

# Unravelling the Future Game of Drones

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Can they be legitimized?

October 2016



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October 2016

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# 1. Overview

*“Everything that can be invented has been invented.”<sup>1</sup>*

This statement may have appealed to the United States' Patent Office in 1899; however, technological advancements presented by the 20th and 21st centuries have proven them wrong. The materializing of self-driven cars, cloud computing and introduction of concepts such as Machine to Machine (“M2M”), Internet of Things (“IOT”), augmented reality etc. have proven that innovation is not bound by any limits and has no goals to rest. Driven by the human imagination, innovation has touched our lives in an unprecedented manner.

On one hand the Internet has largely broken the barriers of physical borders and brought people closer, on the other, several ground-breaking inventions have provided a plethora of benefits to human kind. One such revolution in the making is the increasing use of drones. Ever since their introduction, drones have opened up several commercial applications in different fields ranging from delivery of products to end-consumers, capturing aerial footage for news purposes by journalists, entertainment, transport etc. Governments and militaries across the world

have also been employing drones for guarding their international borders and other law enforcement purposes.<sup>2</sup> The global Unmanned Aerial Vehicles/ drones market is expected to reach USD 5.59 Billion by 2020, at an estimated Compound Annual Growth Rate (“CAGR”) of 32.22% between 2015 and 2020.<sup>3</sup>

Despite several advantages, there is a high possibility of misuse of drones. A lot of concerns relating to the chilling effects caused to privacy and security rights due to unauthorized surveillance, tracking & profiling using such data collected, have been raised across jurisdictions by different stakeholders.

The given paper provides a brief introduction to the concept of drones, the technology they can integrate with and their current commercial capabilities and uses. It further analyses the legal and tax issues on drones usage along with providing a comparative regulatory framework of different jurisdictions. The concluding section provides for a way forward to ensure successful regulations which will strive for a balance between drone usage and policy making.

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1. <http://patentlyo.com/patent/2011/01/tracing-the-quote-everything-that-can-be-invented-has-been-invented.html>

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2. <http://www.ndtv.com/india-news/india-seeks-to-purchase-patrol-drones-from-us-1421891?from=home-topstories>

3. <http://www.marketsandmarkets.com/PressReleases/commercial-drones.asp>

## 2. What are Drones?

Drones, as we know them today, represents a significant development in robotic technology<sup>4</sup> and the private use of drones has started trending in media recently. The use of unmanned aircraft such as drones, is not a new concept and the origins of the concept can be traced back to 1896, when the first pilotless steam-powered aircraft registered a powered flight lasting over one minute.<sup>5</sup> Drones come in many shapes and sizes and can be operated by individuals for recreational or commercial purposes. Unlike traditional helicopters and hot air balloons, drones have the capability of flying at lower altitudes combined with data capturing capabilities of smart computing devices. They also differ from the traditional aircrafts, as they are mostly economical to operate and easily accessible to a wider range of population.<sup>6</sup>

In common terminology, drones refer to aerial vehicles, which can fly without a human operator. For regulatory purposes, different countries and international organizations have varied definitions of drones. Some of these definitions have been reproduced below.

In general aviation and space-related parlance, a 'Drone' refers to *any vehicle that can operate on multiple surfaces and/or in the air without a human being on board to control it*. They vary in size, shape, form, speed, and a host of other attributes, though some jurisdictions categorise and regulate them by weight. A drone could vary from a model aircraft / toy in a store or a large sized aircraft sent in a war zone.<sup>7</sup>

Other terminologies describe drones as **Unmanned Aerial Vehicles ("UAVs")**, **Unmanned Aerial Systems/ Unmanned Aircraft Systems ("UAS")** and **Model Aircrafts**.

4. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2571490](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2571490)  
 5. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2385448](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2385448)  
 6. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2571490](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2571490)  
 7. [https://www.priv.gc.ca/information/research-recherche/2013/drones\\_201303\\_e.asp#ftnref5](https://www.priv.gc.ca/information/research-recherche/2013/drones_201303_e.asp#ftnref5)

### I. Unmanned Aerial Vehicles ("UAVs")

A UAV refers to a power driven aircraft that is designed to fly without a human operator on board. The International Civil Aviation Organization ("ICAO"), charged with codification and regulation of airways, identifies drones as UAVs. It has also coined an exclusive term defining them as Remote Piloted Aircraft Systems ("RPAS"). The ICAO Circular on Unmanned Aircraft Systems, 2011 defines an RPAS as '[a] 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.'<sup>8</sup>

The use of the term "Remote Pilot" is of key importance here as it highlights the fact that the system is not always unmanned and always has a pilot in command responsible for the flight,<sup>9</sup> which may also be controlled either by on-board computers or a remote control of a pilot on the ground. Thus, RPAS belong to the wider family of UAS. The ICAO has also constituted an RPAS Panel, which aims to deliver standards for unmanned aircraft to ICAO's Governing Council ("GC") by the end of 2018.<sup>10</sup>

### II. Unmanned Aerial Systems ("UAS")

The term 'UAS', though defined similarly, is broader in its ambit and includes:

8. ICAO Circular 328-AN/190  
 9. Council of the European Union. Towards a European Strategy for the development of civil applications of Remotely Piloted Aircraft Systems external (RPAS), Working Paper (13438/12), September 6, 2012. Council of the European Union.  
 10. <http://www.ainonline.com/aviation-news/aerospace/2015-01-06/icao-panel-will-recommend-first-uav-standards-2018>



- the aircraft;
- the control system(s) on the ground;
- the control data link(s);
- other support equipment.

### III. Model Aircrafts

Model Aircrafts' are defined as aircrafts, which are mechanically driven or launched into flight for recreational purposes and are not designed to carry persons or living creatures. According to FAA Modernization and Reform Act, 2010, a drone may be equated with a "model aircraft" if it weighs less than 55 pounds and is operated in compliance with certain safety guidelines such as flying within the operator's line-of-sight, below 400 feet, and providing prior notice to air traffic control operators if flying within a 5 mile radius of an airport.<sup>11</sup> Since model aircrafts are generally recognized as being intended only for recreational purposes, they are not covered under the ambit of any international regulations, and are exclusively governed by relevant national regulations, if any.

While these definitions focus on the technology and functioning of drones, the military journals provide for different definitions based on their usage. For example, the US Department of Defence Dictionary of Military and Associated Terms defines UAVs as:

*"A powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles and artillery projectiles are not considered unmanned aerial vehicles."<sup>12</sup>*

Hence, based on the above definitions, we can broadly consider drones to be unmanned aircrafts/ ships guided by remote controls used for different purposes. The fact that they may be operated without a person on board, allows them to be designed smaller, making them less obstructive than conventional aircrafts.<sup>13</sup>

Also, the possibility of embedding several other technology devices such as Global Positioning System ("GPS"), camera, computer systems, sprayers, etc. with drones has opened up many avenues for their uses in commercial and domestic spheres. As per a study by the Association for Unmanned Vehicles Systems International ("AUVSI"), drone industry in the United States of America could provide up to over 100,000 new jobs and add \$82 billion in the economic activity between 2015 and 2025.<sup>14</sup> Drones, therefore, are a form of technical innovation that has tapped the doors to an entirely new market, bursting with potential.

The usage of drones from legal, operational and security perspective has been discussed in further sections.

