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OUTSMARTED & DEFUNDED: EUROPE'S COUNTER-DRONE INDUSTRY

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As the technology and capabilities of unmanned aerial vehicles (UAVs) increase, the countermeasures to protect against them have struggled to keep pace. This comes at a time when the world is witnessing a widespread use of precision strikes well beyond great powers, as more and more non-state actors including terrorist groups are employing smaller commercially available, off-the-shelf drone systems. As such, several states have recognized the importance of boosting investments in both missile and drone development as well as defensive technology necessary to defend against surveillance and attacks from these systems. Among these, are the United States and Israel which are surging ahead of the anti-drone market expected to reach 4.6 billion dollars by 2027.[i] The former's funding to counter-drone systems has risen by 99 percent since last year and the latter's drone detection system makes up over 17 percent of the country's robust UAV industry.[ii] It is against this backdrop that the European Union (EU) finds itself falling significantly behind in its counter-drone capabilities, its

shortfalls stemming from lack of integration and competition rather than collaboration between member-states. The absence of adequate and coordinated defensive capabilities is perilous for the security of the European community as an increasing number of experts are warning Western forces to anticipate a strong, layered threat to the safety of their rear areas, even when facing sub-peer opponents such as non-state actors. Furthermore, the European community's uncoordinated approach to the development of this industry has left it largely dependent on American and Israeli exports. While several EU states possess aircraft and missiles capable of countering large drones, no armed force has acquired integrated point air defense systems necessary to combat small UAVs, undetectable by conventional aerial surveillance equipment. As such, this piece will adopt a policy-based comparative approach to first provide an analysis of the current threats posed by these systems and will then assess EU counter-drone capacities against leading countries in the industry. In doing this, this work seeks to highlight the disparities that exist between them as to provide guidance on how to narrow them and improve the bloc's overall strategic defence system.

Threat of Small Drones: Rise of Non-State Actors

At present, terrorist groups are known to operate largely three distinct types of drones: "commercial drones, home-made systems of varying sophistication, and military-grade systems provided by states".[iii] The first kind is an off-the-shelf system [COTS], available online for cheap and are sometimes called "hobbyist" drones. Over the past few years, these commercial drones have transformed to become more advanced, to an extent even rivaling some smaller-scale military systems. These were previously used in the attacks carried out by the Islamic State in Syria, where the group employed modified hobbyist drones and quadcopter drones attaching to them explosives that would drop or detonate on targets.[iv] By conducting other attacks using small UAVs equipped with improvised explosive devices, the extremist group demonstrated

how COTS drones can be weaponized and turned into deadly weapons.

The second kind of drones posing an increasing danger are the "home-made" drones, which several militant groups have started to build themselves with the help of other proxies. Among these are the Houthis, whom defence experts have reported to have even succeeded at "building their own drone manufacturing industry in Yemen" with the help of Iran.[v] Tehran has provided them with the necessary equipment and technical knowledge to transform these systems into attack weapons capable of striking larger nations such as Saudi Arabia.[vi] Thus far, eight different types of Houthi-manufactured drones have been identified including combat UAVs with significant ranges and payload abilities for a DIY system.[vii] Their potential to disrupt critical infrastructure was distinctively seen during the 2019 attacks on Saudi's central oil facilities. This situation highlights how much easier it has become for hostile non-state actors to get their hands- on drones either purchased online, brought into the field by foreign fighters, or with the contribution of capable states.

Small UAVs: Harder to Combat?

Contrary to popular belief, defense experts have found that large drones [i.e. America's Predator or MQ-9 Reaper drone], are mainly effective in asymmetrical conflicts, when one country has more sophisticated military capabilities than its opponent. Whereas these larger systems can be countered by traditional anti-aircraft capacities, smaller drones cannot and are in many ways harder to combat. That is given the reduced size and lower altitude at which small UAVs fly, they are easily camouflaged among trees or buildings and their lower speed paired with their thermal, acoustic and smaller radar signatures makes them undetectable by conventional surveillance systems.[viii] It is the precise inability of standard monitoring equipment to identify small drones that has been an important driver in the rising demand for new technology to track these very systems. The extensive range of relatively low-

cost drones also offers the possibility for states to gain air power at a fraction of the cost it takes to support a conventional air force.

Industry Leaders versus Lagers

Unfortunately, there is to date no "perfect" way to neutralize hostile or unauthorized drones. Nonetheless, there exists several methods that can be combined to detect their presence and prevent them from doing harm. The most efficient ones include: the use of sensors (acoustic, electro-optical, infrared) to detect the target by either its visual, heat or sound signatures; employing radar systems; or using radio frequency sensors to identify the wireless signals controlling the drone. These different methods are best when used together as to provide a more comprehensive layered detection. Additionally, states will also often use electronic warfare such as "jamming" devices to obstruct the UAV's communication links with its operator.

