

SECURING THE AIR: HOW TO ENHANCE THE EU'S RESILIENCE AND SECURITY IN THE AIR DOMAIN?

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CHALLENGES IN THE AIR DOMAIN

Security in the air is of critical strategic importance for the European Union (EU). The air domain is increasingly congested and contested, yet it is fundamental for Europe's economic health and security. All the more since we live in a world in which everything is intertwined, Europe represents a quarter of the world's air traffic, and it is a transit route for transatlantic and Asian flights, which in 2019 represented no less than 26,000 flights per day. Nevertheless, the air domain is becoming more congested. The explosion of commercial drone users continues and by 2050 a quarter of all air traffic will be represented by drones.

The air domain is also more contested. Adversaries such as Russia have successfully created an Anti-Access/Area Denial (A2/AD) strategy. The European airspace can also be instrumentalised for geopolitical ends, as was the case when Ryanair Flight 4978 was diverted to Minsk mid-flight. Flights over conflict zones can be targeted – as was the case for the downing of flight MH17. Competitors can restrict the use of their airspace to impede Europe's diplomatic and military action, but they are also developing hybrid means to challenge critical infrastructure such as airports.

Europeans may have taken for granted the importance of air supremacy and superiority in and around Europe. As the recent evacuation of Afghanistan shows, having in place strategic airlift capacity is a prerequisite for the security of EU citizens based across the world. However, air power can be under-appreciated, and Europe is at risk of losing its strategic edge in the air domain. European countries have in many ways under-invested in critical infrastructure such as airbases, missile defence and next-generation aircraft.

Without air capabilities and enablers, Europeans are increasingly unable to conduct certain joint military operations. Air forces give Europe the benefit of range, reactivity and speed and new air technologies such as drones can give Europe greater operational persistence. Aircraft and enablers can help protect troops during military operations and air power can be used to contain and even control escalation in conflict. Furthermore, past investments in air capabilities have focused almost exclusively on precision-strike, but there is a need to invest in A2/AD-beating technologies. Air power will be necessary for Europe to meet the dual challenge of asymmetric conflict in its neighbourhood and high-intensity warfare.

Emerging disruptive technologies (EDTs) are also changing the nature of the air domain. The advent of hypersonic velocity vehicles challenges deterrence, but modern surface-to-air and cruise missiles do so too. Cyber-attacks are being used to downgrade Europe's command and control (C2) and radar systems. Armed swarm drones may also test the security of Europe and be used against European armed forces in the theatre of military action. Europe's deterrence picture is evolving in light of new aerial technologies and Europe is at risk of quantitative and qualitative shortfalls in this domain.

THE EU APPROACH TO AIR SECURITY

The EU and its Member States are already engaged in the development of air capabilities through the European Defence Fund (EDF) and Permanent Structured Cooperation (PESCO), and these tools can help develop further the Union's strategic autonomy in defence. Other initiatives such as the Single European Sky are also critical for Europe's air security, and there is a need to develop further the cyber resilience of air traffic management and communications systems in the EU. To date, there are 10 specific PESCO projects that directly address the air domain. Many more PESCO projects rely on or reinforce aerial security and the Coordinated Annual Review on Defence (CARD) stresses the need to prioritise air capabilities such as air-to-air missiles and aerial surveillance capacities.

The precursor programmes to the EDF – the Preparatory Action on Defence Research (PADR) and the European Defence Industrial Development Programme (EDIDP) – address the air domain including projects on counter-drone technology, air combat systems and air surveillance. The European Commission's February 2022 "defence package" stresses the importance of investing in air assets and there is an emphasis on investments in, and technology roadmaps for, drone capabilities. Such steps will be strengthened by other measures such as a VAT waiver scheme, an innovation incubator for defence technologies and a specific "Cassini" instrument for defence to build up the Union's defence-industrial skills base.

Additionally, EU Member States such as France, Germany and Spain are actively engaged in developing the Future Combat Aircraft System (FCAS), which is designed to ensure European access to a new generation combat fighters and a sovereign capability. Additionally, there is a need to acknowledge and build on pooling and sharing efforts in the area of air capabilities and flight time exchanges. The European Air Transport Command is a good example of being able to generate and make ready critical air assets, but it is time to also consider other such initiatives in the areas of drones or heavy transport helicopters.

