



LIBERALIZED DRONE POLICY CALLS FOR STRICT AIR SPACE MANAGEMENT MECHANISM

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Moving ahead in consonance with the agenda of Atmanirbhar Bharat, there has been a sudden spark in the drone industry and demand from all corners for providing an institutionalized mechanism for the ease of doing business through drones or Unmanned Aircraft System (UAS). Drones tender tremendous benefits to nearly all sectors of frugality. These include surveillance, geo-spatial mapping, infrastructure, mining, agriculture, transportation emergency response, defence, and law enforcement. Drone systems have become important employment and economic growth generators due to their reach, versatility, and ease of use, especially in India's far-flung and unreachable areas. India has a very high potential of becoming a global drone nucleus by 2030 due to its conventional effectiveness in the invention, information technology, economic engineering, and its huge domestic requirement.¹

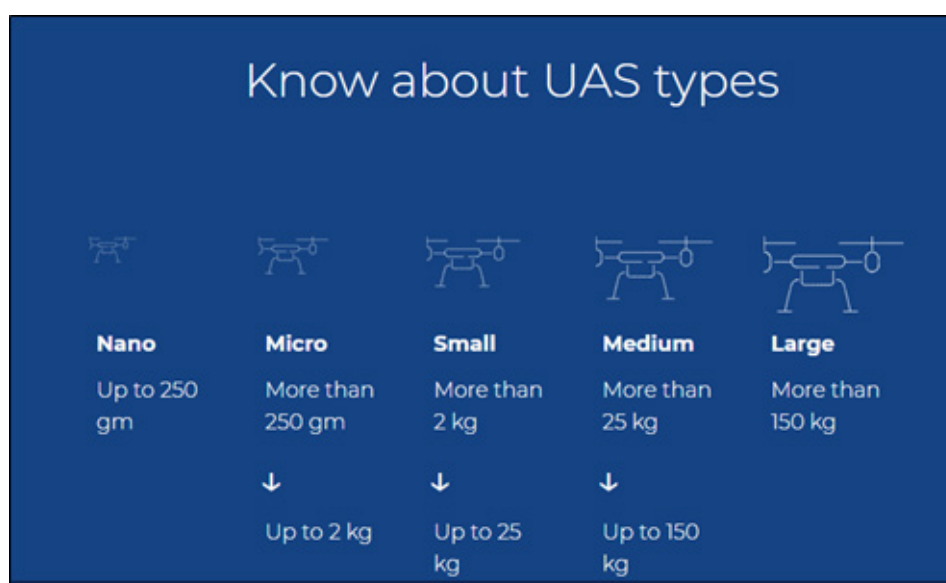
The CAR 1.0 issued by DGCA in 2018 introduced various categories of drones based on their size and all-up weight. These drones fit into commercial usages, whereas the military drones or Remotely Piloted Aircraft (RPA) are relatively larger and heavier in weight.

Civil Aviation Requirement 1.0 (CAR 2018)

Interestingly, the Ministry of Civil Aviation has consistently worked for almost five years to review and regulate drone operations to make a world-leading drone ecosystem. Drones are easily accessible to the common public and organizations due to its low cost of production and procurement. However, until 2018, India did not have any civil or commercial drone regulations in the country. Therefore, it was critical to develop universal standardised drone regulations that would permit the commercial application of various

drone technologies. Keeping India's security environment as mandated precautions, the Directorate General of Civil Aviation (DGCA) and Ministry of Civil Aviation (MoCA) came out with a Civil Aviation Requirement (CAR) for the operations of Drones in the country in 2018. The foremost task for the MoCA was to define the 'What' and 'Who' of drones in view of the technological rapidity in the drone industry. The CAR 1.0 issued by DGCA in 2018 introduced various categories of drones based on their size and all-up weight. These drones fit into commercial usages, whereas the military drones or Remotely Piloted Aircraft (RPA) are relatively larger and heavier in weight (Figure 1).