11. [https://www.faa.gov/uas/publications/model\\_aircraft\\_operators/](https://www.faa.gov/uas/publications/model_aircraft_operators/)

12. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2385448](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2385448)

13. [http://www.academia.edu/11845032/Privacy\\_law\\_implications\\_of\\_the\\_use\\_of\\_drones\\_for\\_security\\_and\\_justice\\_purposes](http://www.academia.edu/11845032/Privacy_law_implications_of_the_use_of_drones_for_security_and_justice_purposes)

14. <http://www.auvsi.org/auvsiresources/economicreport>

## 3. The Cutting Edge Applications of Drones Today

Drones have a multitude of uses which have become apparent. They could be used for the quick delivery of donated organs, thereby avoiding the expense of hiring air transport or having to deal with traffic and potentially saving more lives.<sup>15</sup> They can be used for enhancing agricultural efficiency by identifying factors such as moisture content and nutrient soil availability. Remote sensing through drones can be of significant use in disaster-prone areas for pinpointing and fighting fires<sup>16</sup> or detection of theft and pilferage of goods meant for public utilization, or in detection of LPG gas leaks which can save several lives and resources.<sup>17</sup>

Drones also find application in law enforcement, helping with border patrolling, although cost concerns have been raised regarding a flagship effort on the US-Mexico border.<sup>18</sup> However, with improving technology, one can overcome such concerns and undeniable advantages such as being undetectable will help in preventing human and drug trafficking, spotting and reacting to border infractions and assistance in monitoring otherwise inaccessible terrain. One of the developments which has caught the imagination of the public has been drone delivery in e-commerce which was spearheaded by Amazon's announcement two years ago. This has however, run into problems with Federal Aviation Authority ("FAA") regulations as discussed later.

The latest developments in the field include concepts such as 'drone racing' which has garnered worldwide attention<sup>19</sup> and 'drone taxi', where the passenger, would only set a flight plan and instruct the device to take off or land via a tablet, with no further controls. There would be a back-up control centre which may take over in an emergency.<sup>20</sup> This drone, besides being a variation on the 'flying car' theme is also characterized by its autonomy. The key issue here is the degree of autonomy that is granted to the non-human components. Many drones already have autonomous functionality, to the extent that they avoid collisions and some to the extent that they are only provided general instructions or waypoints to follow, with the rest being left up to the drone.<sup>21</sup>

While regulations have generally not addressed this aspect, the circular released with the latest FAA regulations in June 2016, has allowed autonomous operation, but within certain limits.<sup>22</sup> However, it does not provide for regulation over larger drones as in the case of a drone taxi or it having only non-pilot human passengers. While it remains a legal grey area, this field is likely to evolve along the lines of self-driven cars.

15. <http://www.deccanherald.com/content/501388/drones-may-soon-used-organ.html>

16. <http://www.businessinsider.in/The-fire-in-Alberta-doubled-in-size-on-Saturday-and-firefighters-are-using-drones-to-fight-it/articleshow/52170421.cms>

17. <http://www.businessinsider.in/The-fire-in-Alberta-doubled-in-size-on-Saturday-and-firefighters-are-using-drones-to-fight-it/articleshow/52170421.cms>

18. <http://www.foxnews.com/us/2015/01/13/federal-report-says-border-patrol-drone-program-doesnt-fly.html>

19. <http://www.techinsider.io/drone-racing-league-could-go-main-stream-pilot-says-2016-2>

20. <https://www.theguardian.com/technology/2016/jan/07/first-passenger-drone-makes-world-debut>

21. <http://www.directionsmag.com/entry/future-trends-newest-drone-tech-revealed-at-ces-2016/462157>

22. [https://www.faa.gov/uas/media/AC\\_107-2\\_AFS-1\\_Signed.pdf](https://www.faa.gov/uas/media/AC_107-2_AFS-1_Signed.pdf)

## 4. Security and Privacy Concerns With the use of Drones

The absence of adequate safeguards and regulations with respect to the use of drones has raised several concerns relating to issues such as government overreach, data aggregation and invasion of privacy in public. It is imperative that these concerns are acknowledged and addressed efficiently by adequate regulations.

### I. Unauthorized surveillance

It is well known that drones can be easily utilized for mass surveillance. This is to be understood in context of digital technologies that aim to revolutionize our daily lives by having more detailed records about those lives.<sup>23</sup> In the name of national security and terrorism, surveillance mechanisms are utilized to track and profile the citizens by the state as well and private agencies. By the virtue of their design and size, drones can operate undetected, allowing the user to monitor people without their knowledge. For instance, there are drones with super high-resolution gigapixel cameras that can be used to track people and vehicles from altitudes as high as 20,000 feet.<sup>24</sup> They can carry equipment such as fake towers, which can break Wi-Fi codes and intercept text messages & cell phone conversations without the knowledge of either the communication provider or the user.<sup>25</sup> Drones equipped with advanced technologies can penetrate test networks and collect unencrypted data and even establish fake access points. Such unwarranted surveillance casts chilling effects on the citizen's civil liberties, intellectual privacy and eclipses people's right to dissent. Moreover, information collected surreptitiously can

be used to blackmail or discredit opponents.<sup>26</sup>

Surveillance is not restricted to the state; in fact the private companies also generate vast fortunes from the collection, use and sale of personal data. Although it may be argued that the collection of data about a person does not violate her/ his privacy interests *per se*, extensive collection can rise to a level of privacy intrusion.<sup>27</sup>

### II. Data Aggregation

Data mining/ aggregation refers to the technique of matching different data sets to draw inferences to learn new things and make predictions about the data subjects.<sup>28</sup> Apart from monitoring, drones amass large amounts of personal data, which can be very crucial to an individual's privacy. Post collection, the aggregation of drone-collected data with other personal information such as bank account details, telephone number, biometrics, etc. obtained from other resources can entail a unique privacy infringement beyond the mere collection of those individual data sets.

The mass collection of this data, which otherwise has been unobservable and its integration with other databases leads to 'Big Data',<sup>29</sup> which may raise several potential problems regarding privacy rights and consumer power.

23. <http://harvardlawreview.org/2013/05/the-dangers-of-surveillance/>

24. <https://www.eff.org/deeplinks/2012/01/drones-are-watching-you>

25. <https://www.eff.org/issues/surveillance-drones>

26. The Intellectual privacy theory suggests that a meaningful guarantee of privacy, protection from surveillance or interference is necessary to promote intellectual freedom.

27. <https://fas.org/sgp/crs/misc/R43965.pdf>

28. <http://www.dbta.com/Editorial/Trends-and-Applications/What-is-Data-Analysis-and-Data-Mining-73503.aspx>

29. Big Data refers to any voluminous amount of structured, semi-structured and unstructured information that has the potential to be mined for information.

### III. Hacking

The drones used by the government for maintaining law and order and for patrolling the borders, generally contain sensitive information. However, like every computer resource, drones are also prone to getting compromised. There have been previous instances where even the high-equipped patrolling drones have been compromised. A report provided by the University of Texas observed that the current generation of the UAVs is vulnerable to spoofing, hacking and jamming. In another instance, drug traffickers across the Mexican border successfully hacked the US Department of Homeland Security (“DHS”) and the US Customs and Border Protection (“CBP”)’s UAVs by sending wrong GPS coordinates, making it possible for them to avoid surveillance and cross the border.<sup>30</sup> A more alarming instance is that of drones being hacked by terrorists, gaining access to live feeds.<sup>31</sup>

Apart from being compromised, drones can be used to hack other devices as well. Recently, a group of researchers at Singapore University of Technology developed a drone which hacked the printers while flying outside a building and sharing the sensitive information directly with the drone.<sup>32</sup>

Hence, there is a need to ensure that adequate measures are taken to maintain high encryption standards for the data stored on the drones and strict punishments and penalties are prescribed for unauthorized hacking of drones.

