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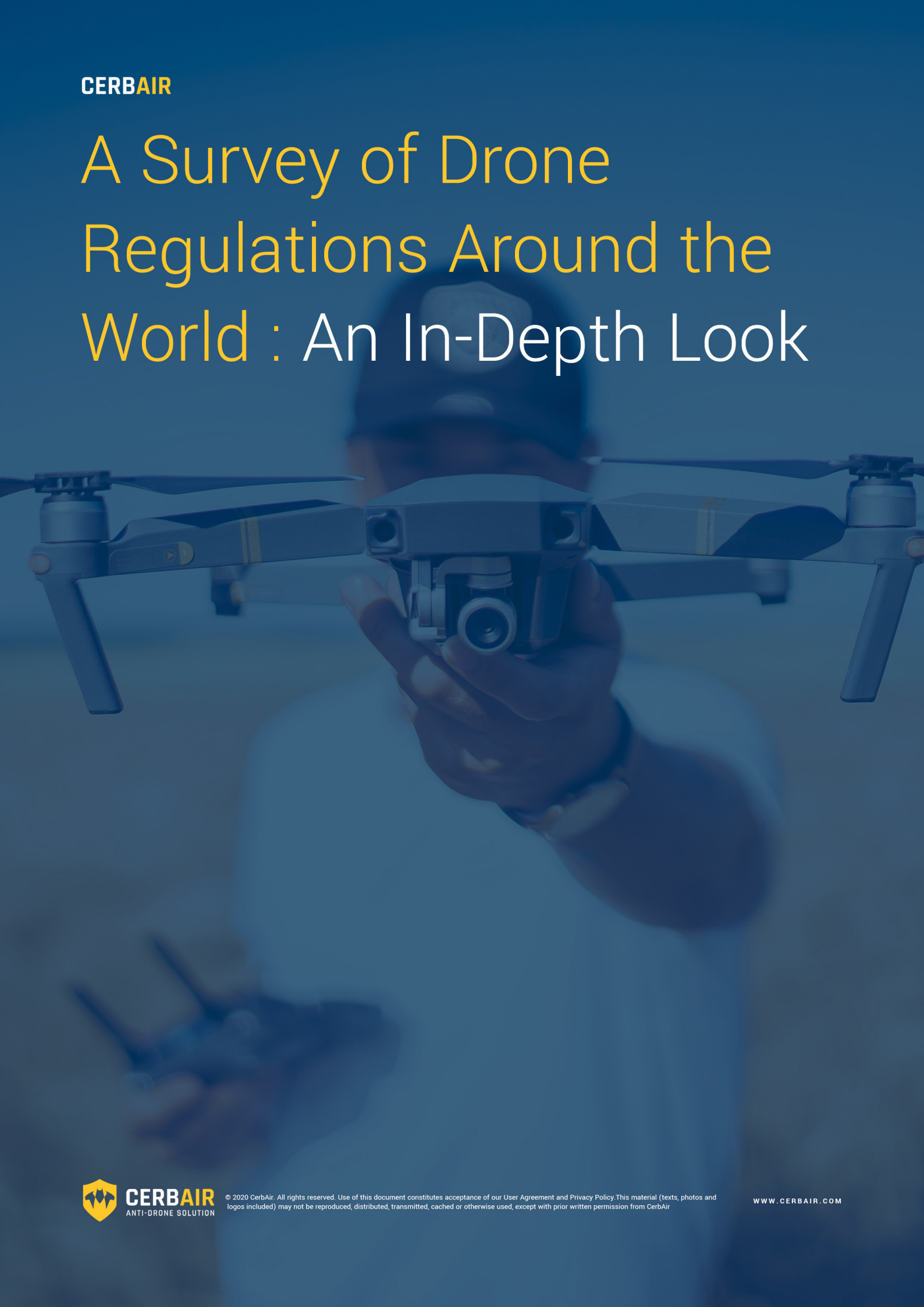
# A Survey of Drone Regulations Around the World : An In-Depth Look



# Introduction

The newness of drone technology means there is still a great deal of uncertainty regarding what the devices are or are not permitted to do. CerbAir dives into the complex and shifting world of drone regulations.

In this publication you will learn:

- A brief history of drone intrusions & incidents
- A survey of six countries' drone regulations
- Useful links and references on drone regulations

# THE THREAT EMERGES

Before the democratization of UAV (Unmanned Aerial Vehicle) technology in the early teens, there was almost no drone-specific legislation anywhere. Drones and their actions were mostly covered by rules governing civil aviation and lumped in with model airplanes and kites.

A noticeable shift in the attitude of authorities towards consumer drones began around 2014-2015 following a number of high-profile incidents involving drones:

- **September 2013** - A drone piloted by an internet activist flies within one meter of German Chancellor Angela Merkel during a political rally in Dresden, Germany. Security experts are alarmed[1].

- **October/November 2014** - Unidentified drones are spotted hovering over 13 separate nuclear power plants in France in what the Secretariat-General for National Defence and Security describes as an «organized provocation»[2].

- **January 2015** - A drone ends up on the White House lawn in Washington, DC after the drunken operator loses control of the device. Unnoticed by the Secret Service, the pilot himself called to report the incident, provoking an investigation and raising concerns that the US capital could come under threat from consumer drones[3].

- **February - March 2015** - In February a near-miss with a jetliner is recorded at Paris Charles de Gaulle-Roissy International - Europe's second busiest airport. Over the next few months drones are spotted flying over important structures in Paris, France including the residence of the French President, the American Embassy and Disneyland Europe [4/5/6].