Figure 1: Types of Unmanned Aircraft System (UAS)



Source: Directorate General of Civil Aviation, Government of India²

Digital Sky Application Platform (Digisky)

Forecasting the involvement of innumerable stakeholders and operators throughout the country required to do away with the manual mechanism of filing the flight plan for drone operations. It was almost impossible to have a manual tool to file the drone movement with the nearest Air Traffic Control (ATC), obtain security clearances from DGCA and Air Defence Identification Agency (ADIA), and finally execute the drone operations in the intended area. Therefore, the NDA-I government brought an application-based all-digital process software Digital Sky Platform "Digisky" as a single point facilitating registration, licensing, and approval of drone operations in the country. It also facilitated the process of filing and authorization to undertake drone operations from this application. Furthermore, it has brought out a revolution in the unmanned traffic management (UTM) platform that implements "no permission, no takeoff" (NPNT). To avert unauthorised flights, any drone would not be digitally permitted to takeoff

through Digisky to ensure public safety and prevent unauthorised flights in the approved drone zones. The UTM system has been entrusted with guaranteeing all drones remain on the approved flight paths. It acts as a traffic controller in the drone airspace, which would simultaneously coordinate with the civil and military ATCs.³ It is expected that the single window digital sky platform will be fully operational by 26 January 2022⁴ fully aligned with the Drone Rules 2021.

Covid 19 pandemic has given an Opportunity in Crisis “Aapada mein Avsar” making us realise the increasing significance and necessity of drones in our lives and their usage in various sectors.

Operating Requirements and Restrictions

This CAR 1.0 laid a condition that all RPAs except Nano category drones will have to be mandatorily registered on Digisky to obtain a Unique Identification Number (UIN). The RPAs operated, and those owned by NTRO, ARC, and the central intelligence agencies were kept out of this mandate. It allowed the commercial drones to operate within visual line of sight (VLoS), during daytime only, and up to maximum 400ft. altitude. It was necessary to obtain Air Defence Clearance (ADC)/Flight Information Centre (FIC) number from ADIA/FIC for flying in controlled airspace. Geographical areas were earmarked as different colour zones, namely Red Zone (flying not permitted), Yellow Zone (controlled airspace- where permission required before flying) and Green Zone (uncontrolled airspace- where automatic permission is granted) for smooth conduct of drone operations. The regulation also defined “No Drone Zones” around the airport, near the international border, Vijay Chowk in Delhi; State Secretariat Complex in State Capitals, strategic locations/vital and military installations etc. To ensure the security regulations are maintained, the mandatory equipment required for the operation of RPAs except nano category included the capability of having Onboard GPS, Anti Collision light, Return to Home (RTH), Flight controller with flight data logging capability, Identification plate, and No-Permission No Take off (NPNT).⁵

Drone Rules 2021

Unlike CAR 1.0 rolled out in 2018, has set the ground rules firm for the UAS quite succinctly. However, the drone industry could not take off till 2019. The Covid 19 pandemic has given an Opportunity in Crisis “Aapada mein Avsar” making us realise the increasing significance and necessity of drones in our lives and their usage in various sectors.⁶ Ankit Mehta, co-founder of Idea Forge, who started working on drones back in 2004 says that “Essentially, drones moved from being a ‘good-to-have to a ‘must-have’ technology,” In April-May 2020, drones

were used to sanitise localities, make announcements, and continuously monitor areas to ensure that lockdowns were being properly enforced.

