



AAS REGINA LEGAL

The Droning Effect: Landscaping the Future

A PRIMER ON LEGAL STRUCTURE CURRENTLY GOVERNING DRONE
TECHNOLOGY IN INDIA

JUNE 2020



“Drones overall will be more impactful than I think people recognize, in positive ways to help society”

-BILL GATES

INTRODUCTION

Drones in simple term means an unmanned aircraft i.e. an aircraft without any human pilot on board. There are many subsets of drones such as Remotely Piloted Aircrafts (the “RPAs”), Unmanned Aircraft Vehicles (the “UAVs”).

International bodies like International Civil and Aviation Organisation (the “ICAO”) dealing with responsibility of codification and regulation of airways has identified drones as Unmanned Aerial System (the “UAS”) or Remotely Piloted Aircraft System (the “RPAS”). UAS includes not only an unmanned aircraft but also ancillary things like control systems on the ground, control data things and other support equipment.

The usage of drones can either be for military purposes or for commercial and/or recreational purposes. Earlier, Indian companies focused predominantly in providing RPAS to military, para-military and government agencies. In India, the commercial usage of drones came into public knowledge only in 2014 when a Mumbai based Pizza store used drones to deliver pizza before that Mumbai police had used drone only for crowd surveillance. This incident persuaded the governmental agencies to formulate guidelines for the commercial usage of drones by civilians.¹ Till the guidelines and regulations are in place, Directorate General of Civil Aviation (the “DGCA”) vide its October, 2014 order banned the use of RPAS by civilians as there is a threat of terrorists attack using drones, collision with manned aircrafts, threat to privacy *et al.*²

This paper will briefly discuss the regulatory guidelines and policies applicable on commercial usage of drones in India. It will also analyse the regulatory framework applicable on commercial usage of drones in other jurisdictions across the globe. At the end, there will be a conclusion which will

¹ <https://mumbaimirror.indiatimes.com/mumbai/other/Police-ban-Drones-from-city-skies/articleshow/41661016.cms?>

² <http://capsindia.org/files/documents/26bc9a02-04d4-4c26-b8da-decb34739113.pdf>



discuss the gaps and lacunas which should be answered for bringing in place robust guidelines and framework for commercial usage of drones in India balancing the interests of all the stakeholders.

MERCANTILE POTENTIAL OF DRONES TECHNOLOGY

Drones i.e. UAS are unmanned aircrafts without human pilot on board. The technology has been used mostly by government or PSUs. UAS's ability to reduce the cost of compliance and that of technology while intensifying the accuracy and quality of information that it gathers has been the key factors behind its increase in popularity not only in India but around the globe.

The increasing bandwidth of UAS industry in India is estimated to grow by US\$ 885.7 million and globally by US\$ 21.47 billion by 2021³. Earlier the nature of usage of drone technology was primarily for military activities including but not limited to surveillance of territories or reconnaissance to locate enemy positions and troop movements. Drones technology which started as a technology to help military strengthen their borders and help combat in war, has now achieved wide growth in commercial sector as compared to military sector. Japan became the first country to use drones commercially for helping civilians in late 1990s for spraying pesticides. Since then, the drone technology has been used for various activities such as:

1. **Agriculture-** Drones are used by farmers for monitoring crop conditions and spraying pesticides in US, China and Japan. The reason for the same being large field size, enhanced cost of labour and the amount of payload it can carry. With the use of sophisticated technology, drones can sense the amount of pesticide the crop requires depending upon the size of the field thereby increasing the yield.

In India, the usage of drones is by the government bodies or PSUs because of lack of regulations and requisite ecosystem which governs the usage of drones by civilians. Maharashtra government

³ <https://www.investindia.gov.in/team-india-blogs/growing-market-drone-technologies-india>



used drones in Marathwada region for accessing loss of crops due to deficit rainfall. Drone technology can be of great advantage in agriculture. Because of the sophisticated technology and the smart machine, drones can react faster to threats (weeds, pests and fungi), optimise inputs by using requisite amount of water, fertilizer and seeds in order to improve the yield.⁴

2. Construction Industry- Construction Industry plays a pivotal role in India's growth. It is one of the major employment generating sector. The industry is facing decline in its productivity since last few years. One reason of such sudden decline is the industry being dependent on man-power rather than technology for monitoring construction sites and collecting data.

Drones have come up to be of great usage when it comes to monitoring construction sites and collecting data. Though usage of drones cannot replace labours required for construction yet it plays a major role in construction industry. Some of the key usage of drones in industry are stated as below:

- Mapping of construction site used to be quite tedious and heavy on the pockets as labours were required in large numbers. With the usage of drones it has become easier. Drones can easily cover any area of the site and give all the information regarding the construction site along with footage in real time with accuracy.
- Construction site needs to be regularly checked and inspected to prevent damage to the site leading to major accident. The inspection is risky and labourers are having exposure to such risks. Drones can reduce the risk to as low as nil. With drones, there can be real time inspection of the construction site and the image of such inspection can be relayed directly to the ground control system so that construction companies have a look at it and take actions if required⁵.

3. Imaging- Drones were used earlier in parties like marriage function etc. for taking pictures and videos etc. This was the only commercial operation of drones. This has changed and the drones have been widely used for filming movies, weddings and other functions.

⁴ <https://factordaily.com/drones-for-precision-agriculture-in-india/>

⁵ <https://www.geospatialworld.net/blogs/using-drones-in-the-construction-industry/>



4. **Delivery-** Delivery through drones is the avant-garde. Companies like Amazon are establishing their drone's fleet for delivering products. The usage of drones for delivery seems to be very lucrative because it is in very nascent stage. Delivery through drones is subject to regulatory restrictions like operation within VLOS, during daytime etc. restricts the movement of drones for delivery.

