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Comparative Study on the Drone Policies of India, Norway and United States of America

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Abstract: ***Beginning with invention of wheels by primitive man, the human saga of technological invention has touched our lives in an unprecedented manner. Twenty first Century man is now working on Artificial Intelligence, Cloud computing, Unmanned Aerial Vehicles. Each such invention is a boon and is meant for the benefit of mankind, but in the absence of a legal framework regulating the use of such technology the same will become a curse. This researchdeals with one such revolutionary invention of man called Drones. It examines the various legal frameworks existing in India, Norway & US regulating use of Drones.***

Keywords: RPAS, ICAO, DGCA, Legal Framework

1. Introduction

Out of numerous definitions, widely accepted definition of drones is contained in ICAO Circular on Unmanned Aircraft Systems, 2011 according to which RPAS is *"…set of configurable elements consisting of a remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other system elements as may be required, at any point during flight operation [*ICAO,*RPAS Concept of operations,* Retrieved from https://www.icao.int/safety/UA/Documents/RPAS%20CONOPS.pdf*]."* In other words drones are pilotless aerial vehicles. Unique feature of drones is that it can be operated on lower altitude and hence it can be used for multi purposes including data capturing, emergency medical support, agricultural purposes, cargo delivery, taxi and other commercial purposes. Drones also play inevitable role in guarding international borders and law enforcement. The UAS market in India is expected to touch US$ 885.7 million 2021, while globally it is projected to touch US$ 21.47 billion. [FICCI, *Make in India for UAS,* Retreived fromhttp://ficci.in/spdocument/23003/Make-in-India-for-UAS.pdf] It's evident that drones have become part and parcel of our life, and this paper aims at comparing regulatory framework for use of drones in India, Norway and USA.

United States of America

USA tops the drone industry both in terms of manufacturing and usage. It also means US tops in drone usage and to keep up with the exponential use of drones the legislature have brought into effect numerous laws for their regulation. In 2012, the Federal legislature introduced Federal Aviation Administration Modernization and Reformation Act, 2012 with an aim to "*integrate and promote civil use of unmanned aircraft system into the domestic airspace* [Section 341, FAA Reauthorization Act, 2018]*"*Regulations governing drone in US are drafted mainly based on purpose of use which can be broadly categorized into 'Fly for fun', 'Commercial, and 'Public safety & Government'

Purpose	Recreational Drone Pilots (Fly For Fun)	Commercial Drone Pilots
Whether UAS is allowed?	Yes, flying only for recreational purpose is allowed.[1]	Yes, apart from general rule of registration of drones, a special permission called Remote Pilot Airman Certificate is required.[2]
Registration of Drones	Drone must be registered[3] if it weighs above 249gms and less than 25kg.	Drone must be registered[4] if it weighs above 249gms and less than 25kg.
Maximum height for flying	400 ft in uncontrolled or class G airspace[5]	400 ft in uncontrolled or class G airspace[6]
Operational requirements	• In class G airspace, which is uncontrolled airspace no prior permission is required for operation of drone provided maximum height is 400ft. • To fly in controlled airspace prior permission has to be obtained before you fly through Low Altitude Authorization and Notification Capability (LAANC) • Do not fly in prohibited areas which can be viewed in interactive map. [1]	• Operations in class G airspace doesn't require permission of ATC but operations in class B,C,D,E airspace requires ATC permission. • Fly only in VLOS • Minimum age to get RPAC is 16
Other relevant	• Do not fly near airports & other aircrafts.	**Waiver which is an official document issued by**

[1] Section 349, FAA Reauthorization Act, 2018
[2]FAA,*Part 107,*Retrieved from https://www.faa.gov/uas/media/Part_107_Summary.pdf
[3]FAA, *FAA Drone zone,* Retrieved from https://faadronezone.faa.gov/#/
[4]*ibid*
[5]FAA, *Recreational flyers,* Retrieved from https://www.faa.gov/uas/recreational_fliers/
[6]*ibid*

rules	• No flying over public gathering, stadium etc. • No flying under influence of alcohol. • Drone operators to pass online aeronautical knowledge test and they must carry proof of test passage. • Drone should be operated only within visual line of sight. • The minimum age for registration process is 13. • FAA registration number must be made visible and should be fireproof label	**FAAallows the operator to fly drones:** • from moving surface • at night • beyond VLOS • multiple UAS with only one remote pilot • UAS over person/people.

