

Concept Note

Future of Military Unmanned Systems in India

Unmanned Systems for use on Land, Air and Sea, including surface and sub-surface systems are being extensively researched and deployed for various applications across the world. Their potential military applications in reconnaissance, combat, law enforcement, communication and logistics are simultaneously finding great traction as the technology develops.

The field of Unmanned Ground Vehicles (UGVs) for Land use has seen substantial development in the past decade with significant research and development in both civil and defence sectors. In the defence sector, UGVs are being developed to carry out multiple missions like reconnaissance, detection of threats, combat operations, acquisition of targets, delivery of supplies and medication in remote areas, mine clearance and rescue operations. The research on Unmanned Surface Vehicles (USV), Remotely Operated Vehicles (ROV), and Autonomous Underwater Vehicles (AUV) of maritime unmanned systems (MUS) has also gained momentum with Navies across the world trying to augment their capabilities by deploying unmanned systems in seas.

The Unmanned Aircraft Systems (UAS), commonly denoted as Unmanned Aerial Vehicle (UAV), Remotely Piloted Aircraft (RPA) and Drones are the niche sectors that have gained the greatest importance in both civil and military uses. Though the research and development on Unmanned systems for Land and Maritime use (above and below water surface) is gaining popularity across the globe, the present thrust is primarily on aerial use of Drones like Advanced Air Mobility, Urban Air Mobility, Transportation and Logistics, formulation of next-generation Unmanned Traffic Management (UTM) and enabling regulations for managing the ever-increasing air traffic for both manned and unmanned aircraft.

The ongoing global technological advancements in artificial intelligence, machine learning, big data analysis and mining, solar energy, advanced battery developments, nano technology and robotics are some areas that need to be looked at while dealing with the Unmanned Systems sector. In addition, there are communication and networking issues with unmanned systems that significantly affect system performance in achieving full autonomy. Intelligent and autonomous designs for unmanned systems are required to be operated not only during operations but also during peacetime and therefore, there is an inescapable need of framing policy regulations and doctrines for optimal use of these unmanned systems.

The Government of India is promoting the 'Make in India' initiative in an effort to promote self-reliance in the defence sector through Indigenous Design, Development and Manufacture thereby reducing dependence on foreign military imports. While the government is focusing on creating a robust defence ecosystem, all three Services are planning to exploit unmanned systems as Force Multipliers, which is evident from various capital and emergency procurements underway. Considering the evolving technological disruptions and challenges the world is facing, futuristic Defence Unmanned Ground Vehicles (UGV), Maritime Unmanned Systems (MUS) and Unmanned Aircraft Systems (UAS) along with Counter-UAS and Swarm Drones are the areas to be researched upon with focus on 'Make in India' and the government policies.

Keeping these issues into consideration, the *Journal of Defence Studies*, a peer-reviewed journal of the Manohar Parrikar Institute of Defence Studies and Analyses (MP-IDSA), intends to bring out a special issue on “**Future of Military Unmanned Systems in India**”. To this end, articles are being sought dealing with all aspects of UGVs, MUS, UAS, Counter-UAS and Swarm Drones. The articles can incorporate any analysis with respect to Indian context on Defence Unmanned systems use on Land, Sea (on and underwater) and in Air, mitigation of technological challenges, Defence Industry Capability and capacity of Unmanned systems, policies of the Government of India, etc.