DRONES REGULATION IN INDIA

A. CURRENT SCENARIO

Drones in India are used mostly by government and defence agencies. The commercial usage of drones by individuals caught eyes when Pizza store in Mumbai used drones to deliver Pizza in May, 2014. Back then in 2014, DGCA (a regulatory body of India dealing civil aviation) was of the view that UAS has the huge potential commercially. Due to lack of regulations, operating guidelines and uncertainty of technologies and the risk it possess, DGCA banned the usage of drones by individuals, organisations or any non-government agency⁶ till it formulates the regulations and operating guidelines governing the usage of drones.

DGCA pursuant to the circular dated August 27, 2018⁷ introduced Civil Aviation Requirements (the “CAR 1.0”) for Operation of Civil RPA allowing civil usage of drones thereby ending the long-term ambiguity. CAR 1.0 was introduced under the provisions of Rule 15A and 133A of the Aircraft Rules, 1937 which laid down the operational requirements for civil usage of RPAs, obtaining Unique Identification Number (the “UIN”) and Unmanned Aircraft Operator Permit (the “UAOP”). The regulations also classified drones based on their size. The regulations were in force from 1st December, 2018.

B. FUNDAMENTAL ASPECTS OF CAR 1.0

I. Categorization of Drones

⁶ <https://dgca.gov.in/digigov-portal/?page=publicNoticePDF>

⁷ <https://pib.gov.in/newsite/PrintRelease.aspx?relid=183093>



CAR 1.0 has categorized drones on the basis of maximum All-Up-Weight. All-Up-Weight includes not only the weight of the drones but also the amount of fuel it carries and the amount of pay-load it carries. All-Up-Weight is the key determinant to be considered both by the operator and the owner who are looking for applying for operating drones. Classification of drones on the basis of maximum All-Up-Weights is as follows:

- Nano- Having weight less than or equal to 250 grams
- Micro- Having weight greater than 250 grams and less than or equal to 2 kg
- Small- Having weight greater than 2 kg and less than or equal to 25 kg
- Medium- Having weight greater than 25 kg and less than or equal to 150 kg
- Large- Having weight greater than 150 kg

Categorization on the basis of All-Up-Weight is also necessary as the regulations have granted some exemptions to drones on the basis of the weight such as nano and micro drones.

II. Import of Drones

Directorate General of Foreign Trade (the “DGFT”) vide its order dated 27th July, 2016 restricted import of drones in India without taking clearances first from DGCA followed by import license from DGFT⁸. DGCA through CAR 1.0 allowed drones to be imported in India subject to certain regulatory restrictions.

Entities planning to import drones in India are required to obtain Equipment Type Approval (the “ETA”) from WPC Wing, Department of Telecommunications (the “DoT”) for operating in de-licensed frequency bands. De-licensed frequency bands is defined as low frequency bands facilitating communications between connected vehicles in automotive industry. Entities after obtaining ETA has to then apply to DGCA for import clearance (through Digital Sky Platform (the “Platform”)) with the details such as the mode of acquisition (i.e. by lease or outright purchase), maximum All-Up-Weight, maximum height attainable along with other details as mentioned in Annexure 1A of CAR 1.0. The concerned officers of DGCA will look

⁸ https://dgft.gov.in/sites/default/files/Notification_No.16_%28English%29_0.pdf



into the applications and they can either grant the clearance or reject the same giving suitable justifications. Once the clearance is granted by DGCA, an applicant can move to DGFT for import license. Nano category drones are exempted from obtaining import clearance from DGCA.

After the applicant has received clearance and license from DGCA and DGFT respectively, the applicant shall apply for Unique Identification Number (the “UIN”) and Unmanned Aircraft Operator Permit (the “UAOP”) respectively.

III. Purchasing Drones manufactured in India

Drones manufactured in India require ETA from WPC Wing, DoT for operating in de-licensed frequency bands. Import clearance from DGCA and license from DGFT is not required for drones manufactured in India. Domestically manufactured drones have to apply for DIN and UAOP for operating drones.

As per the current norms government has allowed civil usage of drones with effect from 1st December, 2018 however such usage is subject to the fulfilment of the conditions dealt in detail with in this Primer. So, now drones can be used not only for defence purposes but also by civilians for commercial purpose. UAVs have been recognized under list of defence items requiring Industrial License⁹. There is no demarcation between drones used for commercial nature and defence purposes. This has led to ambiguity as to whether domestically manufactured drones for commercial usage require industrial license.

IV. Eligibility for UIN

Drones except nano category drones flying up to 50 feet above ground level (the “AGL”) in uncontrolled airspace/ enclosed property for recreational/ commercial and R&D purposes and the ones owned or operated by National Technical Research Organization (the “NTRO”), Aviation Research Centre (the “ARC”) and Central Intelligence Agencies (the “CIAs”) are required to obtain UIN from DGCA.

In order to obtain UIN, drones must be wholly owned by:

⁹ <https://pib.gov.in/newsite/PrintRelease.aspx?relid=187164>



1. A citizen of India; or
2. A central government or any state government or any company or corporation owned or controlled by either of the said governments; or
3. A company or body corporate provided that-
 - a. It is registered and has principle place of business with-in India
 - b. Its Chairman and at least two-thirds of its directors are citizens of India, and
 - c. Its substantial ownership and effective control is vested in Indian Nationals;

OR

4. A company or corporation registered elsewhere than in India, provided that such company or corporation has leased the RPAS to any organization mentioned in 2 and 3 above.