### IV. Potential Security Hazards

The opening up of respective national skies for the private and domestic use of UAVs, also gives rise to the risks of possible accidents caused by collisions, battery failures, loss of navigational control or other equipment. The operation of UAVs is significantly different from that of the conventional aircrafts. The traditional air traffic control system issues a command for the pilot by radio and the pilot thereby avoids the collision. However, the current generation of drones / UAVs are not technically advanced to avoid such collisions and the users may not be properly trained to ensure that the risks of the accidents are mitigated. There is also a lack of clarity of segregation of no-fly zones and enforcement of such segregation. Numerous accidents were reported in the last three years because of negligent use of drones. For example In July, 2014, a drone narrowly avoided a collision with an Airbus A320 at the London’s Heathrow Airport.<sup>33</sup> Even in USA, more than 600 cases of drones flying near airplanes were reported within a span of 6 months.<sup>34</sup>

Drones pose a similar risk of injury on grounds caused due to crash impacts. A drone can crash into a populated area due to a system failure or unauthorized third party interference, leaving people on the ground gravely injured. It is imperative that in order to avoid such hazards, UAVs need to be equipped with ability to detect and avoid other aircrafts while moving through the air. Additionally, the relevant regulatory authority must prescribe minimum quality and technology standards, which must be used for manufacturing of drones meant for commercial or recreational purposes.

30. <https://www.hackread.com/us-border-patrol-drones-hacked-by-drug-cartels/>

31. <http://www.thedailybeast.com/articles/2016/03/25/how-islamic-jihad-hacked-israel-s-drones.html>

32. <http://www.ozy.com/fast-forward/the-next-great-threat-from-hackers-drones/67660>

33. <http://www.techrepublic.com/article/12-drone-disasters-that-show-why-the-faa-hates-drones/>

34. <http://www.techtimes.com/articles/145369/20160329/faa-report-reveals-drones-almost-collide-with-planes-multiple-times-a-day.htm>

## 5. Regulation of Drones

Currently, the domestic use of drones is at a nascent stage. Most countries do not provide for exclusive regulations to govern their operations. Only a few countries such as United States of America, France, and Germany have thoroughly deliberated on various concerns involved with UAVs and have laid down comprehensive legislations to regulate their use. The given section briefly discusses the regulation of drones in India and a few other countries.

### I. United States of America (“USA”)

#### A. Federal regulations

The US currently dominates the drones industry, in terms of manufacturing and usage. As per Federal Aviation Administration (“FAA”)’s report, the number of drones is estimated to cross 7 million by 2020, with recreational drones accounting for 4.3 million units.<sup>35</sup> Thus, in order to keep up with the rapid pace of UAVs’ usage, the FAA and the respective states have provided for a plethora of legislations for their regulation.

In 2012, the US Congress with an aim to address the safety concerns and to provide for uniformity throughout the national airspace, passed the FAA Modernization and Reform Act, 2012 (“FMRA”). The act requires the FAA to “*develop a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system.*”<sup>36</sup> It further mandates that a ‘*model aircraft*’ which could be a drone:

i) must not weigh more than 55 pounds; ii) must be within the visual line of sight (“VLoS”) of the operator; iii) must be used only for recreational

or hobby purposes. Model aircrafts are covered by Federal Aviation Regulation (“FAR”) 101 which came into force in August 29, 2016.<sup>37</sup>

At present, any federal, state or local agency wanting to operate a drone in national airspace needs a certificate of authorization from the FAA, whereas the commercial use of drones is allowed in compliance with FAA regulations and guidelines for private commercial use and the state-specific guidelines. FAA also plans to create test ranges and designate specific airspace throughout the country to be used to operate drone flights to develop better certification and air traffic standards.<sup>38</sup>

FAA and the US Department of Transport also issued an Interim Final Rule of 14 CFR “Aeronautics and Space” Part 48, **Registration and Marking Requirements for Small Unmanned Aircraft.**

The rules require registration of anyone above 13 years of age to register with FAA, for operating drones outdoors for a hobby or recreational purposes, before taking the outdoor flight. Additionally, Rule 91.13 of the FAR prohibiting careless and reckless operations of aircrafts is also applicable to drones, as per the case of *FAA v. Pirker*<sup>39</sup> where it was observed that drones fall within the definition of ‘aircraft’ for the purposes of this FAR.

In furtherance to this, FAA has asserted a much wider control by using its Interpretation<sup>40</sup> of the FMRA, stating that all existing FARs apply to drones as the FAA includes ‘*model aircraft*’ in its definition of ‘Aircrafts’, to which the FARs are applicable in law. While the US Supreme Court has held that the interpretations of

35. <http://www.govtech.com/public-safety/Drone-Sales-Could-Reach-7-Million-by-2020-FAA-Says.html>

36. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2357657](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357657)

37. <http://www.lexology.com/library/detail.aspx?g=a46a14e9-c2c1-40c8-949c-c90e28ecf287>

38. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2357657](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357657)

39. *FAA v. Pirker*, NTSB Docket CP-217, July 18, 2013.

40. Federal Aviation Administration, Interpretation of the Special Rule for Model Aircraft, 14 CFR Part 91, available at: [http://www.faa.gov/uas/media/model\\_aircraft\\_spec\\_rule.pdf](http://www.faa.gov/uas/media/model_aircraft_spec_rule.pdf)

a federal agency are not legislative rules, and do not have the force and effect of law, they continue to stand unless found to be arbitrary.<sup>41</sup>

## B. Exemptions for commercial purposes

The commercial use of drones is prohibited, however, FAA provides for certain exemptions to fly drones commercially, provided with other compliances such as requirement for operator to obtain a private pilot's license.<sup>42</sup> The FAA has laid down a procedure under which people can obtain exemptions under S.333 of the FMRA in order to fly their drone commercially.<sup>43</sup> This exemption is granted to certain FARs if i) they demonstrably burden the applicant, ii) the applicant adheres to the minimum standard of safety envisaged by the regulations, and iii) it is in the interest of the public.

## C. Small Unmanned Aircraft Rule (Part 107)

The FAA has come out with the final version of small Unmanned Aircraft System ("sUAS"), which came into effect on August 29 2016.<sup>44</sup> Part 107 regulation provide for detailed operational limits along with the certification process and responsibilities for remote pilots in command.<sup>45</sup> It allows for operation of drones without applying for a S. 333 exemption. This regulation is significantly different as it does not require operators to pass a medical exam or file any notice to Airmen ("NOTAM") prior to commencing a drone operation. It required operators to only obtain a remote pilot certificate by passing an online test regarding the new regulation<sup>46</sup> and a basic aeronautical knowledge test rather than acquiring any form of pilot's license,<sup>47</sup> which had been a roadblock.<sup>48</sup> Furthermore, the new regulation requires person actually flying the drone

to be at least 16 years old or be directly supervised by someone holding a remote pilot certificate. It further obligates a drone operator to ensure that the drone is safe prior to flying by performing a pre-flight visual and operational check of small UAS and checking the communication links between the control station and the UAS.<sup>49</sup>

This latest regulation has been hailed as a step forward, but has also been criticized as well since it still does not allow flight beyond visual range of the operator and restricts the flight to daytime.<sup>50</sup> The continuing restriction on beyond visual range operations rules out implementation of drone deliveries (as they would have to travel kilometres), to the frustration of companies like Amazon and Google, and delivery is specifically left out of the ambit of possible waiver under Part 107.<sup>51</sup> Further in all cases the combined weight cannot exceed 55lbs. However as far as the restrictions in the regulations are respected, commercial applications can be undertaken, with examples of operations benefitting including professional photography, journalism, short distance delivery, farm surveillance, etc.<sup>52</sup>

The FAA<sup>53</sup> grants a Certificate of Waiver or Authorization ("COA"), which can be exercised under the S. 333 exemption as well as new Part 107. The terms of CoA for the purpose of Part 107 will permit activities otherwise proscribed such as, operation from a moving vehicle, beyond visual line of sight operation (however, this explicitly excludes delivery), operations in restricted airspace, operations of multiple small air crafts, operations over uninvolved people, etc.<sup>54</sup>

## D. State Legislations

As the American Federal Government has exclusive sovereignty over the American airspace, federal enactments pre-empt any state enactment on this issue. Therefore, state governments are blocked out of legislating on this issued due to the passage of the

41. Perez v Banke 135 S. Ct. 1199 (2015)

42. <http://dronelawjournal.com>.

