JRC 135462

European Commission

SCIENCE FOR POLICY BRIEF

Protection of Public Spaces

Countering the threat of drones

HIGHLIGHTS

- → Two JRC handbooks listing thought-through approaches for countering such threats
- → Elements for the development of a site protection strategy
- → Key actions for countering threats from uncooperative Unmanned Aircraft Systems (UAS)
- → Insights on available physical hardening measures focusing on their typology, performance and constraints
- → A robust risk assessment focused on the parameters influencing UAS-driven security incident

'As incidents involving drones have become more frequent inside and outside the EU, it is necessary to address the potential threat posed by their use for illegal, irregular or even malicious purposes.'

Two JRC handbooks list key actions for countering threats from uncooperative Unmanned Aircraft Systems

Drones are shaping the future of Europe's economy and society due to their versatility, technological advancement and decreasing purchase cost. Even though initially drones were developed to be operated within a military context, they have gained popularity both in the business and public sectors.

The overall number of drones in the European skies is set to grow significantly through their use in various activities, notably in the transport, commerce or services domain. Moreover, the sales of recreational Unmanned Aircraft Systems (UAS) has been increasing rapidly, since they constitute affordable solutions for taking aerial photographs and video footage.

Over the last years, a great number of safety and security incidents concerning drones have been reported in Europe,

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many of which are caused by actors with criminal, illegal or even terrorist intent. Common examples include the transportation of illegal goods into prisons and across country borders, monitoring police activities, cyberattacks, privacy invasion and disruption of air traffic.

The importance of responding to such threats is addressed in two new handbooks from the JRC that shed light on the elements that can facilitate countering UAS-driven threats, regardless of the intent of the pilot.

Which elements compose an efficient counter-UAS strategy?

Countermeasures are rarely effective against all UAS types and need to be adapted to each particular site layout and landscape. There are, however, common elements that may be adopted when developing the protection strategy of a site, regardless of its specific needs. In the first handbook (*Protection against Unmanned Aircraft Systems: Handbook on UAS protection of Critical Infrastructure and Public Space - A five Phase approach for C-UAS stakeholders*), a five-phase approach is demonstrated providing the key aspects for efficiently securing an area against drone threats, as follows:

Getting started: Setting the principles, goals and requirements for the Counter-UAS solution

Risk analysis: Investigating, analysing and documenting the site's UAS-driven threats and establishing a response plan

Solution design: Matching business needs with potential solution architectures

Solution implementation: Installation and testing considerations of the solution

Solution operation: Operating, maintaining and updating the solution

But, countermeasures are really expensive…

They do not necessarily need to be. Tackling the security threats posed by the use of UAS for criminal and terrorist acts is extremely challenging and a combination of different solutions may prove to be the most efficient approach.

The second JRC handbook (*Protection against Unmanned Aircraft Systems: Handbook on UAS Risk Assessment Principles for Physical Hardening of Buildings and Sites*) provides insight on available physical hardening measures focusing on their typology, performance and constraints. It explores their advantages over more sophisticated technological solutions, focusing on the fact that they are cost-efficient, multifunctional and not vulnerable to technical failures.

The handbook also illustrates a robust risk assessment that provides a comprehensive understanding of the parameters that influence the likelihood of manifestation of a UAS-driven security incident and the potential resulting consequences. Criteria are determined for reducing the amount of subjectivity to such a process, which is a prerequisite for selecting the most cost-efficient methodologies for mitigating the impact of an attack.

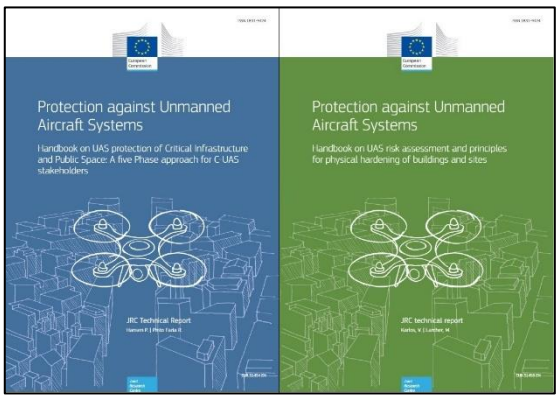
Background

The EU has already taken concrete steps to address these pressing issues by incorporating UAS security threats in various documents, such as the *Action Plan to support the protection of public spaces* in 2017 and the *Counter-Terrorism Agenda for the EU* in 2020, while several funds have been granted to research and innovation projects that examine UAS security-related issues..

The two new JRC handbooks are a key component of the European Commission's Counter-UAS package initiative, announced as a flagship action under the Communication *A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe*.

The package includes a dedicated communication in '*Countering potential threats posed by drones*' outlining the main ideas for the EU's future policy on how to address the potential threats posed by Unmanned Aircraft Systems.

Figure – JRC Handbooks on the protection against UAS



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