As per CAR 1.0, foreign nationals, foreign company or foreign subsidiaries companies cannot apply for UIN for owning the drones as it is absolutely prohibited. This is a setback for foreign drone players entering into Indian market as their Indian subsidiaries cannot own drones because of the limitations stated in CAR 1.0. This is also dis-advantageous for foreign investors investing in Indian drone market.

CAR 1.0 has listed documents that has to be submitted along with the prescribed UIN application. DGCA has listed documents in three categories such as general, equipment related and approvals or clearances. Under general category documents, the owner/ lessee is required to provide their contact details along with valid CIN (in case of a company), GSTIN and/ or PAN Card. The owner/ lessee is also required to provide purpose and base of operation.

Owner applying for UIN is also required to provide equipment related documents such as specification of RPAS, weight of compatible payload and the maximum load carrying capacity of the RPA. Apart from the documents mentioned above, owners are also required to obtain ETA from WPC Wing, DoT and Security Clearance from Ministry from Home Affairs (the “MHA”), in case the owner is an individual or company incorporated in India.



Indian citizens can either take security clearance from MHA or they can provide self-attested copies of at least 2 out of 3 valid identity proofs viz. passport, driving license or Aadhar Card. If the drones owned by government bodies, companies or any drones leased to Indian companies employs any foreign remote pilot for operating drones, in such a case DGCA has to forward documents for security clearance to security agencies in accordance with procedures laid down for Foreign Aircrew Temporary Authorizations (the “FATA”) pilots.

All the applications shall be made through the Platform along with the application and requisite documents mentioned above along with requisite fees to DGCA. After vetting the applications, if all the documents are found correct, UIN will be issued in 2 working days.

V. Unmanned Aircraft Operator Permit

An owner of the drones operating or engaged in operating drones are required to obtain UAOP from DGCA. Once UIN is obtained, the owner should apply for UAOP through the Platform after filling the application with applicable fees. An application for UAOP has to be made with DGCA at least 7 days prior of actual commencement of operations.

The owner is required to file following documents along with the application for obtaining UAOP:

- Standard Operating Procedure;
- Permission of the land or property owners only where the landing or take-off shall take place;
- Details of the Remote Pilot along with security clearance either from MHA or self-attested copies of at least 2 out of 3 government issued identity cards along with copies of training records;
- Insurance details and
- Security programmes approved by Bureau of Civil Aviation Security (the “BCAS”)

After vetting the applications, if all the documents are found correct, UIN will be issued in 7 working days. A copy of the UAOP has to be given to MHA, BCAS, Indian



Air Force (the “IAF”), Air Traffic Service (the “ATS”), Ministry of Defence (the “MoD”), Airport Authority of India (the “AAI”) and District Administration i.e. Superintendent of Police for information. In case of company or corporation registered outside Indian, UAOP will be issued only to the entity in whose favour RPAS is leased. UAOP is not transferrable and the same is valid for 5 years from the date of issue.

Owners owing nano drones (operating below 50 feet AGL in uncontrolled airspace/ enclosed premises), micro drones (operating below 200 feet AGL in uncontrolled airspace/ enclosed premises and any drones owned or operated by NTRO, CIAs and ARC are exempted from obtaining UAOP. However, in case of micro drones, the owner is required to intimate local police 24 hours prior to conduct of actual operations. Drones owned and operated by NTRO, CIAs and ARC are required to intimate local police and ATS units prior to conduct of operations.

VI. Drones: Safety and Security Requirements

CAR 1.0 provides certain compliances that owner or operator needs to comply in case of any damage to drones or if the drone is lost. Drone operators are required to ensure safe custody, security and access control of RPAS. The operator needs to report immediately to the local police station, BCAS and DGCA in case the drone is lost.

The operator of all the RPA i.e. drones except nano category drones is responsible for notifying any incident or accident to the Director of Air Safety, DGCA with details category of drones, damage caused etc. who will further intimate concerned agencies. In case the drone is damaged and cannot be restored to original condition, their UIN shall be cancelled on notification by the owner/ operator.

VII. Remote Pilot and Training

An operator operating drones should have attained 18 years of age, cleared 10th standard exam in English and should have undergone thorough ground and practical training. Ground training is to be provided at DGCA approved Flying Training Organization (the “FTO”). Any owner or operator owing or operating nano or micro category drones are exempted from the training.



Ground training will deal with theoretical subjects which will equip the pilot with all the knowledge equivalent to the one provided to the pilot dealing with manned aircrafts. This training will help the pilot in managing drones at any circumstance. Practical training shall comprise of an extensive 5 days course which will help pilots garner practical knowledge of the drones through stimulated flight training which includes safe recovery from any emergency or system malfunction. Remote pilot should be equipped with communication facilities establishing two-way communication facilities with the concerned ATS unit.

VIII. Equipment Needs

CAR 1.0 provides that all drones except nano category drones are required to be equipped with serviceable components. Such requirements shall include equipment's like fire resistant identification plate inscribed with UIN, flight controller with flight data logging capability, RFID and GSM SIM card, return home option and flashing ant-collision strobe lights.

Drones except nano and micro category drones operating in controlled airspace up to 400 feet is required to be equipped with additional components including but not limited to barometric equipment with capability for remote sub-scaling setting, geo-fencing capability, detect and avoid capability. The remote pilot is also required to establish connect with the Air Traffic Controller (the “ATC”) prior to entering the controlled airspace. Drone's tracking system should be self-powered and tamper proof so that data can be transmitted even in the event of drone accident. IAF will be required to monitor the movement of drones in coordination with AAI.