What separates an advanced nation in the industry of counter-unmanned aerial systems (C-UAS) is how much importance and funding is dedicated directly to research and development (R&D) and procurement in anti-drone technologies. For 2021, the U.S. has made it a priority to increase its budget towards combating the threat of smaller drones by planning to spend a minimum of $487 million in these *specific* areas. Israel-another leading nation in anti-drone technologies- dedicates 30 percent [$4.8 billion] of its annual $15.95 billion defence budget *entirely* to R&D in the drone sector.[ix] In comparison, as part of the 2021-2027 EU budget, the European Defence Fund (EDF) proposed to allocate 1.8 billion euros per year to overall defence research.[x] Not only is this insufficient to make tangible progress, but the budget also does not distinctively address the need for C-UAS funds.

While cross-country defence projects could see an increase in numbers from these investments, the delivery of such initiatives remains uncertain. A common strength of C-UAS leading nations prioritizing the development of such platforms is to allocate

appropriate funds to this sector which allows to move from design concepts prototypes to operational platforms. In contrast, EU defence spending only represents 2.6 percent of total government expenditure which indicates that "for the majority of European countries, it appears as if defense equipment continues to be an afterthought, particularly when it comes to modern technology."[5]

EU Challenges

In 2020, the EU published its first-ever defence report assessing the planning and capability development of each member state [minus Denmark]. The conclusions drawn by the review were concerning as it judged European defence as "suffering from fragmentation, duplication and insufficient operational engagement" also adding that defence R&T spending levels "continue to be insufficient, putting the EU strategic autonomy at risk."[xi] This verdict came as anticipated by experts, many of which have been critical of the bloc's chosen priorities that they feel do not address its greatest capability gaps such as missile defence.

While it is true that the EU is faced with the obstacle of having to coordinate between 27 different national governments rather than a single one, this difficulty must not be overstated. These are primarily the unevenness of armed forces' capabilities between each member and their lack of incentives to cooperate due to intense competition and the lack of adequate funding. EU member-states have very widely differing experiences of C-UAS, as some are only beginning while others already possess the industrial foundations and expertise to produce the full spectrum of military drone capacities. These include France, Germany, Italy, and Poland which have all developed or experimented with their own anti-drone systems [largely independently]. In Italy, Leonardo remains the lead manufacturer of counter-UAV technology, amongst which is the 'Falcon Shield' system capable of accurately detecting, tracking and geo-locating small drones through the integration of sensors and effectors.[xii] Germany's state-owned company Deutsche Flugsicherung has worked in developing drone

detection systems that were tested in all large German airports this past August and showed potential. France further possesses short-range anti-drone jammers and it has also developed additional jamming technologies through Airbus Defence.

While these cases represent a good step towards consolidating national security, they also contribute to furthering overarching difficulties faced by the EU at an institutional level. At a micro level, each member-state has its own national industries and manufacturers which compete amongst them for contracts. This makes it complex to decide who gets to build what and creates a stronger sense of rivalry. Furthermore, the different branches of national armed forces [navy, air, army, etc.] also have to compete for funding from their governments. At a macro level, a certain level of friction exists between all countries which compete not only across Europe but also internationally to attract the most customers and money for their systems. All combined, these situations lead to an environment more favorable to distinctiveness rather than collaboration between member states.

Looking Ahead: Reforms & Lessons

As such, what this piece proposes is an essential reconfiguration and redistribution of EU priorities and budget spending in order to achieve concrete results. Within the European community, there needs to be more incentives presented to countries as to increase interoperability. One of the ways this can be done, is through the creation of a specific academy that could welcome and train members of all armed forces in using effectively counter-drone technologies. By increasing the number of joint exercises in this sector, a greater sense of cooperation and knowledge sharing between member-states would be encouraged. Furthermore, military coordination could be boosted through the establishment of a collective program dedicated solely to the R&D of C-UAS combining experts from all EU states. Additionally, a specific training fund for C-UAS capabilities could be administered by the EDA to participating countries of the program or the academy as

an incentive. In general, the EU presents immense potential to become a C-UAS leader, but it must seize the opportunity to become stronger not divided, but united.

In terms of solidifying national security- which remains a priority for all members-EU countries should explore the U.S. system which divides C-UAS research and training among each branch of its armed forces. For instance, the Air Defence division tests and develops its own prototypes [i.e. high-powered lasers], teaching officers how to properly use them in counter-drone missions. In the same light, both the Navy and Army also field their own operational weapons under the supervision of the Joint Counter-Small Unmanned Aircraft Systems Office (JCO) which collaborates with other authorities to evaluate defensive systems.[xiii] Thus far, the JCO has evaluated forty and selected 10 C-UAS systems as well as one standardized command-control platform for further testing.[xiv] This could be a promising route to explore for EU states as both a stepping-stone into developing the European industry and bettering their own organizational skills.

Last but not least there is important work to be done on developing common standards and coherent pan-European regulatory framework around counter-drone technology to address the practical and legal challenges of deploying such systems to protect critical infrastructures. Although the EU has had a late start to the game both in terms of C-UAS suppliers, sitting behind the U.S. and Israel, and adopters related to slow demand for such technologies, the industry situation and interest of end-users are picking up.

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