- **July 2015** - Unidentified drones are spotted multiple times over the Lyondellbasell chemical plant near Marseille, France. An explosion at the plant shortly after raises (unproven) fears that the drone pilots were somehow involved[7].

- **April 2015** - A drone carrying a small amount of radioactive material is discovered on the roof of the offices of the Prime Minister of Japan after landing there two weeks earlier. The pilot, who was protesting the use of nuclear energy in the country, received a suspended two-year sentence.

- **December 2015** - A UAV filming a sporting event in Italy suddenly falls from the sky, crashing mere meters behind slalom athlete Marcel Hirscher. The International Ski Fede-

ration consequently bans drones for broadcasting purposes from their events.

- **August 2018** - Colonel Pedro Zambrano and General Alejandro Perez were charged in the drone incident against Nicolas Maduro, the unpopular president maintaining his grip on the Venezuelan power. On August 4, a drone loaded with explosives detonated near a military event where the embattled leader was giving a speech. He was unharmed but has described the incident as an «assassination attempt». Fourteen people have so far been arrested and charged in connection with the incident, which opposition figures say Maduro is using to step up repression and persecution of the opposition. The president has also accused Colombia and unidentified individuals in the United States of involvement[8].

- **10 September 2019** - Houthis rebels deployed 10 drones against Saudi oil sites in Abqaiq and Khurais. Abqaiq, 60 km (37 miles) southwest of Dhahran in Saudi Arabia's Eastern Province contains the world's largest oil processing plant and Khurais, 190 km further southwest, contains the country's second-largest oilfield. The attack reduced global daily oil production by roughly 5%.

# AUTHORITIES TAKE ACTION

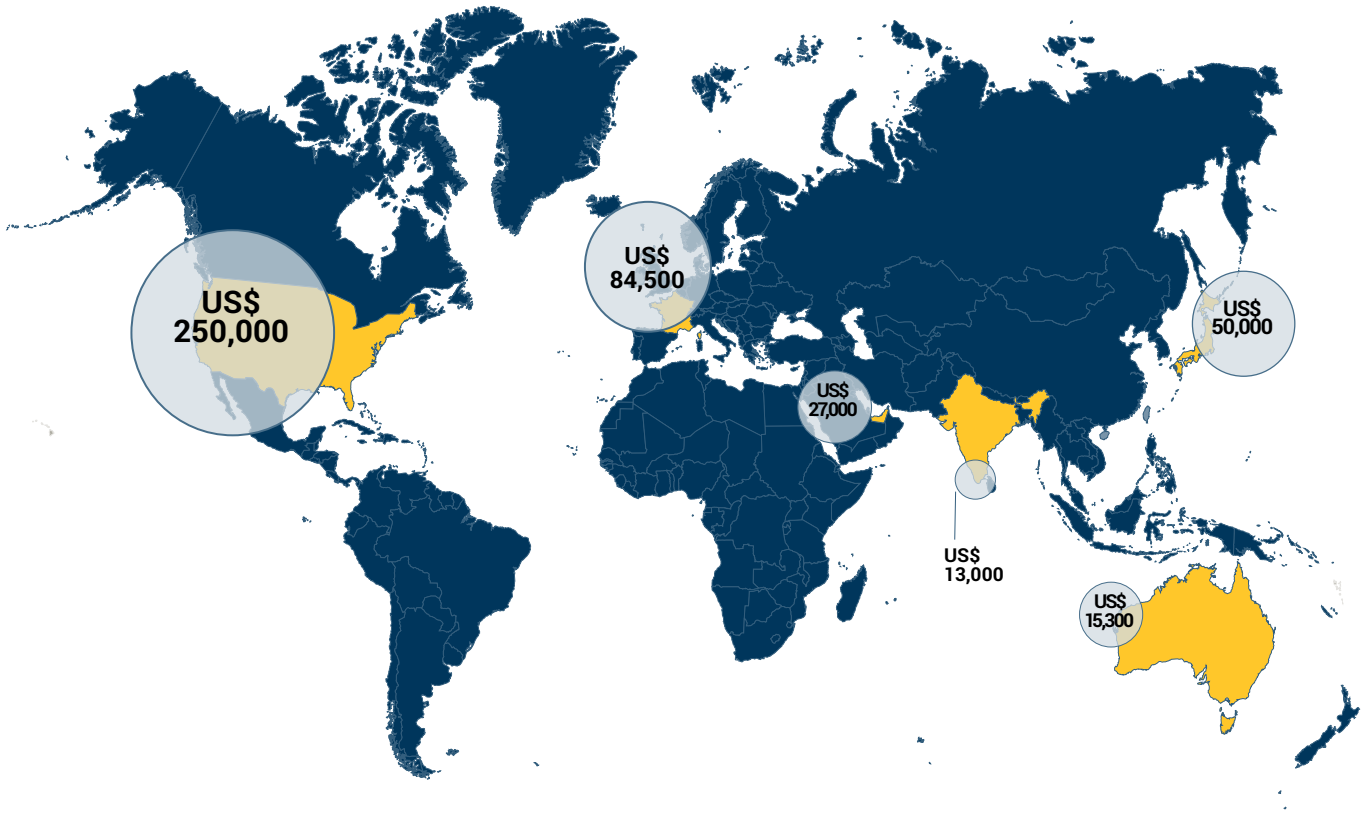
As complaints and reported incidents began piling up, taking many civil aviation authorities by surprise, a serious movement to bring drones and their operators under some sort of government control began taking shape. Although uneven, some common elements appear :

- Limiting maximum flight altitude to 120m (400ft)
- Restricting drone operation to within line-of-sight and daytime hours
- Banning unauthorized drone activity near airfields
- Banning or restricting drone flights over populated areas
- Prohibiting drone operation in disaster areas or near emergency operations

Still, drone regulations remain a subject of confusion for many including drone pilots themselves. In this paper, we will examine drone-related legislation in place in a variety of nations around the world: the United States, France & Europe, the United Arab Emirates, Japan, Australia and India.