43. <http://dronelawjournal.com>

44. <http://www.lexology.com/library/detail.aspx?g=a46a14e9-c2c1-40c8-949c-c90e28ecf287>

45. [http://www.faa.gov/uas/media/Part\\_107\\_Summary.pdf](http://www.faa.gov/uas/media/Part_107_Summary.pdf)

46. <http://motherboard.vice.com/read/the-faas-new-commercial-drone-regulations-are-a-mess-for-hobby-pilots>

47. <http://waypoint.sensefly.com/u-s-drone-rules-part-107-explained/>

48. <http://dronelife.com/2016/05/17/what-is-part-107/>

49. [https://www.faa.gov/news/press\\_releases/news\\_story.cfm?news-Id=20515](https://www.faa.gov/news/press_releases/news_story.cfm?news-Id=20515)

50. <http://dronelife.com/2016/06/21/industry-reaction-part-107/>

51. <http://dronelawjournal.com/commercial/>

52. [http://www.faa.gov/uas/media/RIN\\_2120-AJ60\\_Clean\\_Signed.pdf](http://www.faa.gov/uas/media/RIN_2120-AJ60_Clean_Signed.pdf)

53. <http://dronelawjournal.com>

54. <http://dronelawjournal.com/commercial/>



FMRA, which confirms the federal government's intent to continue to "occupy the field" of flight. However, states are at the liberty to provide for ancillary regulations such as providing for security safeguards, segregating no fly zone whereby 45 states have introduced legislation to protect privacy and limit the use of drones.<sup>55</sup> Furthermore, certain states like the District of Columbia are a complete no-fly zone for UAVs. The rules set forth after the 9/11 attacks consign the airspace over the area to the category of 'National Defence Airspace', and limit aircraft operations to those with an FAA and Transportation Security Administration authorization.

## II. Canada

The Transport Canada is responsible for regulation of all drones used for recreational purpose or for other state uses such as police drones, except for military drones. Private use is regulated by Special Flight Operations Certificate ("SFOC") process.

SFOC is a two-step process for drone registration. The first step involved authorization followed by a gradual certification process. The SFOC is issued initially for a specific mission with specific conditions, which restricts the certificate holder to a particular flight plan, to be executed with a specific model of drone. If the operator develops a good track record of successful flights, the authorization is broadened to include larger geographical area and longer validity periods to cover multiple flights.<sup>56</sup> As per SFOC process, drones with maximum take-off weight lesser than 2 kg weighing between 2 kg- 25 kgs, do not require SFOC.<sup>57</sup>

## III. The European Union

Similar to the United States, the EU also provides for detailed set of regulations for regulating drones operation. The European Aviation Safety Agency

("EASA") in December, 2015 released the following notes titled: "Introduction of Regulatory Framework for the Operation of Unmanned Aircraft" and "Proposed Concept of Operations for Drones", with regard to the regulation pertaining to the use and operation of drones.<sup>58</sup> These notes provide feedback for EASA members and other stakeholders such as manufacturers and operators of regulatory framework for operation of drones. Based on the nature and purpose, the notes divide drones in the following categories:

- **Open** – These drones do not require an authorisation by an aviation authority for the flight but need to carry out their flight within defined limitations;
- **Specific** – These drones require an operations authorisation by an aviation authority with specific limitations adapted to the operation;
- **Certified** – These are drones with a higher risk associated with them due to the kind of operation they are used for. Such drones require certification from the relevant aviation authorities.

Notably, while the FAA regulations categorise drones by size and shape, the EASA regulations go for more *risk*-based categories. The EU regulations are focused on licenses and certifications, as noted above. Accordingly, permissions have to be sought from the aviation authority and an airworthiness certificate has to be obtained before a pilot is allowed to fly a drone.

With respect to the privacy and data protection ramifications, the EU has released a report evaluating the implications of drones.<sup>59</sup> As per the report, Europe's existing regulatory framework is adequate to address the concerns posed by the emergent technology. There are certain pre-conditions which need to be addressed to ensure that drones do not pose serious risks for citizens' fundamental rights to 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

55. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2357657](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357657)

56. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2571490](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2571490)

57. <https://www.tc.gc.ca/eng/civilaviation/opssvs/ac-600-004-2136.html>

58. <https://www.easa.europa.eu/easa-and-you/key-topics/civil-drones-rpas>

59. [http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/519221/IPOL\\_IDA\(2015\)519221\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/519221/IPOL_IDA(2015)519221_EN.pdf)

based application maintained by the local authorities. Though specific provisions have to be framed by Member States of the EU, the EASA notes provides clarity in terms of the objective of the proposed law and the rights and duties of the stakeholders.

Up until the final EASA rule is published, the EASA has delegated interim rulemaking for the regulation of drones to its Member States, which have promulgated national regulations for the same. Examples include France's "Decree of 11 April 2012 on the use of airspace by aircraft operating with nobody aboard",<sup>60</sup> UK's CAP 722 "Unmanned Aircraft System Operations in UK Airspace",<sup>61</sup> Finland's Regulation TRAFI/4482/03.04.00.00/2015 "Use of Remotely Piloted Aircraft and Model Aircraft",<sup>62</sup> and Germany's 'Common principles of federal and state governments for granting the permission to fly Unmanned Aviation Systems according to § 16 paragraph 1 point 7 Air Traffic Regulations ("LuftVG")'.<sup>63</sup>

## IV. Germany

In Germany, the German Aviation Act, 2007 ("Luftverkehrsgesetz" or "LuftVG"), was amended classifying RPAS as an aircraft for non-commercial purposes, on the fulfilment of certain physical conditions.<sup>64</sup> Such flights faced certain restrictions under S. 6(4) regarding use in certain zones, and a use-based permissions criterion.

The German Federal Ministry of Transport and Digital Infrastructure<sup>65</sup> have proposed new rules<sup>66</sup> for both commercial unmanned systems as well as recreational UAS operations, with relevant prospective legislations to effectuate such changes.

As per the rules, i) all drones weighing over 0.5 kgs, regardless of their use must obtain individual license plates for identification purposes. ii) for commercial purposes, the ministry has the discretion to permit on a case-to-case beyond line of sight flights, pending the determination of safe operation – however, what constitutes 'safe operation' is considerably open-ended. The rules also provide for separate set of regulations for UAVs flights for recreational purposes. According to these rules, recreational flights above 100 meters and out beyond visual line-of-sight are to be forbidden. More no-fly zones have been proposed, namely the airspace over railroads, power plants, industrial facilities and other critical infrastructure such as power transmission networks.

## V. Other Jurisdictions

Other countries which have an expanding presence of drones include Israel, Japan and S. Korea. Israel is one of the leading exporters of military drones in the world, accounting for over 60% of sales, in number of units shipped.<sup>67</sup> However their domestic regulations require licensing for business purposes and there are distance and height regulations for recreational use as well as area based restrictions.<sup>68</sup> S. Korea and Japan have recently taken the step of liberalizing their regulations on drones and their usage to encourage a new industry.