The Ministry of Civil Aviation (MoCA) published the UAS Rules 2021 in the NDA-II government on 21 Mar 2021. It was then thrown open to the environment, including industries, academia, startups

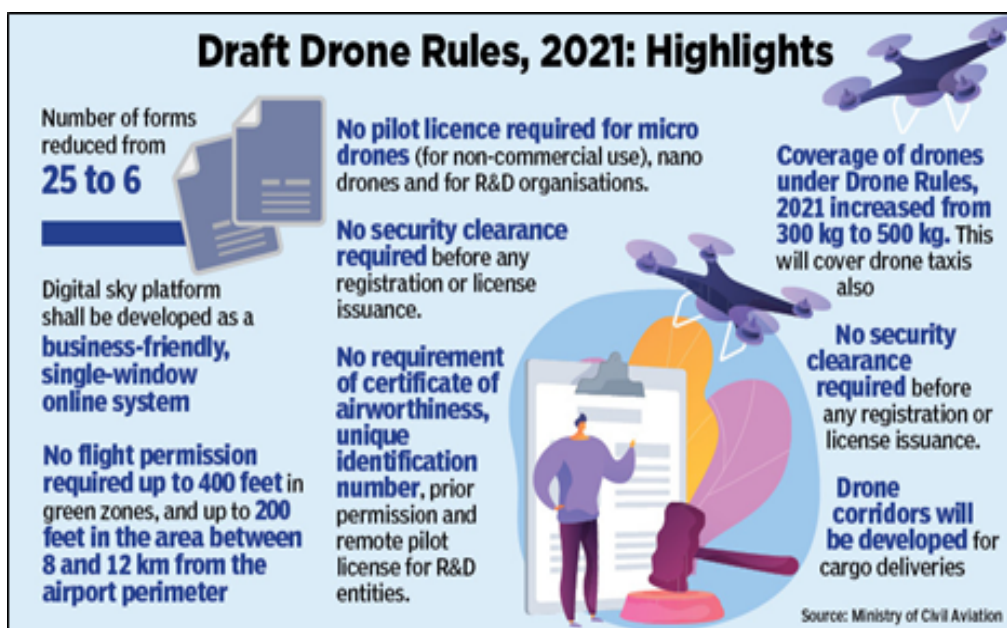
The Drone Rules 2021 is notably a set of liberalised rules aimed at drawing the drone industry to the fore resulting in the shining Atmanirbhar concept.

and entrepreneurs, for public consultation. The government took the decision to revoke the UAS Rules 2021 and replace it with the liberalised Drone Rules 2021 after obtaining feedback from the environment through a gazette notification. New Rules is primarily based on trust, self-certification, and non-intrusive monitoring, which is expected to simplify drone operations for civilian drone operators.⁷

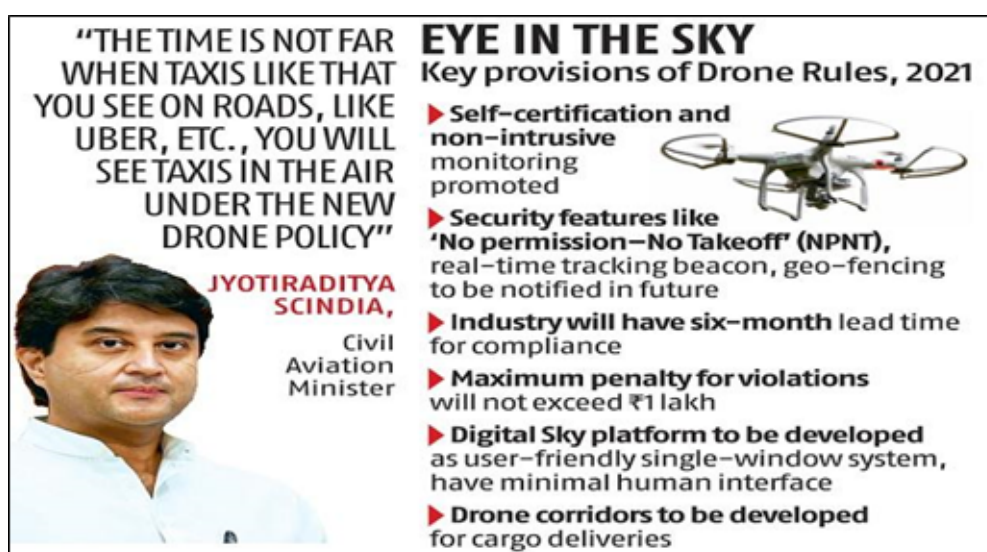
Prime Minister Narendra Modi stated in a tweet, “The new Drone Rules usher in a landmark moment for this sector in India. The rules are based on the premise of trust and self-certification. Approvals, compliance requirements and entry barriers have been significantly reduced,” He added, “The new Drone Rules will tremendously help startups and our youth working in this sector. It will open up new possibilities for innovation & business. It will help leverage India’s strengths in innovation, technology & engineering to make India a drone hub.”⁸