# THE COST OF FLYING ILLEGALLY

Flying a drone without registration or in restricted areas can bring on particularly stiff penalties for lawbreakers.




France : €75,000; UAS: DH100,000; Japan: ¥500,000; Australia: AUD25200; India: ₹10 lakh


* up to

YEAR(S) OF JAIL*

FRANCE
JAPAN

AUSTRALIA/
INDIA

USA / UAE

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# USA

The United States has been the center of consumer drone technology since its inception and many drone «firsts» (including the unfortunate «**first documented drone-related aircraft crash**»[9]) have happened here. A terrorist plot in 2011 to attack the US Capitol and Pentagon with bomb-wielding drones[10], or a UAV sighting in early 2019 that temporarily shut down Newark Liberty Airport[11] illustrate the dangers the country faces from both malevolent as well as merely clueless drone pilots.

Perhaps unsurprisingly, legislation has had a hard time catching up to the quickly evolving world of consumer drones, but a major change came with the approval of the Federal Aviation Administration (FAA) «Exception for Limited Recreational Operations of Unmanned Aircraft (AC-91-57B)» on May 31, 2019.

## Current Situation

With the passage of the new legislation, the drone world in the United States was thrown into a state of uncertainty. For the moment, the FAA has advised pilots to adhere to the current regulations governing drone flights **which for consumer drones under 551bs** (25 kilos) include[12]:

- **Online registration** of all drones over 0.551bs (250g) and attachment of registration number to device Minimum pilot age of 13 to register
- Flight for **hobby purposes** only (commercial pilots must obtain a license)
- Fly your drone at or below 400 feet **(120m)** above the ground when in uncontrolled (Class G) airspace.
- Obtain **authorization before flying** in controlled airspace (Class B, C, D, and E) thru websites such as LAANC, DroneZone
- Flight during **daylight** hours only unless the drone has lighting that allows you to know its location and orientation at all times.
- No flights within a **5-mile (8 kilometer) radius** of airports, military bases and emergency operations unless previously authorized
- No flights over people, public events, moving vehicle, heavily populated areas or interference with manned aircraft.
- Flights above any part of Washington, DC (the national capital) or NYC are strictly prohibited.
- Never fly under the influence of drugs or alcohol. Many over-the-counter medications have side effects that could impact your ability to safely operate your drone.
- Do not operate your drone in a careless or reckless manner.

When we wrote this document more than 50,000 people have deluged the FAA with comments over a proposed regulation that would require almost every drone in the sky to broadcast its location over the Internet at all times. The AC-91-57B could effectively destroy the market for kit aircraft and custom-designed drones by shifting large financial and paperwork burdens on the shoulders of consumers. Hobbyists fear that will instantly render many existing drones obsolete, forcing hobbyists to upgrade or discard them. Moreover, the FAA states that a compliant drone needs to have a serial number that was issued by the device's manufacturer in compliance with the new rules.

Yet many RC aircraft are built by small companies who never intended to get into the commercial drone business. They might not have the technical resources to comply with the new standards or the legal resources to get FAA approval.

The FAA offers a workaround for people with DIY aircraft: special FAA-designated areas where people could fly non-compliant aircraft. These would be run by «community-based organizations». These clubs would have a 12 months window to apply to the FAA for permission to run one of these sites. At the end of the year, the FAA would publish a list of approved sites, and anyone who wants to fly a non-compliant aircraft would need to travel to one of the sites.

## Commercial pilots

Commercial pilots are currently regulated by «Section 107» of the existing legislation which, among other regulations, requires operators to register their drones electronically or, if the device is over 551bs (25 kilos) with a paper application. Commercial UAV pilots must pass pilot certification and carry proof of their certification on them whenever they fly. They must obtain from FAA a Tracking Number (FTN) by creating an Integrated Airman Certification and Rating Application (IACRA) and taking a knowledge test from an FAA-approved Knowledge Testing Center. Once you've successfully pass the test complete the Form 8710-13 and your personal background will be check by TSA for final remote pilot certificate deliverance.

## Tourists

Tourists are permitted to bring their devices into the country, but only in their carry-on luggage. They must register the device online, bringing proof of registration with them, and they are bound by the same regulations as native consumer or commercial pilots.

NB: The penalty for flying an unregistered drone could reach $27,500, and you could also be handed a 3-month jail term.

DISCLAIMER: The above lists are not exhaustive and additional state and local-level restrictions often apply. UAV operators are advised to check with all relevant authorities before flying.

## Countermeasures: For the Authorized Only

As in most of Europe and Australia, the United States restricts the use of drone countermeasures to authorized security, police and military personnel. Persons attempting to take down or intercept a drone may face fines, jail time or be required to reimburse the drone pilot for damages (13).

## A Situation in Flux

The FAA was hitherto bound by an exception («section 336») in the civil aviation codes which exempted «model aircraft» from its jurisdiction. Drones under 551bs (25 kilos) were included in that category until now, however the new legislation abolished section 336, bringing the devices directly under

the Authority ‘s control.