FAA, Interactive map, Retrieved from https://faa.maps.arcgis.com/apps/webappviewer/index.html?id=9c2e4406710048e19806ebf6a06754ad
FAA, *Commercial operators*, Retrieved from https://www.faa.gov/uas/commercial_operators/part_107_waivers/

Norway

On April3, 2018 the Norwegian Government released its first drone strategy [Global Legal Monitor, *Norway Government publishes first drone strategy*, Retrieved fromhttps://www.loc.gov/law/foreign-news/article/norway-government-publishes-first-drone-strategy/]. The Civil Aviation Authority of Norway (CAAN) legalized use of drones in national airspace for both commercial and leisure purpose. [UAV Coach, *Drone laws in Norway*, Retrieved fromhttps://uavcoach.com/drone-laws-in-norway/]
Following are the general rules [CAA Norway, *Drones*, Retrieved from https://luftfartstilsynet.no/en/drones/] for flying drones in Norway:

- Operate only in VLOS
- No flying near accident sites
- No flying within 5km of airport without permission
- No flying beyond 394ft above the ground
- No flying over public gatherings

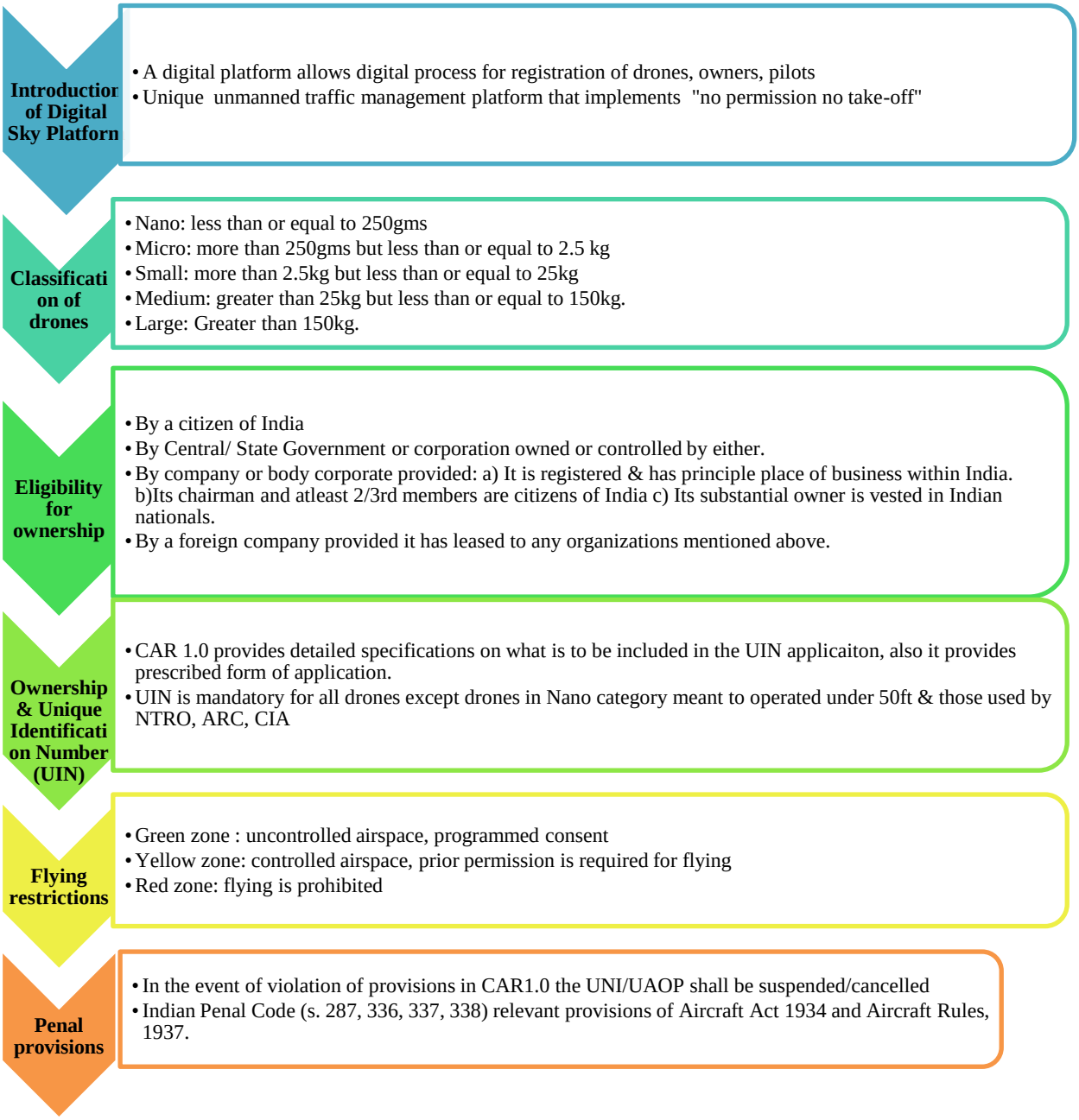
For commercial use, the user needs to notify and register drones with CAAN. Based on purpose for which drone is used, commercial operations [CAA Norway, *Commercial use of drones*, Retrieved from https://luftfartstilsynet.no/en/drones/commercial-use-of-drones/about-dronesrpas/regulations-of-drones/] fall into three categories: RO1, RO2 and RO3. The respective regulations are as follows:

Type/Purpose	RO1	RO2	RO3
Maximum Take-off Mass (MTOM)	Up to 2.5 kg	More than 2.5kg but less than or equal to 25 kg	More than 25 kg.
Rules of operation	Should be operated exclusively within VLOS during day light hours	Can be operated within VLOS or EVLOS during day light hours	Can be operated within VLOS or EVLOS during day light hours
License	No license is required however operator must notify CAA and give declaration.	Mandatory license required from CAA	Mandatory license required from CAA
Additional criteria	•Requires an operational manager who has attained age of 16 •Operational Manager must keep flight log, operational manual, mark drone with operator's name and telephone number.	•Pilot must pass the online course for drone operators.[3] •Requires an operational manager who has attained age of 18.	•Pilot must pass the online course for drone operators.[4] •Requires an operational manager who has attained age of 18.

[3]CAA Norway, *Commercial use of drones*, Retrieved fromhttps://luftfartstilsynet.no/droner/kommersiell-bruk-av-drone/nettkurs-drone/
[4]*ibid*

India

In 2014, DGCA imposed blanket ban on civil use of drone. The draft guidelines released in April, 2016 released draft guideline on possible future drone regulations in India. On August 27, 2018 Civil Aviation Requirements (CAR 1.0) was released, under provisions of Rule 15A and Rule 133A of Aircraft Rules, 1937, legalizing the civil use of drones in India. The guidelines came to existence from December 01, 2018. Following are the key features of the CAR1.0 or Drone Policy 1.0.



In January 15, 2019 Drone Policy 2.0 was released by Ministry of Civil Aviation which liberalized the constraints set by the previous policy. The new policy aims to promote commercial use of drones expanding its operability beyond VLOS. It also aims to promote foreign investment in India which will foster development of UAV industry.

2. Conclusion

Territory			
Recreational Use of Drones	✓	✓	✓
Commercial Use of Drones	✓	✓	✓
License Required to Fly	✓	✓	✓
Training Required to Get License	✓	✘	✓
Insurance Required for Commercial Flights	✓	✘	✘
Bvlos Allowed	✘	✘	✘