Highlights of Liberalised Drone Rules 2021

India’s The Drone Rules 2021 is notably a set of liberalised rules aimed at drawing the drone industry to the fore resulting in the shining Atmanirbhar concept. Simultaneously, it will also enable the faster and easier accessibility of technological comfort to the commoner initially in urban areas and later expand it to the country’s rural world. The conditions, penalties, procedures etc. have been kept very minimal and liberal to make it a massive success in a short period possibly. Liberalisation in the norms mainly targets the futuristic and bold idea of ‘Drone corridor’ in the country. The notable highlights can be easily summed up in Figure 2 and 3.

Figure 2: Key Highlights of Drone Rules 2021

Source: Forbes India, 13 September 2021⁹

Figure 3: Additional Provisions of Drone Rules 2021

Source: Business Standard, 27 August 2021¹⁰

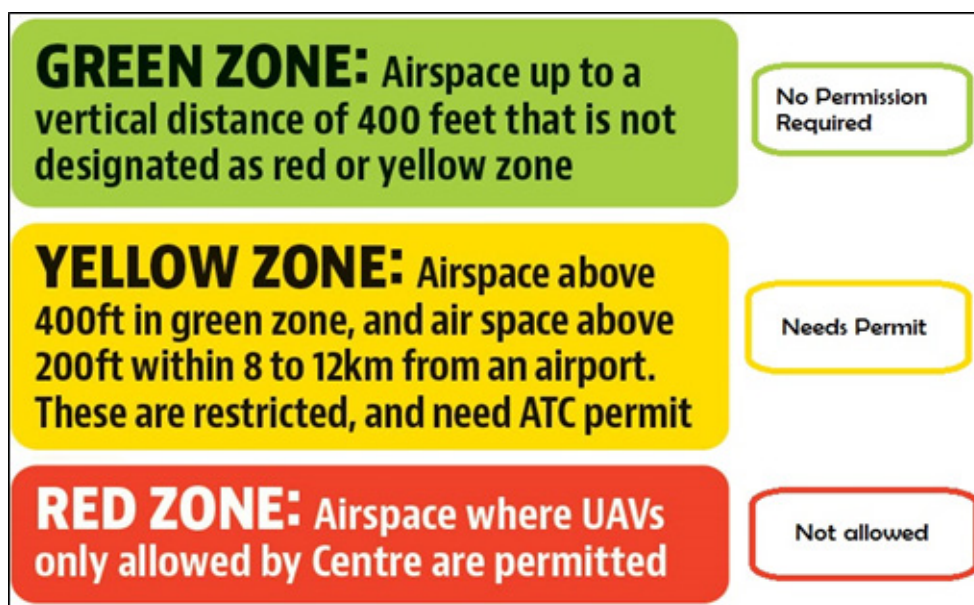
Drone Air Space Map 2021

France's The launch of Drone Rules 2021 necessitated the requirement of categorically defining the earmarked areas for drone operations. MoCA released an interactive drone airspace map on 25 September 2021, demarcating yellow and red zones across India (Figure 4). Necessary clearance from the concerned air traffic control authority is required to operate drone in the designated yellow zones. The red zone is the 'No Drone Zone' within which the Centre's permission is needed for operating drones. There is no permission required to operate drones in the green zone up to 400 feet.¹¹ Drone operations in the

yellow zone need permission from the concerned air traffic control authority – AAI, IAF, Navy, HAL, etc. It has also been reduced from 45 km earlier to 12 km from the airport perimeter.¹² Anyone planning to operate a drone is required to be updated from the airspace map for any amendments in zone boundaries. The interactive drone airspace map is freely and easily accessible to all without any login requirements on the digital sky platform.