The FAA has shown a willingness to work towards the integration of UAV’s into the civil aviation landscape and committed to studying new ways of doing so, including: allowing beyond line-of-sight and nighttime flights for commercial pilots and allowing drones to fly over crowds in certain circumstances.

## Current Concerns

However, some commercial and consumer drone pilots are worried by sections in the Act requiring a still-unspecified «electronic pilot test» for all operators.
Professional pilots are not opposed to this regluation, it is rather recreational pilots who consider it as a large ban.

More controversial still are sections requiring visible «identification markings» on all drones that are linked to the operator ‘s personal information (in the same way that motor vehicles have a license plate) and particularly provisions allowing the FAA and other select federal agencies to electronically identify, detain and even destroy drones without a warrant if they deem the drone a threat to security.The cost of integrating such a system is a problem. Brands like DJI have already expressed that cost forecasts are largely underestimated by the FAA.

While most pilots acknowledge the need for clearer rules following numerous drone-related accidents and incidents in the country, as well as recent drone-perpetuated terrorist attacks - they feel that the legislation in its current state is far too broad and could lead to civil rights violations.


**Helpful Link**
The Federal Aviation Authority ‘s page on drone registration and regulations : https://www.faa.gov/uas/

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# France

France, one of the first countries to legislate drone activity (2012)[13], has suffered a number of prominent drone incidents in recent years. In 2019, the environmental activist group Greenpeace sent drones (one dressed as Superman, the other carrying a smoke bomb) hurtling into two separate nuclear plants to draw attention to the vulnerability of the facilities to drone attacks [14/15]. Many incidents occur on a monthly basis on sensitive sites such as prisons or where large audience gather (Disneyland Paris).

The laws regulating drone flights were recently updated again in March and May 2019; In France, UAV flights are supervised by the Directorate General for Civil Aviation (DGAC) which oversees the security and safety of aircraft operators within French airspace. The enforcement of the new rules will start on July 2020.

## All Flying Devices Are «Aircraft»

France takes a stricter view of drone classification and considers any «flying device», even unmanned and small in size, to be an aircraft falling under the DGAC's control[16].

## General Requirements

In general, French drone regulations resemble those of many other European countries (for which they were often a model). All drone pilots must adhere[17] to:

- No flights over people
- Drones may not be flown above 150 meters (492 feet), or higher than 50 meters (164 feet) above any object or building that is 100 meters (328 feet) or more in height.
- Flights restricted to line of sight and daytime hours
- No flights over urban areas without prior authorization
- No flights within 10km (6 miles) of airports or airfields without prior authorization
- No flights over sensitive sites or monuments without prior authorization
- Respect for the privacy of others
- Aerial photos or videos that capture people or private property may not be reproduced or broadcast without prior authorization
- Subscription to civil liability insurance to cover possible damages
- Always check with national and local authorities before flying
- All drones of 800g and more must be registered on AlphaTango, the public portal for users of remotely piloted aircraft.

The DGAC has released both an instructional video as well as a smartphone app which allows UAV operators to consult an interactive map showing authorized flight zones;

## Category System

Several categories of drones are recognized from Category A to Category G. The vast majority of consumer drones sold on the market are in Category A - devices weighing less than 25kg (551bs) and having only one source of propulsion.

France tightened up its legislation on «Category A « consumer drones in July 2018 requiring civilian pilots not only to register their devices, but to complete an online training course if they wish to fly any drone weighing more than 800g ( l .71bs). Pilot age for the training course is restricted to 14 and above, meaning children are prohibited from flying devices any heavier than the 800g cut-off[18];

Commercial pilots of any category must pass an obligatory training and certification session and register their flights with the DGAC to obtain a flight authorization. Commercial flights are divided into 4 scenarios depending on the type of device, flight altitude and distance, as well as weight and nature of the cargo carried (if any). Different scenarios types are subject to different restrictions and requirements.