IX. Operating Needs

All drones including nano drones are required to be operated in daytime within Visual Line of Sight (the “VLOS”). VLOS means a straight line along which a remote pilot has a clear view of drones and which may be achieved by spectacles, contact lenses or a similar device used to correct any subnormal vision¹⁰. VLOS is in

¹⁰ <https://www.dronetraining.co.nz/questions/drone-law/what-is-visual-line-of-sight-as-defined-by-caa/>



conformity with international norms. This might limit the usage of drones commercially but since the technology is changing very rapidly, we can expect this VLOS requirement to be flexible and dynamic with the changing time. Drone operations will be allowed only upto a maximum ceiling of 120 m i.e. 400 feet if the following meteorological conditions are met except in case of enclosed premises:

- During daylight (between sunrise and sunset)
- In Visual Meteorological Conditions (the “VMC”) with a minimum ground visibility of 5 km and cloud ceiling not less than 1500 feet.
- Surface winds of not more than 10 knots or as advised by the manufacturer
- No precipitation activities (rain, hail or snow) or thunderstorm activities

Drone operators for all the category of drones (except nano category drones operating up to 50 feet AGL) are required to obtain permission before undertaking flights through the Platform and they are also required to inform the local police authorities in writing before the operations.

CAR 1.0 further states that, all the drone operators except the nano and micro category drone operators operating up to 50 feet and 200 feet AGL respectively in uncontrolled airspace/ enclosed premises are required to file flight plan 24 hours prior before actual operations. They are also required to obtain the following:

- ATC briefing, Meteorological (MET) briefing and ATC clearance from the latest ATC Unit
- Air Defence Clearance (the “ADC”) from the nearest IAF unit
- FIC Number from Flight Information Centre Concerned

Drones should not drop discharge or drop any substances unless cleared specifically cleared and mentioned in UAOP and they are also required to give way to manned aircrafts at all times. They are also required to ensure privacy norms of all entity at any costs.

X. Operating Restrictions

CAR 1.0 divides the air-space into 3 different categories as mentioned below:



- No Drone Zones or Red Zone- flying not permitted
- Controlled airspace or Amber Zone- permission required before flying
- Uncontrolled airspace or Green Zone- automatic permission

Regulations have specifically listed down areas from where flying drones are specifically prohibited. Some of the prohibited areas are indicated below:

- Within distance of 5 km from perimeter of airports situated in Mumbai, New Delhi, Chennai, Kolkata, Bangalore and Hyderabad
- Within distance of 3 km from perimeter of any civil, private or defence airports other than those mentioned above.
- Within 25 km from international borders which includes Line of Control (the “LoC”), Line of Actual Control (the “LAC”) and Actual Ground Position Line (the “AGPL”)
- Within 3 km from perimeter of military installations where military activities or exercises are carried out unless clearance is obtained from local military installations
- Within 2 km from perimeter of strategic locations identified by MHA unless clearance is obtained by MHA
- Over eco-sensitive zone like National Parks and Wildlife Sanctuaries, notified by Ministry of Environment, forests and Climate Change (the “MoEF”) without prior permission.

Aerial photography is prohibited in the areas mentioned above but the permission can be granted on case to case basis subject to approval from Ministry of Defence (the “MoD”).

XI. Minimum Criteria for manufacturing of Drones

CAR 1.0 provides for minimum criteria that every manufacturer of drones should follow including Indian and foreign manufacturers. For nano and micro category drones, criteria's specified by Original Equipment Manufacturers (the “OEMs”) or designers are to be strictly complied with.



Drones manufactured in categories other than Nano category drones are required to procure Certificate of compliance along with No Permission No Takeoff (the “NPNT”) certificate and submit the same to DGCA.

XII. Penalty Provisions

CAR 1.0 provides stringent enforcement mechanism for dealing with breach of provisions of this regulations. In case of violation of any of the provisions of the regulations, the drones will lose UIN/ UAOP and other operating conditions issued by DGCA will either stand suspended or cancelled. Since, UIN/ UAOP is the pre-requisite before operating drones in India, losing the same would mean that drone operators will not be able to operate once their license is cancelled or suspended. Including such deterrent mechanism in the regulation will stop violators from violating the regulations. The penalty provisions under the regulations also provide for penal provisions as prescribed by Indian Penal Code (the “IPC”), 1860. In case the operator/ owners breaches any compliances or provide false documents, such operators/ owners will be punished under Sec. 287 (*negligent conduct with respect to machinery*), 336 (*act endangering life or personal safety of others*), 337 (*causing hurt by act endangering life or personal safety of others*), 338 (*causing grievous hurt by act endangering life or personal safety of others*) or any other relevant section of IPC. Local police station will have the jurisdiction over any matters stated above.

It is also provided that necessary actions may be taken as per the relevant sections of the Aircraft Act, 1934 and Aircraft Rules, 1937 or any statutory provisions.