While liberalisation has helped vendors and operators tremendously, the execution of drone operations in the skies remains a big challenge for Air Defence Agencies pan India.

Figure 4: Additional Provisions of Drone Rules 2021



Source: Vision Tutorials¹³

National Unmanned Aircraft System Traffic Management (UTM)

Drone rules 2021 can be categorised into two broad themes: Registration of Operators and Methods of Operations, apart from Production Linked Incentives (PLI) targeted at the investments by the startups. Within the target of 60 days of the launch of Drone Rules 2021, MoCA notified the “National Unmanned Aircraft System Traffic Management (UTM) Policy Framework” on 24 October 2021. The policy Framework categorically enunciates the responsibility of UTM stakeholders for the entire process of policy formulation to drone operations. The UTM stakeholders include the Central government, the Directorate General of Civil Aviation (DGCA), Bureau of Civil Aviation Security (BCAS), Airspace Management Agencies, ATC Authority and Air Defence Authority. While liberalisation has helped vendors and operators tremendously, the execution of drone operations in the skies remains a big challenge for Air Defence Agencies pan India.

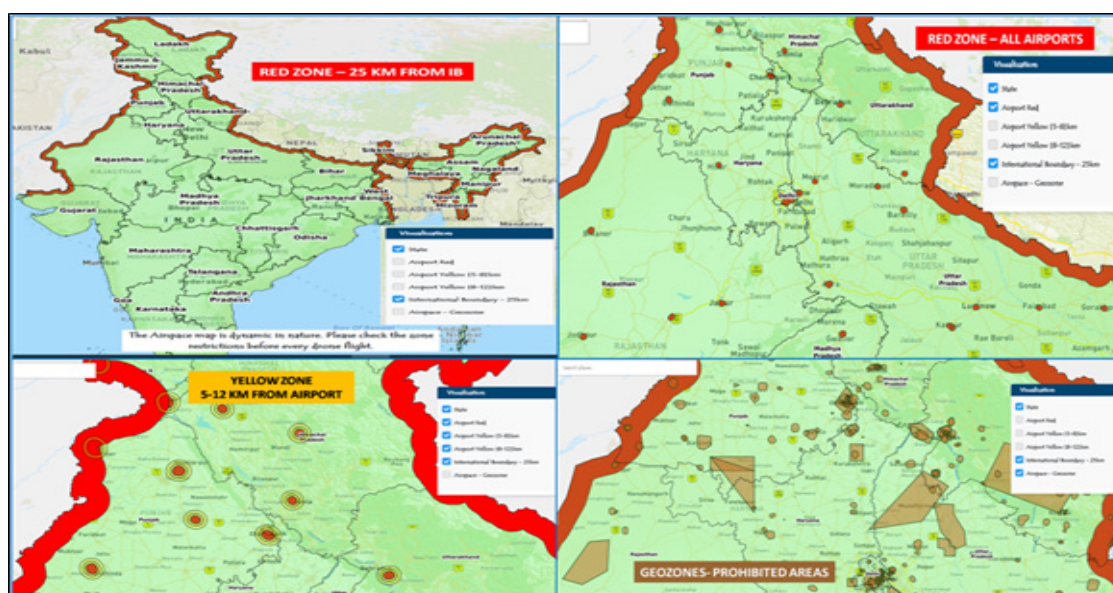
Challenges for Air Defence Agencies

The Union War Book of India entrusts the responsibility of safeguarding the skies to the Indian Air Force. The ADIA of the Indian Air Force (IAF) is responsible for monitoring the operations of all manned and unmanned aircraft in the national airspace. The Air Defence Authorities shall provide Air Defence Clearance (ADC) for unmanned aircraft operations in the yellow zone through the Digital Sky platform. In the airport red zone, such Air Defence Clearance will be provided after the drone operator obtains necessary permissions from the MoCA.¹⁴ However, the air space management mechanism, by and large, remains the same as it has been for decades. The nationwide capability of real-time identification and monitoring its flight path is an arduous task for the ADIAs with the kind of availability of infrastructure in terms of sensors, communications, and the enmeshed network-centric environment with all concerned agencies.