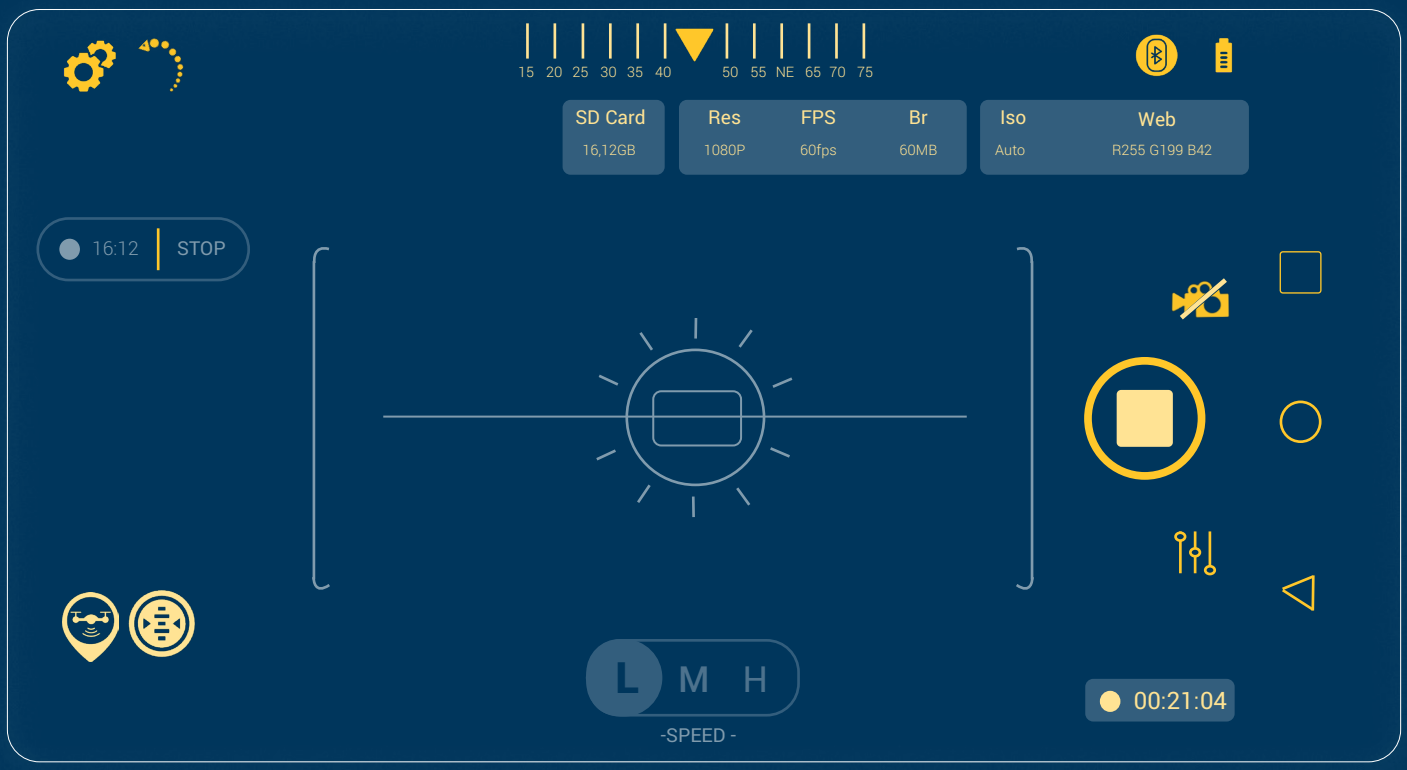
Tourists are currently allowed to bring in consumer drones weighing less than 25kg through customs, but most airlines require the drones to be carried in hand luggage and lithium batteries to be stored separately in adapted pouches[19].Tourists intending to make commercial flights must register their devices and comply with regulations on commercial flights . Tourist pilots are expected to respect drone regulations and to be aware of national and local restrictions.

The above lists are not exhaustive. It is recommended that all UAV pilots consult local aviation authorities before taking to the skies.

## Countermeasures : Not for Everyone

Unsurprisingly, France bans attempts to intercept or destroy drones with the only exception to this rule being authorized security, police or military personnel[20].


**Helpful Link**
The Directorate General for Civil Aviation's page on drone registration and regulations (French) : https://www.ecologique-solidaire.gouv .fr/modeles-reduits-et-drones-loisir



# EUROPE
# EMPOWERMENT

**The European Union Aviation Safety Agency (EASA) is working at an unprecedented pace to issue rules and guidelines on drone activities to meet the demands from industry for the basic rules for drone operations.**

The European Union Aviation Safety Agency has recently published a document called “Easy Access Rules” that covers European drone regulations in an easy to understand and handy format.

The 265 page document is available on EASA website for download. It represents an improvement – and a single resource for drone operators all across Europe.

Part of the EASA e-Rules project, there a re fours key takeaways of the Easy Access Rules:

- the **Commission Implementing Regulation** (EU) 2019/947
- the related **Acceptable Means of Compliance** (AMC)
- the **Guidance Material** (GM),
- the **Commission Delegated Regulation** (EU) 2019/945 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems.

EASA has developed their regulations over several years. Working collaboratively with member states is clearly a challenge in this matter but regulations could give European service and technology providers easy access to neighboring markets. However, the work isn’t over – member states must still set up their own compliant systems for things like drone registration.

"It's important that, as we put together the regulatory framework for drones operations in urban or populated areas, we set the right societal targets in terms of safety, risk exposure and environmental impact."

Patrick Ky, EASA Executive Director.

## Promoting the «U-Space».

The EASA has published the first view worldwide on the use and control of drones in an urban environment.

The term «U-space» has been adopted to describe the management of unmanned aircraft traffic to ensure the safe interaction with other entities using the same space in any location, not just urban areas.

The «opinion»[21], presented to the European Commission as a basis for future legislation, lays down the first building block for the establishment of the U-space in Europe. The initial scope is low level airspace, densely-populated urban airspace and locations close to an airport, with no attempt made to cover the airspace in other areas. EASA expects to expand the scope as the market develops and experience is gained.

This will help drone operators to plan and execute their flights safely, knowing exactly where and when their drone is permitted to fly.

www https://www.easa.europa.eu/

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# UAE

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ANTI-DRONE SOLUTION

It is perhaps unsurprising that the UAE, with its cutting-edge cities and massive tourist numbers, should suffer from a high-tech «drone problem». Dubai's international airport, one of the busiest in the region, was forced to close its runways numerous times over the past five years due to the presence of consumer drones in its no-fly zone, with every incident costing millions in canceled and delayed flights[22].

**TIPS FOR DRONISTS**

The **AirMap** platform delivers a reliable and accurate digital view of the airspace. It is natively integrated with advanced software automation services to enable safe and scalable unmanned aviation globally.

**www.airmap.com**

The ongoing Yemen War poses an additional threat with Houthi rebels determined to disrupt Emirati air traffic using locally produced UAVs[23]. The country's **General Civil Aviation Authority** (GCAA) reacted quickly, introducing licensing legislation for commercial drones in 2015 and updated laws covering consumer drone registration and regulation, removing a ban on consumer drones in place up until that time.