60. <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORF-TEXT000025834986>

61. <http://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=415>

62. [http://www.trafi.fi/filebank/a/1444223591/7ded5988558660d38599203de96117fe/18706-OPS\\_MI-32\\_RPAS\\_eng.pdf](http://www.trafi.fi/filebank/a/1444223591/7ded5988558660d38599203de96117fe/18706-OPS_MI-32_RPAS_eng.pdf)

63. German Air Traffic Control, NFL-I-281-13, (December 2013).

64. Per § 1(2) German Aviation Act; <http://www.gesetze-im-internet.de/luftvg/BJNR006810922.html>

65. [http://www.bmvi.de/EN/Home/home\\_node.html](http://www.bmvi.de/EN/Home/home_node.html)

66. <http://www.bmvi.de/SharedDocs/DE/Artikel/K/151108-drohnen.html>

67. <http://www.theguardian.com/news/datablog/2015/mar/16/numbers-behind-worldwide-trade-in-drones-uk-israel>

68. <https://uavsystemsinternational.com/drone-laws-by-country/israel-drone-laws/>



## 6. Drones Regulation under Public International Law

### I. Transnational Operation of Drones

The military use of drones recently came into light with various drone strikes in Yemen, Somalia and particularly, Pakistan.<sup>69</sup> In past, the use of drones for transnational attacks has resulted in several casualties including loss of life and property of civilians. At several instances, different school of thoughts of Public International Law (“PIL”) have debated whether the transnational use of military drones violates a nations’ sovereignty. A brief analysis of the use of armed drones across borders has been mentioned below.

The military operations of drones will be governed by the PIL principles for the use of armed forces. The Charter of the United Nations (“**Charter**”) provides for the use of armed forces in limited cases. As per the Charter, the Security Council may authorize the use of armed forces in order to prevent an aggravation of a situation, in case of any threat to the peace/ breach of

peace or act of aggression. It further allows for the use of armed forces by a member nation for self-defense in case of an armed attack against it until the Security Council has taken appropriate measures.<sup>70</sup> For transnational use, a state also needs to obtain the targeted state’s consent for such use or prove that the targeted state is unwilling/ unable to address the threat in issue.<sup>71</sup>

Use of military drones by a state qualifies as the use of armed forces. Also, carrying out drone attacks in another state without its consent may violate the targeted state’s sovereignty.

However, PIL regime is unclear on the transnational use of all civil drones. For example, whether a transnational flying of a micro drone for recreational purpose or a drone for commercial purpose would also violate a state’s sovereignty? Hence, the evolution of drones has presented significant other challenges to the existing PIL regime. It is pivotal that concepts of PIL also evolve accordingly, in order to address the concerns raised by such technological advancements.

69. <https://www.thebureauinvestigates.com/2015/02/02/almost-2500-killed-covert-us-drone-strikes-obama-inauguration/>

70. <http://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=2296&context=facpub>

71. <http://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=2296&context=facpub>

## 7. Drones Regulation in India

Drones are quickly becoming cost effective and more capable and have been widely adopted by the law enforcement agencies in India. Currently, India accounts for the highest percentage of the world's UAV imports (for defence purposes) at 22.5%.<sup>72</sup> The Government of India has recently entered into an arrangement to purchase armed drones from Israel and the US.<sup>73</sup> With India's innovation flight taking off with the launch of key initiatives such 'Make in India', 'Digital India' and a strong focus on IT start-ups, the government must use this opportunity to make India the world-manufacturing leader for drones.

The technological advancements and the benefits provided by drones have been widely acknowledged by different stakeholders in India, including the government, law enforcement agencies, industry, however, no particular steps have been taken up by the government to provide for an effective regulatory framework of UAVs, particularly for commercial purposes. As witnessed in the past with other technologies as well, the current mandate [*discussed below in detail*] on drones seems to be reactionary and lacks a long-term vision of incorporating drones in achieving goals of socio-economic development. However, the potential of this upcoming sector must not be undermined. As they gain more popularity in the eyes of the public and garner support for a potential market, a timely institution of robust and flexible drone regulations would go a long way towards tapping into and building upon this opportunity. The given section briefly discusses the current drones' regulatory framework in India and the implications of existing laws to the technological advancements.

### I. The Present scenario

Drones have been used in India for an extended period of time, however their use caught public attention when a pizzeria in Mumbai delivered a pizza, to much fanfare in May, 2014.<sup>74</sup> The police, realising that there were no regulations on drones, banned their use.<sup>75</sup> This was followed by the Director General of Civil aviation ("DGCA") issuing a public notice dated October 7th, 2014, imposing a blanket ban on the use of civil drones in the interest of national security, until further guidelines are issued. It should be noted that while the ban has been imposed due to 'national security', the DGCA acknowledged that drones have potential for a large number of civil applications. Post this notification, in April, 2016 the DGCA released draft guidelines on possible future drone regulations in India.<sup>76</sup> These draft guidelines have been discussed in the section below.

### II. Proposed guidelines for obtaining Unique Identification Number & Operation of Civil Unmanned Aircraft System ("Draft guidelines").

The Draft Guidelines define an unmanned Aircraft ("UA") as being '*an aircraft with no pilot on board*' and this would include all drones and model

72. <http://www.timesofisrael.com/india-to-buy-armed-israeli-drones-in-400m-deal/>

73. <http://www.ndtv.com/india-news/india-seeks-to-purchase-patrol-drones-from-us-1421891?from=home-topstories>

74. [http://www.telegraphindia.com/1140522/jsp/nation/story\\_18368920.jsp#.V3JATfl97IU](http://www.telegraphindia.com/1140522/jsp/nation/story_18368920.jsp#.V3JATfl97IU)

75. <http://www.mumbaimirror.com/mumbai/others/Police-ban-Drones-from-city-skies/articleshow/41661016.cms>

76. [http://www.dgca.nic.in/misc/draft%20circular/AT\\_Circular%20-%20Civil\\_UAS\(Draft%20April%202016\).pdf](http://www.dgca.nic.in/misc/draft%20circular/AT_Circular%20-%20Civil_UAS(Draft%20April%202016).pdf)

aircraft, with model aircraft being distinguished as not carrying a payload and only for recreational purposes.<sup>77</sup>

Key pointers of the Draft Guidelines are as follows:<sup>78</sup>

1. Division of UAs into categories based on weight: Micro (less than 2kg), Mini (less than 20kg), Small (greater than 20kg and less than 150kg) and Large (more than 150kg)
2. Each UA (including drones) needs to have a Unique Identification Number (“UIN”) which is issued by the DGCA.
3. UINs shall be issued only to the Indian citizens or to a company or a body registered or having a principal place of business in India, with the chairman and 2/3rd of directors being Indian citizens and ownership and control lying with Indian nationals.
4. Obtaining of an UIN is mandatory for all UAs and the operator needs to undertake a police verifications along with submitting details such as the proposed UA use, manufacturing details, UAs flight range, size etc.
5. Once the UIN is granted, it will be inscribed on a fireproof licence plate, with a Radio Frequency Identification tag or Subscriber Identity Module card and other indicators of ownership on the UA.
6. Civil UA operations below 200ft AGL (above ground level) in uncontrolled airspace and clear of restricted areas shall require no prior permission from the DGCA but the operator shall obtain permission from local administrative authorities.
7. Model aircraft operating below 200ft AGL in uncontrolled airspace and indoors for recreational purposes only, shall not require any prior permission from the DGCA / administrative

authorities. (*Aero modelling activities carried out within the premises of educational institutions will be considered as recreational purposes*).

8. All civil UA operations at or above 200ft AGL in uncontrolled airspace for any purpose whatsoever will require prior permission from the DGCA.
9. UAs must be in visual range and not more than 500 meters from the remote pilot in the case of micro and mini drones.
10. Training requirements for remote pilots where the UAs (i) are for purposes other than recreational flying; (ii) are not in the micro category (the ones which weigh more than 2 kgs).
11. UAs shall not discharge or drop substances unless specially cleared and mentioned in the permit letter. Further, UAs shall not carry any explosives/ dangerous goods, animals/ human payload etc.

The Draft Guidelines in their current state may present significant hurdles even for use of drones for recreational purposes. There are several provisions, which are vague and lack clarity, which may confuse the applicants and the operators. For e.g. the Draft Guidelines do not elaborate on definition of ‘AGL’ in order to measure permissible limits of a drones’ flight. Since an operator may operate a drone from different locations, including buildings, open grounds etc., certain clarity with respect to measurement of AGL would be significantly helpful in ensuring compliance with the guidelines. Furthermore, the Draft Guidelines also do not lay down any security or quality standards for drones. Due to the absence of such standards, there is a likelihood that low standard quality drones may also enter the Indian drones market.

