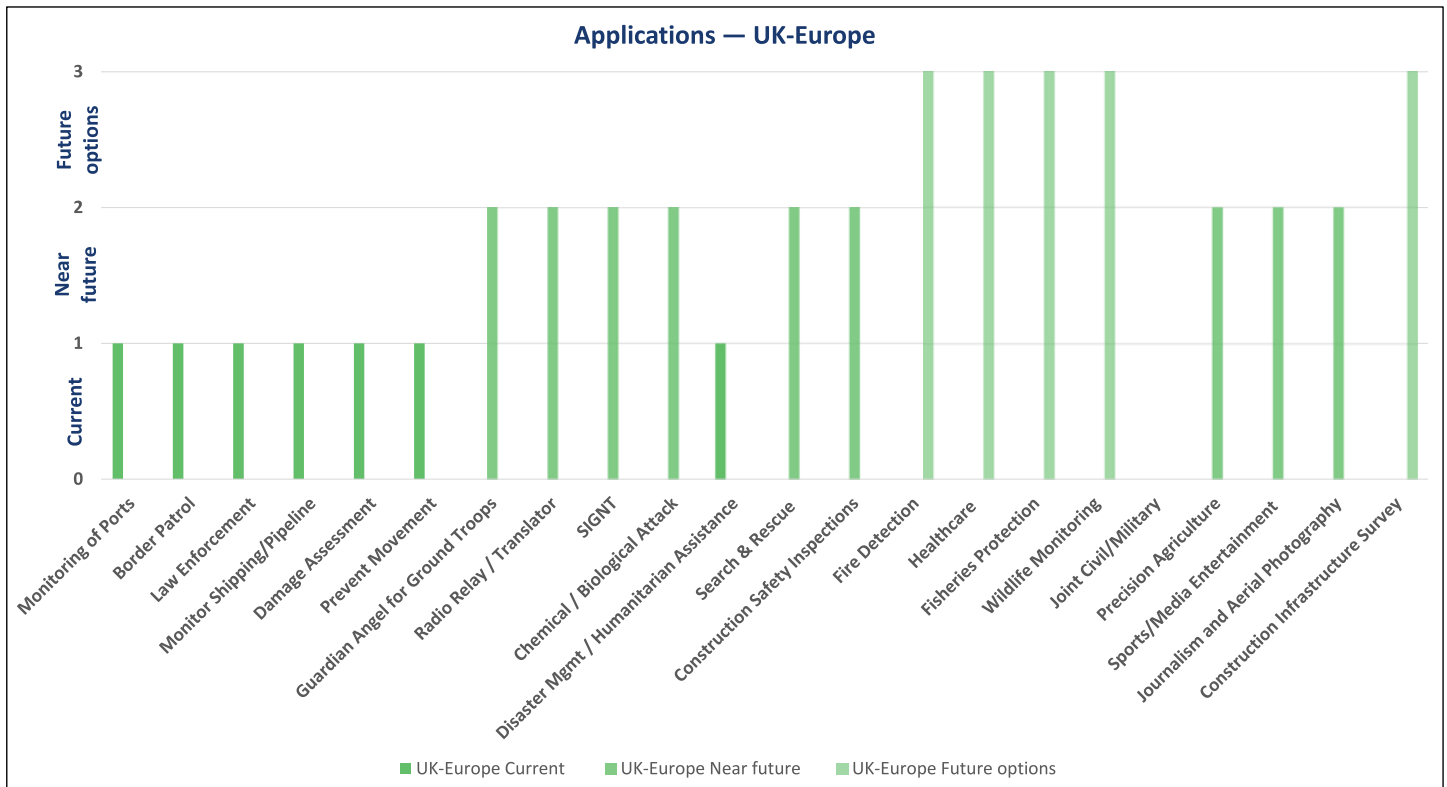


Fig 1: Applications – Europe



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