## Know Before You Fly

The UAE has national legislation put in place by the GCAA and local regulations set by both the Civil Aviation Authorities of the individual emirates as well as by municipal authorities.

Drone operators are expected to **be aware of the rules on both the federal and local levels**[24]. While the chief objective of UAV regulations is to ensure safety, the protection of privacy in a society that considers private life off-limits is an equally important element.

## Registration & Licensing

All drones, both commercial and consumer, must be registered with the GCAA. This includes drones flown by foreign tourists, who must register their devices before entering the country and declare them (showing proof of registration) upon arrival. The GCAA provides online registration through its website. Some emirate-level civil aviation authorities require registration as well.

Commercial drone operators must also obtain a flight license, insurance and an Unmanned Aircraft Operator Authorisation (UOA) from the emirate where their activities will take place. Some emirates, like Dubai, specify that commercial drones must be fitted with tracking devices for safety and monitoring.

## Fees

- To register a drone for personal, non-commercial purposes – Dh100 (28US$).
- Annual renewal – Dh100
- Dh350 for a basic licence.

This is the Sanad Remotely Piloted Aircraft System Basic certification, which is designed for hobbyists piloting light aircrafts below 4 kilograms.

- Dh750 for professionals piloting aircrafts below 12kg.
- Dh4,700 for certificates for commercial drones 15kg.

The Sanad Academy is located in the Al Lisali area, off of Dubai-Al Ain road (E66).

## Consumer Drone Regulations

After buying a drone, purchasers receive a leaflet on how to register on www.dcaa.gov.ae. Once registered, owners must take an approved operator course (such as in Dubai with Sanad Academy). The academy is a training ground for both hobbyists and professional drone operators. Those looking to get a licence from DCAA to fly drones have to undergo a mandatory certification course from Sanad Academy. Following the course completion, the drone identification is issued by DCAA. Here follows some of the DCAA requirements:

- **No video or camera devices** may be used in flight without prior authorization and flights over residential areas are generally prohibited in any case.
- Drones may not be flown within **50 meters** (165 ft) of a person or vehicle.
- Drones must be inspected before flight and flown in accordance with manufacturer instructions.
- Drones may not be used for commercial purposes (otherwise a license must be obtained).
- Operation is permitted only during daylight hours.
- Consumer drones are restricted to **certain radiofrequency bands** (29.7-47.0 MHz max power 10 mW, or 2400-2500 MHz max power 100 mW) and power sources (battery, not gas).
- Drones may be flown only in authorized areas. The GCAA has a smartphone app («UAE Drone Fly Zone Map») and online map indicating such «green zones». Operators should also verify emirate and municipal level restrictions

## Articles 69 & 70

Articles 69 & 70 of the UAE aviation code prescribe heavy punishments for UAV pilots who violate restrictions, including:

- Flying without registration
- Harassment of others or violation of their private space
- Causing damage to other aircraft or to communication and/or navigational devices
- Flying within 5km of restricted areas, including airports, military installations or sensitive sites without authorization
- Flying while intoxicated or under the influence of illegal substances
- Flying beyond the line of sight (defined as the distance from which a drone may be observed without visual aids such as binoculars)
- Flying above 120 meters (400 feet)

- The above lists are not exhaustive and a prospective UAV operator in the UAE is advised to check with authorities before proceeding.

## Drone Interception - A Matter for Police & Military

For the moment, only authorized parties - the Police, Security and Military forces - are permitted to intercept or neutralize an intruding drone. Individuals who feel a drone pilot has violated their privacy or is harassing them are urged to report the matter to their local police.


**Helpful Link**
The General Civil Aviation Authority's page on drone registration and regulations (Arabic & English): https://www.gcaa.gov.ae/en/pages/UASRegistration.aspx/

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# Japan

Japan amended its Aviation Act and passed a new law in response to an incident in 2015. Yasuo Yamamoto, a 40-year-old environmental activist who was deeply opposed to the use of nuclear energy in Japan, flew a drone loaded with a small amount of radioactive sand over the Prime Minister's office[25]. The device landed on the roof and was not spotted by an employee until two weeks later, prompting the evacuation of the building[26]. Up until this time, Japan only had laws on the books governing low-altitude flights around airports, but the incident spurred a quick update of legislation[27]. Since then Japanese authorities have recorded a spike in illegal drone activity - often linked back to foreign tourists who are unaware of the rules. In 2017, drones made headlines again when a device flying over a festival suddenly crashed, injuring 6 including a small child.

## Drones Defined and New Restrictions

The Ministry of Land, Infrastructure, Transport and Tourism, the Japanese agency in charge of drone regulations, defines a «drone» or «UAV» as an «airplane, rotorcraft, glider or airship weighing over 200 grams that cannot accommodate any person on board and can be remotely or automatically pilote.»

Under the amendment to the Aviation Act[28], UAV operators are prohibited from operating their devices in the following areas without prior authorization :

- Areas where air traffic is expected, such as airports or military bases
- In designated «Densely Inhabited Districts» (DIDs) or above gatherings of people
- At a distance of closer than 30 meters to people or objects or more than 150 meters above ground level
- At nighttime or beyond line of sight
- Drones may not carry «dangerous items» or drop items while in flight such as leaflets

The following year, Japan passed the Act on Prohibition of Flying UAVs over Important Facilities and Their Peripheries. The Act prohibits drones from flying over or within 300 meters of designated «Important Facilities» such as:

- The Supreme Court
- Embassies of any nation
- Nuclear power facilities
- The Diet (Japanese parliament building)
- The Imperial Palace
- The office of the Prime Minister or buildings of government agencies involved in crisis management
-

It remains illegal in Japan to attempt to intercept a drone in flight without prior authorization. Though the legislation is flux, for the moment only law-enforcement and military personnel are permitted to do so. This said Japanese police arrested or took other action against 115 people for civil aviation law violations linked to unauthorized drone flights in 2019, up 31 from the previous year[29].