SHORTCOMINGS IN CAR 1.0

CAR 1.0 draws and establishes basic regulatory framework for commercial usage of drones. Though this step is regarded as a breakthrough and writes a new chapter in India’s advancement towards the technology, there are certain challenges as well. One major challenge is operation of drones during day and within VLOS. This limits the trajectory of drones thereby making its usage more disadvantageous. The other concern is with respect to safety and privacy. One major concern faced by drone industry is the difficulty in obtaining clearances from multiple government agencies like MHA, DGCA resulting in transparency and accountability



issue in granting clearances. CAR 1.0 has introduced an online platform (the **DigitalSky Platform**) for registering, operating and monitoring drones. Though this DigitalSky Platform is said to be a good start but there are certain loopholes which the government needs to consider such as:

- Single window online application for obtaining DIN, UAOP involving approvals from stakeholders/ government agencies like WPC, MHA, BCAS and DGCA. The window should also be used for getting permissions from ATC, meteorological briefings.
- Airworthiness Certificate to be obtained by all the drone operators. Efforts should be made to formulate standards like reliability of RPAS, reducing the accident rate and guidelines for preventing GPS failure.
- Operation should be beyond VLOS and night operations should also be allowed to ensure proper usage of drone technology. While allowing usage of drones at night and beyond VLOS, one thing should be kept in mind i.e. safety and privacy of individuals and other stakeholders¹¹.

DRAFT DRONE REGULATIONS 2.0

In order to establish robust ecosystem for drone operations catering to the need and grievances of all the stakeholders, a task force was constituted under the chairmanship of Minister of State for Civil Aviation (the **MoSCA**) addressing the challenging frontier issues such as Beyond Visual Line of Sight (the “**BVLOS**”) and other safety and security issues including those mentioned above. Draft Regulations 2.0 was presented by MoSCA in January 2019 and it looks to expand the scope of operations of drones to include autonomous flying and developing sound regulatory framework by introducing the highest standards of safety, security, airworthiness, operational approval, maintenance and licensing for commercial and autonomous usage of drones.

C. KEY RECOMMENDATIONS IN DRONE REGULATIONS 2.0

¹¹ <http://capsindia.org/files/documents/26bc9a02-04d4-4c26-b8da-decb34739113.pdf>



I. New Operating Needs

Under CAR 1.0, the potential for exploitation of commercial usage of drones was limited, like operations could only take place during day within VLOS which limits the trajectory of drone operations. Similarly, operations were allowed upto a maximum ceiling of 400 feet AGL. To counter these limitations, draft Drone Regulations 2.0 recommends drones to fly beyond 400 feet AGL and beyond VLOS. This certainly creates an enabling framework for businesses dealing in deep-tech logistics and those involved in last mile delivery be it of food, groceries and other essential items like medicines, organs etc. Further the draft regulations would ensure optimum utilization of the technology.

II. Drone Corridors

CAR 1.0 allowed UAS operations to be carried out both in segregated and unsegregated airspace. The limitation with such operation is that there is always a chance of interruption in the smooth operation of drones because of manned aircrafts. Draft Regulations 2.0 recommends setting up of drone corridors i.e. an airspace segregated from manned flights trajectory. Regulations 2.0 also recommended that UAS Traffic Management (the **UTM**) system be established for managing UAS induced traffic especially in drone corridors.

III. Drone ports

Draft Regulations 2.0 proposed establishment of designated areas to facilitate the landing and take-off of drones. The establishment of droneports will not only facilitate landing and take-off of drones rather in the future it will also act as distribution centres i.e. as a cargo place and battery charging stations. Droneport licenses will be given by appropriate authorities on the basis of technical requirements as will be envisaged under the regulations. Droneports will be designed in a manner providing systematic interoperable droneport ecosystem, which will be integrated with Digital Sky Platform and the same will be listed on National Droneport Registry.

IV. Make in India Initiative

CAR 1.0 did not speak anything about foreign direct investment (the **FDI**). Therefore, the same was addressed in draft Regulations 2.0 which proposed 100%



FDI under automatic route in UAS and RPAS based commercial aviation services¹². The step was taken to boost Make in India initiative. Under the same initiative, it is also proposed that UAS for civil use is to be distinguished from UAS for defence purposes and in regards with the same the civil UAS will not be required to comply with license requirements specifically made for the defence sector. In case the Indian drone companies fulfil the criteria's of a start-up as defined by Department for Promotion of Industry and Internal Trade (the **DPIIT**), said companies will be able to avail the necessary benefits as contemplated under Start-up India Policy.

V. Privacy by Design

CAR 1.0 speaks about maintaining privacy of all the stakeholders but nowhere has it mentioned about the procedure regarding the same. Draft Regulations 2.0 goes one step ahead in this regard, it mandates 'privacy by design' standard. For the purpose of mitigating risks pertaining to privacy, protection of personal data or personal security arising from the operation of UAS, the OEMs can be required to include corresponding and specific features and functionalities which can take into account the principles of privacy and protection of personal data by design and by default. This is in conformity with the international norms. The draft policy mandates knowledge of privacy and data protection regulations to be made compulsory for all the remote pilots along with their training. DigitalSky Service Provider collecting personal data are required to establish feedback and review mechanisms including request to access, anonymize or erase the data of the Data Principal.

VI. Insurance

CAR 1.0 only states that all civil RPA shall have third-party insurance to absolve themselves from any liabilities arising due to loss of third party because of accident. Draft Regulations 2.0 proposes comprehensive insurance package to be taken by UAS Operators which is going to cover liability towards cargo, hull loss (a loss in aviation accident which damages the aircraft completely i.e. complete loss) and any third-party risks which is possessed by drones due to commercial operations

¹² <https://www.geospatialworld.net/news/indian-government-announces-drone-policy-2-0/>



of drones. This comprehensive insurance policy ensures covering of legal cost and damages that may incur due to commercial operation of UAS.