Real-Time Identification and Tracking

The UTM policy framework defines in Para 6.0 that the “Real-time Identification and Tracking (RIT) of the unmanned aircraft would enable sharing of the identity of the UAS and its location to other airspace owners and people on the ground. It would provide stakeholders situational awareness and allow law enforcement and security agencies to track unmanned aircraft, where required.”¹⁵ However, it is essential to be aware that identifying and tracking an unmanned aircraft flying in the Indian airspace while enabling high-density, complex unmanned aircraft operations is a critical requirement to ensure foolproof identification of all drones operating in the Indian airspace (Figure 5).

Figure 5: The Complexity of Air Space Zones



Source: Directorate General of Civil Aviation, Government of India¹⁶

The Complexity of Air Space Management Mechanism

Technology is a double-edged sword that poses a growing threat to security as much as systems like drones are helping us to build a better world.¹⁷ The apparent routine technology brings a thin line between impervious and menace. For example, a drone system may be widely useful until its remote control gets in the hands of rogue elements with serious objectives to create chaos. Of late, such tools have become more of weaponry for Anti national elements (ANE).

According to government figures, 167 and 77 drone sightings were recorded along the border with Pakistan in 2019 and 2020 respectively.

Air space management in wartime has got a connotation of decision-making between attrition on enemy and fratricide. However, this decision making goes to a different level of dilemma in peacetime where ADIA has to choose between friendly and other unhostile aircraft which has gone rogue. The entire airspace is occupied with thousands of flying machines of various kinds, fighters, jets, fixed-wing, rotary, manned and unmanned at any point in time. Each of such machines has a distinct route, level, speed and purpose. There are also innumerable restrictions in the usage of airspace for numerous flying machines. The no flying zones are categorised as restricted and prohibited airspace. The flexible use of airspace has added a restriction to be followed meticulously by all the users and ADIAs to keep a watch on it. The airspace is getting unprecedentedly crowded every day. The Air Defence operators have to remain vigilant glued to the radar scope 24x7x365 to safeguard the skies. All such efforts are manual, and basic automation is far ahead despite the technological revolution in military affairs. Now the liberalisation of Drone Rules has further aggravated the pressure on the operators to remain vigilant at all times.

Need for Stricter Rules and Regulations

The ANEs have used drones for sub conventional activities, including drop of explosive devices. The recent case of triggering blasts inside the technical area of Air Force Station Jammu is an eye-opener for the ones advocating the liberalization of Drone without changing the existing paraphernalia of detection and destruction mechanism. Over the past two years, Pakistan-based outfits have deployed drones regularly to drugs, arms and ammunition into Indian territory. According to government figures, 167 and 77 drone sightings were recorded along the border with Pakistan in 2019 and 2020 respectively.¹⁸ Due to the fast developing drone technology and the exponential growth of its global market in recent years, even the safest cities cannot be fully prevented with the possibility of drone attacks. As a result, easy accessibility of drones is becoming necessary evil for

security threats, especially in conflict zones where ANEs are active.¹⁹

The recent Jammu drone attack is a glaring example of lack of infrastructure, including sensors for surveillance and identification, communication links for alerting various agencies and anti-drone capability for initiative timely punitive action. Hence, the possibility of stealth drones transmitting sensitive data to potential adversaries will persist until high-resolution radar systems are set up to detect such rogue drones. At the same time, the liberalisation of drone rules is a definite step towards the Atmanirbhar Bharat and matching pace with the technology to keep abreast with the world. But this fact cannot be denied that along with the promulgation of such rules, there is a requirement to strengthen the country's Air Defence infrastructure, justifying the spirit of the Union War Book in its entirety.