## Future Developments

The « new » legislation for Olympics restricts the flying of drones over venues. Only drones providing coverage for, and controlled by, the media will be allowed to fly over venues during the sports events, if permission is granted.

In past Diet sessions, opposition parties such as the Constitutional Democratic Party of Japan, expressed many concerns that people's right to know may be hampered because the legislation would prohibit aerial photography and filming of the site in the Henoko district of Okinawa Prefecture where landfill work is being conducted for the relocation of the U.S. Marine Corps Air Station Futenma.
The government said it has no intention of restricting newsgathering activities.The legislation restricts operators from flying drones within 300 meters of the boundary of designated sites.


**Helpful Link**
The Ministry of Land, Infrastructure, Transport and Tourism's «Drone» page (Japanese & English): www.mlit.go.jp/en/koku/uas.html

# THE WORLD-WIDE HOBBYIST WEB RESOURCE

- dronelife.com news about civil drones and the drone industry in general.
- thehightechhobbyist.com/category/drones a source of the latest tech tutorials, reviews, and news from the viewpoint of a hobbyist. A must read for drone geeks.
- ardupilot.org a trusted, versatile, and open source autopilot system supporting many vehicle types. The source code is developed by a large community of professionals and enthusiasts.
- diydrones.com news for dronists dopped with «Do it yourself» technics.
- dronedj.com with its clean interface Haye Kesteloo and Seth Weintraub (and many other writers) produce content about releases of new machines, civil drones and DIY FPVs.
- fpvknowitall.com FPV drones news and tutorial site run by an US electronics engineer (Joshua Bardwell) who participated in the design of the first racer flight controller.
- oscarliang.com FPV drones news and tutorial site run by an US electronics engineer (Oscar Liang). Established in 2013, Oscar published over 1200 articles, and the content is still growing and being updated regularly.
- helicomicro.com one of the best news website in France on new machines and accessories in the world of consumer drones (DJI, Parrot...) and FPV.
- wearefpv.fr a wealth of tutorials for pimping your machine.
- droneradioshow.com Randy Goers originally started the Show to showcase the opportunities emerging in the industry. His weekly podcast is packed with interesting and educational information, presented in a fun and engaging manner, providing ideas that you can use to take your interest in drones to the next level.

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# Australia

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ANTI-DRONE SOLUTION

Drone incidents involving aircraft and drones flown in restricted areas have spiked in Australia as the technology gains in popularity. In 2016 a drone flying at an illegally high altitude came within 50 metres of a Lifesaver Rescue Helicopter in Queensland, seriously endangering the crew[30]. Privacy concerns increased as well due to peeping UAS, like the unknown spy drone that terrorised an entire rural community in the state of South Australia in 2017[31]. In response, the Civil Aviation and Safety Authority (CASA) has decreed a number of no-fly zones around the nation's airports, military bases and other sensitive sites. On the state and municipal levels, different restrictions abound - the cities of Sydney and Melbourne for example prohibit all unauthorized drone operations within large areas of their city limits, including city parks. The famous Uluru Rock and parts of the Great Barrier Reef are equally off-limits[32].

## Simple but Comprehensive

At the national level Australian drone laws tend to be more streamlined than some other countries and adhere to the principal of not disturbing the tranquility , or endangering the safety of others[33]. Regulations include:

- Keeping below 120 meters (400 ft) and above 30m (98 ft) away from other people or objects
- Avoiding areas where emergency operations are underway, such as car accidents or firefighting efforts
- Avoiding airfields or military installations within a 5.5km (18 000 ft) radius
- Not flying over gatherings or densely populated areas
- Keeping within line of sight during all operations
- Flying only in daytime
- Not filming individuals or private property without consent

CASA recommends that UAV operators always check with local authorities before flying as some may be stricter than others. This particularly applies to national parks, monuments and the coastline.

Commercial drone pilots - those flying devices weighing over 2kg (4.5 lbs) for monetary gain - are subject to additional requirements including[34]:

- Attainment of an Aviation Reference Number (ARN)
- Remote Pilot Licence (RePL)
- A training course by an approved organization for those without aviation experience or a flight test and supervised flight hours for those with aviation experience are also necessary

## Registration ahead

In a newsletter sent out by CASA, drone registrations and accreditation will soon be implemented in Australia, similar to car licenses.

Any drones that weigh over the 250-gram limit will be required to get registered on myCASA with the serial number, make, model, weight, and the type of drone. You are also required to be at least 16 years old and have an Aviation Reference Number (ARN). The exact price for registration is unknown at this point. This registration must be renewed every 12 months if you want to keep flying.

Along with registering your drone for flight, you will also have to prove you know the “standard operating conditions” for drones by getting accredited by CASA. You will be required to watch a short video and then take a quiz. You are allowed to take the quiz as many times as you want until you pass, where you will then receive a certificate. The certificate will last for three years and allows you to supervise others, including those flying that are under 16 years old.

If you already have a remote pilot license (RePL), you won’t be required to be accredited, but will still have to register your drones whether they are used recreationally or commercially. If you plan to only fly your drone indoors and it’s over 250 grams, you won’t be required to register your drone, either.