VII. Digitalsky Service Providers

Draft Regulations 2.0 recognises Digitalsky Service Providers (the **DSPs**) as new players in the Digitalsky ecosystem. DSPs can either be public or private agencies registered in India which tends to provide enabling services to the UAS operators, Digitalsky platform, relevant law enforcement agencies and other stakeholders. One of the role for DSPs is providing UTM and related services modularly via Application Programming Interfaces (APIs) vis-à-vis the Digital Sky Platform.

VIII. Drone Directorate

In order to ease the burden from DGCA, draft Regulations 2.0 emphasised on creation of Drone Directorate within DGCA. The establishment of Drones Directorate serves two-fold purpose. Firstly, it eases the burden of DGCA so that it focuses mainly on manned aircrafts, secondly, it understands the nascent drone industry and its requirements which may differ from quite matured civil aviation industry. Drone industry will have a power to prescribe maximum life-cycle for each drone-type and operators must apply for re-certification at the end of the lifecycle of the drone.

DRONES USAGE IN OTHER JURISDICTIONS

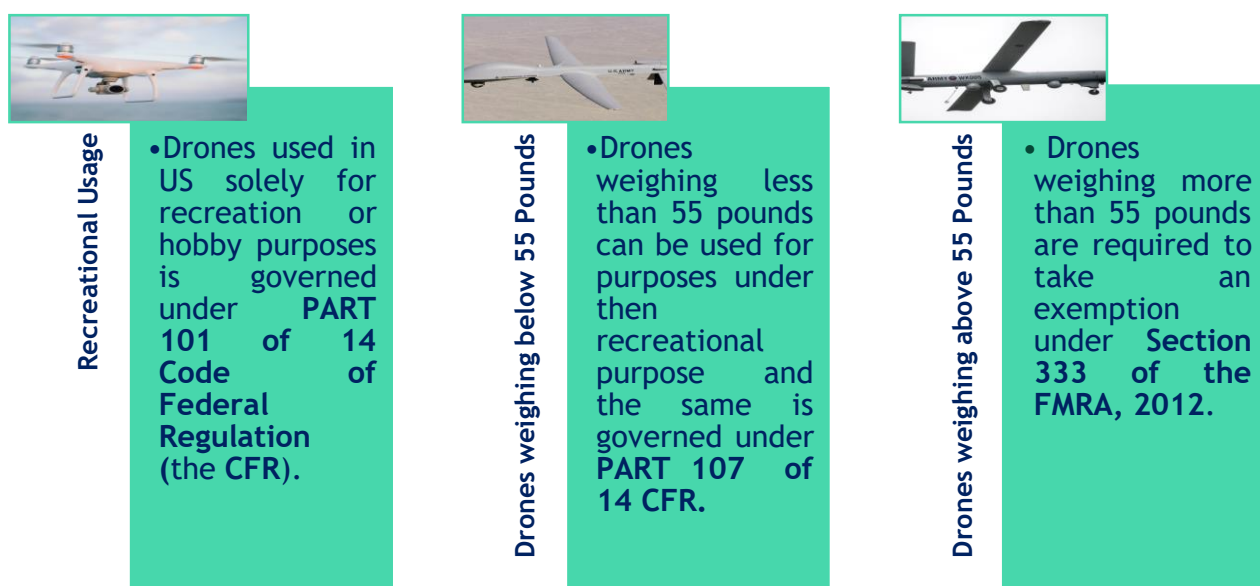
• UNITED STATES OF AMERICA

Unlike India, US s' drone technology is is currently dominating the drone industry in terms of its manufacturing and its usage. It is predicted that sale of drones for commercial operation is to grow at tremendous pace from 6,00,000 in 2016 to approximately 2.7 million by 2020. Federal Aviation Administration (the **FAA**), is the governmental body in United States looking after all matters related to Civil Aviation. Congress in the year 2012 enacted FAA Modernization and Reforms Act of



2012 (the **FMRA**) for addressing safety and privacy concerns arising due to increase in the usage of drones.

Through the enactment of FMRA, FAA was directed to adopt regulations facilitating smooth integration of civil UAS into US airspace¹³. In US, regulations governing civil/ commercial operations of UAS fall into three categories such as:



For Recreational Purposes- Part 101 of 14 CFR is applicable over drones used solely for recreational purposes which came into effect on August 29, 2016. Model Aircrafts which includes drones and other UAS can be flown for recreational purposes if following conditions are met:

- Abide by all the conditions mentioned under Section 336 of the FMRA, 2012;
- Operate within a community-based set of safety guidelines;
- Not endanger the safety of the national airspace system; and

¹³ <https://cdn.ymaws.com/acrel.site-ym.com/resource/collection/95D55D5F-5F29-4C41-B78C-F9C7A8C4D34F/Juras%20-%20Game%20of%20Drones%20-%2002092017.pdf>



- Register oneself as model aircraft owner if the same has to be registered depending upon the weight¹⁴.

For Commercial Purposes- Prior to 2016, entities operating drones for commercial usage were required to petition the FAA for Section 333 exemption. Exemption is granted on a case to case basis and that same sometime takes month for approvals. To do away with such cumbersome process, FAA on 26th August, 2019 enacted Part 107 of 14 CFR changing the regulatory framework for commercial drone operations. Salient features of Part 107 are:

- UAS must weigh less than 55 pounds
- UAS shall operate only in VLOS and during the day
- Must operate only in uncontrolled airspace
- Must fly under 400 feet
- Must fly at or before below 100 mph
- Must yield right of way to manned aircraft
- Must not fly over people
- Must not operate from moving vehicle
- No carriage of hazardous materials
- No person may act as a remote pilot in command for more than one unmanned aircraft at a time

First time pilots or drone operators must be at least 16 (sixteen) years old, should have passed the initial aeronautical knowledge exam and complete an online application to obtain Remote Pilot Airman Certificate. Existing drone operators should have completed a flight review within the previous 24 months along, should have passed initial aeronautical knowledge exam rather than a manned aircrafts pilot's license which was a roadblock¹⁵.