Notes:

¹ "Ministry of Civil Aviation releases India's airspace map for drone operations," Press Information Bureau, Government of India, 24 September 2021, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1757850>. Accessed on 31 October 2021.

² Directorate General of Civil Aviation website home page, <https://digitalsky.dgca.gov.in/home>. Accessed on 31 October 2021.

³ "Government announces Regulations for Drones," Press Information Bureau, Government of India, 27 August, 2018, <https://pib.gov.in/newsite/Printrelease.aspx?relid=183093>. Accessed on 31 October 2021.

⁴ "National Unmanned Aircraft System Traffic Management (UTM) Policy Framework," Ministry of Civil Aviation, 24 October 2021, https://www.civilaviation.gov.in/sites/default/files/National-UTM-Policy-Framework-2021_24_Oct_2021.pdf. Accessed on 01 November 2021.

⁵ Press Information Bureau, n. 3.

⁶ Naini Thaker, "Drone Rules, 2021: What it means for India's drone technology sector," *Forbes India*, 13 September 2021, <https://www.forbesindia.com/article/take-one-big-story-of-the-day/drone-rules-2021-what-it-means-for-indias-drone-technology-sector/70363/1>. Accessed on 31 October 2021.

⁷ "Ministry of Civil Aviation notifies liberalised Drone Rules, 2021," Press Information Bureau, Government of India, 26 August 2021, <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1749154>. Accessed on 31 October 2021.

⁸ Tweet by Prime Minister Narendra Modi on 26 August 2021, https://twitter.com/narendramodi/status/1430795863333359617?t=a_GD3bk1SH9jpK3l6fV3hw&s=08. Accessed on 31 October 2021.

⁹ Thaker, n. 6.

¹⁰ Neha Alawadhi, Arindam Majumder, "Cleared for take-off: New rules kick in for operating drones in India," *Business Standard*, 27 August 2021, https://www.business-standard.com/article/economy-policy/cleared-for-take-off-new-rules-kick-in-for-operating-drones-in-india-121082601325_1.html. Accessed on 31 October 2021.

- ¹¹ Kiran Khatri, “Interactive airspace map demarcating zones for drone operations in India released,” InShorts, 25 September 2021, <https://inshorts.com/en/news/digital-airspace-map-demarcating-zones-for-drone-operations-in-india-released-1632543651759>. Accessed on 31 October 2021.
- ¹² “Ministry of Civil Aviation releases India’s airspace map for drone operations,” Press Information Bureau, Government of India, 24 September 2021, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1757850>. Accessed on 31 October 2021.
- ¹³ “Drone Rules,” Vision Tutorials, <https://www.visionias.net/2021/08/drone-rules-2021.html>. Accessed on 1 November 2021.
- ¹⁴ “National Unmanned Aircraft System Traffic Management (UTM) Policy Framework,” Ministry of Civil Aviation, Government of India, 24 October 2021, https://www.civilaviation.gov.in/sites/default/files/National-UTM-Policy-Framework-2021_24_Oct_2021.pdf. Accessed on 1 November 2021.
- ¹⁵ Ibid.
- ¹⁶ Digisky Website, <https://digitalsky.dgca.gov.in/airspace-map/#/app>. Accessed on 31 October 2021.
- ¹⁷ Bushra Tungekar, “Are Drones a Threat to National Security? Are the Drone Laws in India Strong Enough?,” IP Leaders Blog, 28 July 2021, <https://blog.ipleaders.in/are-drones-a-threat-to-national-security-are-the-drone-laws-in-india-strong-enough/>. Accessed on 31 October 2021.
- ¹⁸ Col Anil Bhat, “India needs to become Drone-Conscious to Counter Aerial Cross-Border Threats,” *Indian Defence Review*, 7 August 2021, <http://www.indiandefencereview.com/news/india-needs-to-become-drone-conscious-to-counter-aerial-cross-border-threats/>. Accessed on 31 October 2021.
- ¹⁹ Ibid.



Centre for Air Power Studies

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