Further, amongst other things one of the UIN requirements being a character verifications from the police *prima facie* appears arbitrary. Also, since the UA operations are heavily dependent on DGCA approvals, the proposed guidelines may be viewed to be overly excessive, hence, creating bottle necks in the usage of drones along with increasing dependencies on local enforcement bodies.

77. Clause 2 of the Draft Guidelines

78. [http://www.dgca.nic.in/misc/draft%20circular/AT\\_Circular%20-%20Civil\\_UAS\(Draft%20April%202016\).pdf](http://www.dgca.nic.in/misc/draft%20circular/AT_Circular%20-%20Civil_UAS(Draft%20April%202016).pdf)

### III. Current Regulatory Framework

The Department of Industry Policy and Promotion (“DIPP”), Ministry of Commerce and Industry in the Press Note No. 3 (2014 series) issued a list of electronic aerospace and defence equipment. As per the press note, obtaining an industrial license is mandatory for manufacturing/ production of equipment mentioned in the list which includes aircrafts, UAVs, Remotely Piloted Vehicles (“RPVs”), autonomous programmable vehicles, unmanned lighter than air vehicles (including drones,

balloons and UAVs).<sup>79</sup> It also clarified that dual-use items, as specified in the said list, having military as well as civilian applications, including drones, would require an industrial licence for manufacturing / production.

The Indian Customs Declaration Form has also been revised to include drones in the list of prohibited and dutiable goods requiring travellers entering India to declare and pay duty.<sup>80</sup> The current absolute ban itself has not seen strong enforcement, resulting in drones becoming increasingly popular in India.<sup>81</sup> Moreover, while there continues to be restrictions on drone manufacturing/ production and flying, there is no explicit ban on their sale.

79. [http://dipp.nic.in/English/acts\\_rules/Press\\_Notes/pn3\\_2014.pdf](http://dipp.nic.in/English/acts_rules/Press_Notes/pn3_2014.pdf)

80. <http://www.ibtimes.co.uk/india-places-drones-prohibited-dutiable-goods-list-1547263>

81. <http://indianexpress.com/article/technology/gadgets/why-india-needs-rules-for-flying-drones-soon/>

## 8. Legal implication of use and development of drones in India

Although India does not have any concrete laws vis-à-vis drones yet, there are various legal implications the existing laws may have on the operation of drones. Therefore, the legislators should also take into account different concerns, which may be presented due to the prospective regulations' interaction with the existing legal framework, as set out below, and work to incorporate them into the necessary legislations.

### I. Intellectual property Rights

As more and more advanced drones are invented with unique utilities, it opens up avenues for protection by the grant of patents. For example, Amazon, one of the leading e-commerce websites, has applied for a patent for its delivery system drone that delivers products to the customers' doorstep within 30 minutes of the order.<sup>82</sup> Boeing also obtained a patent for its "flying submarine" drone which is adaptable for both flight and water travel.<sup>83</sup> Under the Indian Patents Act, 1970 ("The Patents Act"), although there is no express restriction on filing patent applications in relation to drone inventions, specific procedures need to be adhered to if the invention has an impact on defence<sup>84</sup> or national security, and the grant of such patents may be subject to prior government approvals (*including the Indian Ministry of Defence*).

### II. Security and Privacy Concerns

Although not categorically mentioned as a constitutional right, the honourable Supreme Court of India ("Supreme Court") at several occasions such as in the case of *Kharak Singh v. The State of Uttar Pradesh*,<sup>85</sup> *Gobind v. State of Madhya Pradesh*<sup>86</sup> and *R Rajgopal & Anr v. State of Tamil Nadu*,<sup>87</sup> has recognized "Right to Privacy" as a part of the "Right to Life and Personal Liberty" guaranteed under Article 19 and Article 21 of the Constitution of India. At present, the Right to Privacy Bill is currently at a consultative stage in the Parliament. Simultaneously, there is a writ petition pending before the Supreme Court, challenging the use of biometric traits for identification purposes, which requires considering whether "Right to Privacy" constitutes a fundamental right of an individual guaranteed under the Constitution of India.<sup>88</sup> The other legislations providing for interception such as the Indian Telegraph Act, 1885 ("Telegraph Act") and the Information Technology Act, 2000 ("IT Act") lay down certain safeguards for preservation of civil liberties including privacy and expression rights. The government should factor these safeguards into consideration while deliberating on regulation of drones.

The Telegraph Act provides the framework for authorized phone tapping. Under Section 5(2) of the Telegraph Act, an order for tapping can only be issued on the occurrence of 'public emergency' or 'interest of public safety', if it is necessary and expedient in the interest of Sovereignty/ Integrity of India, Security of

82. <https://www.google.co.in/patents/US8825226>

83. <http://www.businessinsider.in/Boeing-has-patented-a-flying-drone-that-turns-into-a-submarine/articleshow/48504572.cms>

84. Chapter VII of the Patents Act, 1970

85. 1963 AIR 1295

86. 1975 AIR 1378

87. AIR 1995 SC 264

88. <http://judis.nic.in/supremecourt/imgsr.aspx?filename=42841>

the State, Friendly relations with foreign States, Public Order, Prevention of incitement the commission of any offence.<sup>89</sup> Further, the Indian Telegraph Rules, 1951 lay down the procedure to be followed for obtaining a phone tapping order.

As per these rules, only the Union Home Secretary or State Home Secretary or in unavoidable circumstances a Joint Secretary, can issue the orders for interception.<sup>90</sup> The rules also require the reasons for interception to be recorded in writing and to be reviewed by a review committee. An interception order can stay in force only for 60 days and the information collected can be retained for six months.

The IT act provides for exhaustive rules for authorized monitoring of information stored on any electronic device or computer. The provisions for interception, i.e. Section 69 and Section 69B draw their language from the phone tapping provisions under the Telegraph Act.<sup>91</sup> The IT act further provides for IT (Procedure and Safeguards for Interception, Monitoring and Decryption of Information) Rules, 2009 and IT (Procedure and Safeguards for Monitoring and Collection of Traffic Data or Information), 2009 for invoking the provisions for monitoring of data.

As previously mentioned, drones amongst other things will also be used for investigation purposes, giving rise to concerns relating to unwarranted targeted or mass surveillance. Use of photography or filming technology by drones, may lead to unauthorized breach of privacy rights. However, the use of drones for surveillance cannot be rejected entirely, as it significantly helps law enforcement agencies in restricting unlawful activities and promoting national security. Therefore, an effective balance needs to be achieved between the security and privacy concerns while ensuring sufficient flexibility to avail variety of beneficial drone uses.

It is noteworthy to mention that drones at several instances collect a lot of sensitive and personal data of individuals or classified information, which if

compromised can lead to adverse consequences for a persons' privacy rights. With regard to collection of data by drones, the legislation should provide for safeguards such as mandating high encryption standards, provision for consent clause for collection of information, data retention policy etc. The legislation for drone governance, like the Telegraph Act and the IT Act should lay down adequate safeguards against the unwarranted collection and abuse of data by the government as well as by private players in the industry.

### III. Tax Related Aspects of Drones

Developments in technology, internet, cloud computing, UAVs and IoT have given rise to various tax issues globally. There has been significant litigation in this respect, especially in relation to characterization of income and withholding taxes. Another emerging area where such issues that is likely to come up is the usage of drones.