It is expected that the Strategic Compass will address the fundamental importance of the air domain, not least because it is a key strategic domain in combination with the maritime, outer space, land and cyber domains. While air security has been previously addressed as part of the EU's Military Level of Ambition (in 2016), the Strategic Compass will help develop a concept for air security operations. This will help underline the need to ensure free and secure access to European airspace and develop ways of protecting troops when deployed on operations. The Strategic Compass should also underline the need to take forward a more global strategic reflection to ensure a free, safe and secure European access to airspace, giving impetus towards a European air strategic culture. Addressing the strategies of competitors will be important, but so too will tackling the reality that non-state actors such as terrorist organisations are seeking to exploit the air domain through commercial drones or missiles.

AREAS OF FOCUS

A key objective for Europe is to regain supremacy over the air domain. This means investing with greater urgency in air power-related capability shortfalls such as new generation combat aircraft, strategic airlift, helicopters and counter-A2/AD systems. It should be acknowledged that the technological sophistication of air systems is critically important, however, and Europe cannot fall for the "small is beautiful" logic because mass in the air domain is important. Without sufficient aircraft, Europe will be reduced to information-gathering missions, whereas a sizeable fleet of aircraft and enablers is required to protect Europe's airspace and interests. Here, it is worth considering that many European air forces still operate legacy systems from the Cold War era. Critically, European Air Forces must reconcile qualitative edge with quantitative depth in terms of Air Power.

In addition to fighter jets and strategic airlift, Europe continues to invest in drone capabilities. Drone technology emerges from the defence and civil sectors, and the evolution of drone technologies has given rise to new strategic applications. For example, while drones can be used for targeting or intelligence and reconnaissance there are civilian applications too such as border management, medical deliveries and modern agricultural management. Despite the huge potential of drone technologies, European governments need to invest in sovereign capabilities due to the global market proliferation of non-European drones.

It is particularly important for the EU to reduce its dependencies, and to dispose of autonomous capacity of action, in view of not relying excessively on some other actors like the United States. This goes in line with the concept of burden sharing.

Beyond air capabilities, there is a need to invest in passive defence measures such as enhancing the resilience of C2 and critical infrastructure such as logistics facilities and airbases. In particular, Europe requires an effective theatre-wide integrated air and missile defence system with modern ground-based radars, missiles and air defence and detection systems. This also implies keeping up investments in stockpiles of long-range stand-off missiles, suppression of enemy air defence systems and electronic warfare capabilities. EU-NATO cooperation is important in such circumstances. Yet perhaps the EU also has a special role in ensuring the resilience of the supply chains and raw materials that underpin the aerospace sector in Europe.

There is also a lot more Europeans can do to improve the interoperability of air systems. Many Member States are using legacy aircraft, whereas others are already investing in next-generation air systems. The risk that an interoperability gap underpinned by technology opens between European countries would be an unwelcome one. This calls for more information exchange and training between Europe's air forces, but it also implies more robust intelligence capacities in order to monitor and track airborne threats. In addition to interoperability, Europeans should consider the benefits of integrated air capabilities that bring together data and communications systems, aircrafts and space-based assets. A more integrated approach to air capability development is increasingly required given the development and maintenance costs of aircraft.

European policymakers must not neglect the importance of disruptive technologies, such as Artificial Intelligence (AI), for the air domain. AI could serve as a force multiplier by positively effecting the development of logistics, predictive maintenance, augmented battlefield mapping and surveillance. AI-enabled systems could also help European air forces anticipate and respond to air threats, especially in contested air spaces that are secured by adversarial A2/AD technologies and systems.

Finally, there is a need for European decision-makers to connect air domain initiatives with other strategic domains such as space. Outer space is an enabler for air forces, not least in the area of positioning, navigation and timing systems such as Galileo. Satellites will also enable the interconnectivity of and communication between assets such as aircraft, drones and sensors. Commercial space launches can also be seen as a risk as the air and space domains become more congested. The need to secure and protect physical space and air infrastructures is developing rapidly.