## Restrictions on Countermeasures

As in most of Europe and North America, attempting to intercept a drone by any means, be they physical or electronic is illegal in Australia for private citizens. Only authorized parties, such as the police and defense forces are permitted to intercept or neutralize a malevolent drone[35]. CASA provides an online report form for people wishing to report dangerous drone activity or harassment: https://www.casa.gov.au/webform/report-unsafe-drone-operations.


**Helpful Link**
The Civil Aviation Safety Authority
https://www.casa.gov.au/drones/rules


Know Your Drone is a national drone safety education campaign by the CASA run until mid-June 2020. It challenges recreational drone flyers on their perceived knowledge of the safety rules, encouraging them to take a quiz to test their knowledge and find out more.

The campaign is led by a 30-second feature video that depicts two large plinths in an outdoor setting – one that says 'TRUE' and the other 'FALSE'. As questions about the drone safety rules are asked over a loudspeaker, drone flyers select an answer by flying their drone over the appropriate plinth.

Advertising targets people with varied drone flying experience, including current and emerging drone operators, different age groups, Aboriginal and Torres Strait Islander people and people from culturally and linguistically diverse backgrounds such as Arabic, Vietnamese, Korean, Mandarin and Cantonese.

**To run the test**
www.knowyourdrone.com.au

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# India

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ANTI-DRONE SOLUTION

While some countries have come up with clear drone laws, others are still struggling to establish drone laws to match the changing landscape of drones over the years. And of course, making the law is one thing, but controlling a pilotless is a whole different level of challenge. In 2014, India imposed a complete ban on the use of civil drones[36]. It took four years for the government agencies to start seeing the flaws and missed opportunity, as in 2018, the Government of India came up with a regulatory policy regarding the use of drones.

## Category System

India's Directorate General of Civil Aviation announced the country's first Civil Aviation Requirements (CAR) for drones on August 27, 2018 amended on January 2020.

## Special Travel Considerations

Foreigners are currently not allowed to fly drones in India. For commercial purpose, they need to lease the drone to an Indian entity who in-turn will obtain Unique Identification Number (UIN) and UAOP from DGCA.

## Know your type!

**Nano:** Less than or equal to 250 grams (.55 pounds)
**Micro:** From 250 grams (.55 pounds) to 2kg (4.4 pounds)
**Small:** From 2kg (4.4 pounds) to 25kg (55 pounds)
**Medium:** From 25kg (55 pounds) to 150kg (330 pounds)
**Large:** Greater than 150kg (33 pounds)
Registration is required for all but the Nano category.

## General Rules

Here is an overview of the most important rules to know for flying a drone in India.

- All drones except those in the Nano category must be registered and issued a **Unique Identification Number** (UIN).
- A permit is required for commercial drone operations (except for those in the Nano category flown below 50 feet and those in the Micro category flown below 200 feet).
- Drone pilots must maintain a direct visual line of sight at all times while flying.
- Drones cannot be flown more than 400 feet vertically.
- Drones cannot be flown in areas specified as "No Fly Zones", which include areas near airports, international borders, Vijay Chowk in Delhi, State Secretariat Complex in State Capitals, strategic locations, and military installations.
- Permission to fly in controlled airspace can be obtained by filing a flight plan and obtaining a unique Air Defense Clearance (ADC)/Flight Information Center (FIC) number.

## Required Drone Equipment in India

Also worth mentioning is that India has specific requirements regarding the types of features a drone must have to be flown in India (excluding those in the Nano category). These mandatory requirements include:

- GPS

- Return-to-home (RTH)
- Anti-collision light
- ID plate, also called UI (Unique Identification Number).
- A flight controller with flight data logging capability
- RF ID and SIM/No Permission No Takeoff (NPNT)

## "No Permission, No Takeoff" Rule

Quite uniquely, India also has a «No Permission, No Takeoff» (NPNT). If a drone pilot tries to fly without receiving permission from the Digital Sky Platform, he or she will simply not be able to takeoff. All drone operators will register their drone and request permission to fly for each flight through India's Digital Sky Platform. Once registered the authority issue a Drone Acknowledgement Number (DAN) and an

## Recent Changes

In March 2020, the MOCA (Ministry of Civil Aviation) registered 20k+ drones since it made it mandatory for the operators to register.

## Penalites for infrigement

In case of violation of the rules and regulations for RPAs, the UIN/UAOP issued by DGCA shall be suspended/cancelled. Violation of compliance to any of the requirements and falsification of records/ documents shall attract penal action including imposition of penalties as per applicable IPCs (such as 287, 336, 337, 338 or any relevant section of IPC) or Aircraft Act 1934 or Aircraft Rules 1937 or any statutory provisions.


**Helpful Link**
Civil Aviation page: https://www.civilaviation.gov.in/sites/default/files/Drone_Registration_Public_Notice_13012020.pdf

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# About CerbAir

Founded in response to an alarming rise in drone security incidents, CerbAir is dedicated to offering the ultimate in anti-drone solutions.

Our in-house development and tool-box approach allow us to provide high-quality and flexible airspace security at a competitive price. With drones set to transform everyday life, CerbAir is committed to keeping our clients' sensitive airspace safe from rogue drone intrusions.

A pattern of drone abuse followed by reactive legislation pumped out by surprised authorities has become the standard in many places. But no matter how well laws are written, some pilots will either miss the message or choose to ignore it entirely. The best strategy to prevent rogue drone intrusions and stop their pilots is an offensive one: installing effective anti-drone solutions capable of evolving with a rapidly changing security landscape.

CerbAir is a proud member of

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# Contact us

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