Part 107 provides for an option to apply for a certificate of waiver which allows for small UAS operation to deviate from certain operating rules if FAA is satisfied

¹⁴ <http://dronelawjournal.com/model-aircraft-operations/>

¹⁵ <https://www.expertguides.com/articles/us-regulation-of-commercial-uses-of-drones/arvlnbxg>



that the proposed operation can be performed safely under the terms of waiver. FAA grants the Certificate of Waiver or Authorizations (the **COA**)¹⁶. Regulations subject to waiver are:

- Operation from moving vehicle or aircraft. The waiver under this provision will not be issued to allow the carriage of property of another by aircraft for compensation or hire
- Daylight operation
- Visual line of Sight. However, the waiver under this provision will not be issued to allow the carriage of property of another by aircraft for compensation or hire
- Operating of multiple small UASs
- Operation over people
- Yielding the right to way

Part 107 gives a significant responsibility to drone operators when it comes to adherence of operational requirements while operating drones. Therefore, it is mandatory to give careful considerations while hiring pilots and giving training to them.

Federal v. State Jurisdiction over Airspace

In United States of America, federal government has exclusive sovereignty over the airspace. This means that federal enactments over airspace will always out-weigh state enactments. Since, federal government has exclusive sovereignty over airspace, its agency FAA asserts jurisdiction to regulate aircrafts including both manned and unmanned in all airspace. So, when it comes to regulating usage of drones, the drone operators are to abide by the federal legislation i.e. FMRA and state cannot legislate on any matters related to airspace conflicting with federal law as federal law will prevail. However, states can regulate on ancillary aspects like privacy, land use and trespass etc. while using drones. This is the reason why 45 states in United States have enacted a legislation to protect the privacy of their

¹⁶ https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs800/afs820/part107_oper/



citizens by limiting the usage of drones¹⁷. These states limiting the usage of drones for safeguarding the privacy is acting as a roadblock for commercial usage of drones.

AMAZON Case Study

Amazon became the first company to announce usage of drones for delivery of goods in December 2013 by Founder and CEO Jeff Bezos. He stated “**60 minutes**” drones will be flying to customer’s home within 5 years. Since then Amazon has tried various designs and models of drones but the same has been of no avail as the regulatory framework in USA has not approved such designs.

FAA after going through more than dozens model of drones approved Amazon drones for test flights but that came with a catch, every new prototype needs special airworthiness certificate which is not easy to get. Secondly, after years of research Amazon received consent from FAA for using drones just for training of crew members in authorized areas and for further research and development. Still it is foreseeable that Amazon will take another few years before getting approval for deliver as there is still many regulatory hurdles which Amazon is required because FAA is yet to figure out answer to questions like privacy and safety of the stakeholders¹⁸.

Till FAA deals with questions like privacy and safety, it is seen that Amazon is taking an active part in research and development. One example of such research is that Amazon has tried to develop technology with the name “**Human Interaction with Unmanned Aerial Vehicles**”. Amazon has applied for patent of the technology on 20th March, 2018. With this technology, it is proposed that drones will be configured for recognising human gestures. Drones will be configured with sensors which will detect visible gestures, audible gestures and other gestures capable of recognition by drones¹⁹.

¹⁷ <https://scholars.law.unlv.edu/cgi/viewcontent.cgi?article=2030&context=facpub>

¹⁸ <https://www.forbes.com/sites/colinsnow/2019/06/17/amazons-drone-delivery-whats-old-whats-new-and-when/#196bacd835f9>

¹⁹ <https://www.pymnts.com/amazon/2018/amazon-files-patent-for-voice-controlled-drone-delivery/>



This technology will be very useful in this unprecedented times of COVID-19 pandemic wherein we require a technology that remains untouched. As defined in the patent here is how a drone would respond to human gestures:

- Seeing a drone approach, a human may make a shoo-ing gesture towards it
- This gesture will be perceived by the drone's sensor and compared to its database of human gestures
- Based on the input, the drone may determine that it should not proceed further and fix its trajectory, speed and/or modify its behaviour
- Similarly, an inviting gesture may guide it to the correct delivery spot, where it will execute the delivery of the package after verification of the human recipient²⁰.

• UNITED KINGDOM

Civil Aviation in United Kingdom (the **UK**) is regulated by Civil Aviation Authority (the **CAA**), a governing body established under Civil Aviation Act of 1982. CAA along Air Navigation Order (the **ANO**) of 2016 is responsible for regulations of all drones used in UK for recreation or commercial purpose²¹.

As per the ANO, drones weighing more than 20 kg will have to comply with all the rules within the ANO and the same will be treated as manned aircraft subject to approval from CAA. Drones weighing 20 kg or less than that are defined as Small Unmanned Aircraft (the **SUA**) and are automatically exempted from majority of the provisions of ANO as laid down under Article 23. Article 94 of ANO, 2016 lays down certain requirements for SUA Operations such as:

- A person must not cause or permit any article or animal to be dropped from a SUA so as to endanger persons or property;

²⁰ https://www.linkedin.com/posts/ikigailaw_drones-ipr-patents-activity-6660864828002959361-QYv3

²¹ <https://www.lexology.com/library/detail.aspx?g=a173acfe-5e59-48b8-8545-db2a9c487017>



- The remote pilot of a small unmanned aircraft may only fly the aircraft if reasonably satisfied that the flight can safely be made;
- The remote pilot of a small unmanned aircraft must maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions.
- The SUA operator must not cause or permit a small unmanned aircraft to be flown for the purposes of commercial operations, and the remote pilot of a small unmanned aircraft must not fly it for the purposes of commercial operations, except in accordance with a permission granted by the CAA²²
- All drones, regardless of its weight must not fly above 400 feet AGL
- Operator cannot fly a small unmanned aircraft closer than 5 kilometers (3 miles) from the boundary of a protected aerodrome (called the “runway protection zone”) without permission from air traffic control, the flight information service unit, or the operator of the protected aerodrome²³.