#### A. Direct Taxes

##### i. Income Tax Regime

Taxation of income in India is governed by the provisions of the Income Tax Act, 1961 ("ITA"). Under the ITA, residents are subject to tax in India on their worldwide income, whereas non-residents are taxed only on income sourced in India. However, non-residents, who are resident of a country with which India has signed a tax treaty, have the option of being taxed as per the tax treaty or the ITA whichever is more beneficial. The corporate tax rate<sup>92</sup> in India is 30% for resident companies and 40% for non-resident companies (to the extent of income sourced in India). The Finance Minister of India had proposed to reduce the corporate tax rate from 30% to 25% (excluding surcharge and cess) over the next four years, coupled with rationalization and removal of various exemptions and rebates.<sup>93</sup>

89. <http://sflc.in/wp-content/uploads/2014/09/SFLC-FINAL-SURVEILLANCE-REPORT.pdf>

90. [http://www.dot.gov.in/sites/default/files/358%20GI-2014%20dated%208.2.2014\\_6.pdf](http://www.dot.gov.in/sites/default/files/358%20GI-2014%20dated%208.2.2014_6.pdf)

91. <http://sflc.in/wp-content/uploads/2014/09/SFLC-FINAL-SURVEILLANCE-REPORT.pdf>

92. All tax rates mentioned in this paper are exclusive of surcharge and cess.

93. <http://www.livemint.com/Politics/F8NkMrFwEzzKQQy9AGIfdP/Jaitley-begins-phasing-out-corporate-tax-exemptions.html>



The Finance Act 2016 has also introduced a new patent box regime by insertion of Section 115BBF in the ITA, with effect from April 1st 2017, under which worldwide income received by way of royalty in respect of a patent developed<sup>94</sup> and registered in India would be subject to tax on a gross basis at a concessional rate of 10%. This is applicable only in case of patents 'registered' in India and resident inventors who have filed for patents in offshore jurisdictions rather than under the Patents Act, 1970 in India may not be eligible for the proposed benefit.

Withholding tax of 10% (on a gross basis) is applicable in case of royalties and fees for technical services ("FTS") paid to non-residents. In case of failure to withhold, the payer could be liable for the principal tax amount, interest (at 12% per annum) and penalty (up to 100% of the principal tax amount). Further, the payer could face the risk of not being allowed to claim expense deduction (for the royalty / FTS payment) while computing its taxable profits.

## ii. Permanent Establishment

Developments in technology, including UAVs, have created unique Permanent Establishment ("PE") related risks due to the peculiar nature of transactions. PE exposure could lead to taxation of business profits at 40% in India to the extent attributable to the PE. Generally, a PE may be constituted if a non-resident carries out an income generating business in the other contracting state either through a fixed place or through employees or dependent agents.

Industries and areas where such drones are likely to be used, specifically for commercial purposes are global in nature. For example Amazon, which is looking at the option of using drones for delivery of goods instead of delivery executives. Owing to the nature of their global operations, their headquarters may be in one jurisdiction, but it may have presence in other jurisdictions in the form of warehouses, branch office, liaison office, godowns etc. for the effective carrying out of business activities in each jurisdiction. Usually issues of whether such presence in the respective countries constitutes PE and is liable to tax therein

may become relevant. Similar issues may emerge when there is a fixed place from which business of the foreign entity is carried out or an individual is engaged to carry out the activities by using drones. In such situations, the physical entity (fixed place) or the individual carrying out the specific activity can itself be construed to be a PE of the foreign entity and the fact that drones are being used to carry out the activity of delivery may not be very relevant.

For the purposes of such determination, Article 5 of the relevant DTAA would have to be looked into, in order to ascertain whether it qualifies the requirements of a fixed place or agency PE. Whether or not a PE formed is a fact specific analysis and each case will need to be looked into individually.

## B. Indirect Tax Framework

Various indirect taxes are levied at the central and state levels in India, which have been discussed below. However, please note that the Indian government has recently introduced a unified Goods and Services Tax ("GST") regime via Goods and Services Tax Bill. Once implemented, this would be a significant step in simplifying the indirect tax regime in India.

### i. Service Tax

Service tax is currently levied by the central government at 15% (inclusive of Swachh Bharat Cess of 0.5% and Krishi Kalyan Cess of 0.5%) on all services provided in India except certain specified services. Service providers can take credit for service tax paid on input services utilized and for excise duty paid on inputs and capital goods (barring certain specified inputs). According to Indian service tax law, services provided outside India are not subject to service tax in India. Typically, services are considered to be provided in India if the service recipient is located in India (even though the services may actually be provided outside India), except when specifically provided otherwise.<sup>95</sup>

94. ("developed" has been defined to mean "the expenditure incurred by the assessee for any invention in respect of which patent is granted under the Patents Act.)

95. Rule 3, Place of Provision Service Rules, 2012.

In case of drones, if the service provider and the service receiver both are in India, the service receiver should pay service tax to the provider. However, in the international context, in cases where the drones are owned by a service provider who is based in India but is providing services to a receiver based outside India, the question that arises is whether service tax should be payable and if yes, who should be paying service tax? Export of services is generally not subject to service tax. However, in such a case the place of provision of service should be outside India. To determine the place of provision of the service, we need to refer to the Place of Provision of Service Rules, 2012 (“POPS”). Under the POPS, generally it is the service receiver who is liable to pay service tax. In case the location of the service receiver is not available in the ordinary course of business, the place of provision is the location of the provider of service.

Services may be rendered by drones in the form of surveillance for Public Distribution System, spraying of fertilisers and pesticides and other such activities. However, at times the drone may be providing certain services along with delivering the goods. In such a situation, it would need to be determined, what is value of service that can be attributed to the task that is performed and only pay service tax to that extent.

## ii. Sales Tax

There are two types of taxes on sale of goods - central Sales Tax (“CST”) at the rate of 2% levied by the central government on sale of goods in the course of inter-state trade and value added tax (“VAT”), levied by the state governments on intra-state sale at standard rates of 0%, 1%, 5%, and 14.5% for different goods, although there may be variations in some states.

In case of VAT, tax credits are available on VAT paid on input goods procured by the dealer. One of the key issues in the context of software and other information technology (IT)-based applications and equipment is in relation to simultaneous levy of both service tax and VAT. The general principle is that service tax and VAT cannot be imposed simultaneously. However, in the context of software, the issue has not been settled. Tax authorities administering both taxes being

different, in many instances, both authorities have claimed that software or IT-based applications are subject to the respective tax administered by them. A similar issue might arise in case of activities conducted by drones. As typically, in a situation where a drone is being used for delivery of goods, both service tax, as well as VAT may arise simultaneously as the delivery is a provision of service alongside goods that are being delivered.

## iii. Excise Duty

Excise duty (or central value added tax or CENVAT) is levied by the Central Government on all goods that are produced or manufactured in India, marketable, movable and covered by the excise legislation. The primary rate of excise is 12.50%, although there are other rates ranging upwards, or based on an ad valorem / quantity rate, depending on the product description. A manufacturer of excisable goods may avail of credit for service tax paid on input services utilized and for excise duty paid on inputs and capital goods (barring certain specified inputs). Manufacture of drones in India should also result in payment of excise duty on such manufacture.

## iv. Customs Duty

Customs duty is levied by the central government on goods that are imported into India and exported from India. Levy of export duties are restricted to limited kinds of goods. Levy of import duties is quite wide. Import duties primarily comprise the basic customs duty, additional customs duty, and countervailing duty, safeguard duty and education cess. While the highest rate of basic customs duty for import of goods is 28.85%, the actual rate may vary according to the product description.

In the context of drones, it should be noted that import of drones is usually not allowed due various threat and security reasons. Further, the government amended the Customs Baggage Declaration to include drones in the list of prohibited and dutiable goods making it mandatory to declare them.<sup>96</sup> This will have the effect of either not allowing the drone or the imposition of duty on it, effective from April 1st 2016.