SUA operators are required to take special permission from CAA before operating drones for commercial purposes. These permissions and exemptions are valid for the period of 12 months and are subject to annual approval. In case an operator is carrying out commercial operations and that to within congested areas, then the operator is required to provide evidence of pilot competence and Operations Manual which will detail how the flight is to be conducted²⁴.

Anyone applying for permission with CAA for commercial operation of drones, the operator will need Remote Pilot Competence which will demonstrate sufficient understanding of aviation theory such as airmanship, airspace, aviation law and good flying practice. The other condition precedent for obtaining Remote Pilot Competence is passing practical flight assessment. Apart from Competence

²² <https://www.caa.co.uk/Commercial-industry/Aircraft/Unmanned-aircraft/Small-drones/Regulations-relating-to-the-commercial-use-of-small-drones/>

²³ <https://uavcoach.com/drone-laws-in-united-kingdom/>

²⁴ <https://www.caa.co.uk/Commercial-industry/Aircraft/Unmanned-aircraft/Small-drones/Permissions-and-exemptions-for-commercial-work-involving-small-unmanned-aircraft-and-drones/>



Certificate, the operator is required to develop basic procedures for conducting the operations and the same should be set-out in Operations Manual. With each permission from CAA, drones operators are required to obtain appropriate insurance package. If an operator with a permission operates drone without valid insurance policy, then such operation would be in breach of the ANO as the permissions would stand void.

• EUROPEAN UNION

European Aviation Safety Agency (the **EASA**) developed a new regulatory framework along with rules on low-risk operations of Drones in July 2015. These framework were then published by EASA for comments by all the stakeholders. The framework proposes to regulate RPAS at EU Level. Based on the nature and purpose of work drones are categorized on the basis of their operations and risks unlike mass which is the criteria adopted by most other countries including India.

- **‘Open’ Category** (low risk): Drones coming under open category do not require authorization from National Aviation Authority (the **NAA**) even for commercial operations. Police will have an authority to oversee drones operation and such operation will be permitted only in defined limits with minimal rules.
- **‘Specific’ Category** (medium risk): Drones in this category would need authorization from NAA with specific limitations adapted to the operation.
- **‘Certified’ Category** (higher risk): Drones in this category are subjected to higher risk and therefore treated as manned aircrafts. Therefore, such unmanned aircrafts require certification from the relevant aviation authorities²⁵.

As per the report released by European Union, it is found that Europe’s existing regulatory framework is adequate to address the concerns posed by the emerging technology. There are certain pre-conditions, which need to be addressed, to ensure that drones do not pose serious risks to citizens’ fundamental rights to

²⁵ https://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571305/EPRS_BRI%282015%29571305_EN.pdf



privacy and data protection, to security and to safety. In order to address these privacy concerns, the EASA has suggested to install chips/SIM cards in drones and direct operators to self-register in a web based application maintained by the local authorities.²⁶

WAY FORWARD

With the formulation of CAR 1.0 which came into effect on 1 December 2018, we embarked our journey towards allowing civil/ commercial usage of drones which was earlier banned by DGCA. Though we can say it is a good start it's still a very long way to go. CAR 1.0 has several limitations like flying within VLOS during daytime and taking several permission/ authorization through Digital Sky Platform from DGCA, local police, MHA and other government agencies.

Due to these limitations, Ministry of Civil Aviation constituted drone task-force headed by Minister of State of Civil Aviation. Taking into consideration the recommendations of task force, the ministry released Draft Regulations 2.0. Draft Regulations 2.0 takes into consideration the limitations of CAR 1.0 and paved a way for establishing and creating drone ecosystem for smooth conduct of drone operations for commercial usage ensuring safety and privacy of all the stakeholders. Draft Regulations 2.0 is still under consideration and the current unstable circumstances could not be more appropriate to enforce new regulations and defining the *modus operandi*. Drone technology is way ahead of time. Tough times need to be played out well and thus, it is for the regulatory bodies to brainstorm with the experts to frame regulations for the commercial usage of this technology and utilise this to fight against invisible enemies like COVID-19 which have the capability to multiply beyond expectations.

One can say CAR 1.0 is enacted for testing waters w.r.t civil/ commercial usage of drones in India. Now, the government is focusing on developing a robust ecosystem for drones in a manner which helps India in coping up with the technological advancement keeping in mind the safety and privacy of its stakeholders. Draft Regulations 2.0 is step in the right direction if implemented correctly. Though there are still some points that needs considerations like application of tort law on usage

²⁶ http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research_Papers/India-Opens-Skies-for-Drones-Legal-Tax-Analysis.pdf



of drones like nuisance, trespass, negligence etc. should also be considered by the government. We understand that since drone technology is way ahead of its time, we will be able to formulate more stringent regulations once we start using it.

“You need to put drones under control; you need to lay out certain rules of engagement in order to prevent or minimize collateral casualties. It is extremely important”

-Vladimir Putin



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