96. <http://www.cbec.gov.in/resources/htdocs-cbec/customs/cs-act/notifications/notfns-2016/cs-nt2016/csnt31->



## 9. Recommendations & Other Key Considerations

On comparison with the proposed guidelines and the latest American regulations as set out earlier, the proposed guidelines impose excessive regulations which may increase red tapism. Further, the guidelines themselves call for mandatory implementation of technologies such as collision avoidance which may take years to become truly effective.<sup>97</sup>

We believe that any drone regulation should strive to achieve a balance between growth and security. Hence, some recommendations regarding the proposed guidelines are as follows:

- Exemption for UIN registration for a certain category of drones;
- Regulations requiring police character verifications in select cases (*UAs beyond a certain size used commercial purposes*);
- Online single window clearances, especially for obtaining UIN;
- The ceiling of operations before requiring a DGCA permit maybe raised, perhaps to the 400 feet AGL (above ground level) standard as adopted by the USA;
- Weight categories could be the benchmark utilized to grade the level of regulations applicable;
- In the grant of the permit letter, the DGCA could consider gradations, based on the kind of activity sought to be carried out by the UA (and accordingly impose restrictions);
- Law enforcement agencies must ensure that drones meant for investigation do not collect or retain data irrelevant to an investigation;
- The proposed guidelines must draw a distinction between civilian and military use and accordingly lay down liabilities and remedies in for any violation;
- Like manned aircrafts, drones should also be registered and marked (*which is being considered in the Draft Guidelines*);
- Use of drones for surveillance (for law enforcement and otherwise) should only be permitted after thorough analysis of an application, which shall require the applicant to provide reasons for collection of data, usage of data and how they would operate while respecting civil liberties;
- Standard encryption and other technology standards for manufacturers should be laid down to for security of personal data collected;
- Commercial drones operators should provide for a privacy policy to their end users laying down the purposes for which the drone is used, type of data drone can collect and authorized uses etc.;
- Drones meant for recreational purposes should not enter private property without the owners' consent;
- Drone operators should ensure that drones meant for recreational purposes should not be used for collecting personal data without consent, particularly at instances where there in an expectation of privacy.

In addition, the following suggestions could also be considered, particularly from a security and privacy perspective.

Beyond the Draft Guidelines, the law is wide open to exploration. No case law as such exists on drones, but the principles of torts such as trespass, nuisance, privacy, harassment, hurt and negligence will play an instrumental role in the development of jurisprudence of drones' regulations. For e.g. flying a drone over another individual's land may account for trespass and

97. <http://www.nationaldefensemagazine.org/archive/2015/July/Pages/CollisionAvoidanceTechnologyforUnmannedAircraftYearsAway.aspx>

nuisance. Although, airplanes, helicopters are allowed to fly over a person's private property as transit, there is no jurisprudence developed regarding the low-altitude flight on an aircraft. The nuisance requires establishing harm. Types of harm recognized under the claim of nuisance may include damage to the land, interference with the easement, discomfort or inconvenience. Although, minor inconvenience will not be considered as nuisance, spying or unauthorized surveillance may account for nuisance, particularly when done with a deliberate attempt of causing harassment.

Similarly, injuries caused due to crash of drone or technical defaults to an individual may trigger a claim of hurt and may also involve principles of

vicarious liability of the owner or the operator of the drone causing the injury under the tort law. It will be interesting to observe how the courts will apply these traditional principles on the functioning of drones and other new technologies, in due course of time.

Application of drones offers several advantages in various facets and it is imperative that these benefits can be availed by maximum number of people while mitigating the risks to the civil liberties. The prospective regulations must be drafted after considering the economic opportunities presented by drones as well as the risks they present to other aircrafts and people at land.

## 10. The Road Ahead

The drones industry has a potential of providing an economic boost along with attracting global investments. The economic benefits also play into the need to innovate, potentially not only delivering better drones, but associated inventions as well. However, the rise of drones has presented several policy challenges in terms of personal privacy, public safety, international airspace, civil rights etc. Thus, the success of drones would depend on achieving a symbiotic integration of law, tax and civil liberties.

As drones gain more popularity in the eyes of the public and garner support for potential markets, a timely institution of robust and flexible drone regulations would go a long way towards tapping into and building upon this opportunity.

Taking lessons from history, different stakeholders should come together and work towards providing a comprehensive policy framework for drone regulation to ensure that a balance between innovation, progress and safety is adequately maintained.

## About NDA

Nishith Desai Associates (NDA) is a research based international law firm with offices in Mumbai, Bangalore, Palo Alto (Silicon Valley), Singapore, New Delhi, Munich and New York. We provide strategic legal, regulatory, and tax advice coupled with industry expertise in an integrated manner.

As a firm of specialists, we work with select clients in select verticals on very complex and innovative transactions and disputes.

Our forte includes innovation and strategic advice in futuristic areas of law such as those relating to Bitcoins (block chain), Internet of Things (IOT), Autonomous Vehicles, Artificial Intelligence, Privatization of Outer Space, Drones, Robotics, Virtual Reality, Med-Tech, Ed-Tech and Medical Devices and Nanotechnology.

We specialize in Globalization, International Tax, Fund Formation, Corporate & M&A, Private Equity & Venture Capital, Intellectual Property, International Litigation and Dispute Resolution; Employment and HR, Intellectual Property, International Commercial Law and Private Client. Our industry expertise spans Automobile, Funds, Financial Services, IT and Telecom, Pharma and Healthcare, Media and Entertainment, Real Estate, Infrastructure and Education. Our key clientele comprise marquee Fortune 500 corporations.

According to the recent report by India Brand Equity Foundation (IBEF), India's Civil Aviation Industry is on a high-growth trajectory expected to grow from being the 9th largest aviation market in the world with a size of around US\$ 16 billion to being the 3rd biggest by 2020 and the largest by 2030.

The Government of India (GOI) also envisions airport infrastructure investment of US\$ 11.4 billion under the Twelfth Five Year Plan (2012-17). It has opened up the airport sector to private participation. The Airports Authority of India (AAI) also aims to bring around 250 airports under operation across the country by 2020. We at NDA accordingly prepare ahead, envisaging the coming 10 to 15 years, in order to provide clients appropriate insights based on our understanding of current as well as future legal and regulatory issues.

Our ability to innovate is endorsed through the numerous accolades gained over the years and we are also commended by industry peers for our inventive excellence that inspires others.

Most recently, NDA was ranked the 'Most Innovative Asia Pacific Law Firm in 2016' by the *Financial Times - RSG Consulting Group* in its prestigious **FT Innovative Lawyers Asia-Pacific 2016** Awards. While this recognition marks NDA's ingress as an innovator among the globe's best law firms, NDA has previously won the award for the 'Most Innovative Indian Law Firm' for two consecutive years in 2014 and 2015.

As a research-centric firm, we strongly believe in constant knowledge expansion enabled through our dynamic Knowledge Management ('KM') and Continuing Education ('CE') programs. Our constant output through Webinars, Nishith.TV and 'Hotlines' also serves as effective platforms for cross pollination of ideas and latest trends.

Our trust-based, non-hierarchical, democratically managed organization that leverages research and knowledge to deliver premium services, high value, and a unique employer proposition has been developed into a global case study and published by John Wiley & Sons, USA in a feature titled 'Management by Trust in a Democratic Enterprise: A Law Firm Shapes Organizational Behavior to Create Competitive Advantage' in the September 2009 issue of *Global Business and Organizational Excellence (GBOE)*.

A brief below chronicles our firm's global acclaim for its achievements and prowess through the years.

- **IDEX Legal Awards:** In 2015, NDA won the “M&A Deal of the year”, “Best Dispute Management lawyer”, “Best Use of Innovation and Technology in a law firm” and “Best Dispute Management Firm”. Nishith Desai was also recognized as the ‘Managing Partner of the Year’ in 2014.
- **Merger Market:** has recognized NDA as the fastest growing M&A law firm in India for the year 2015.
- **Legal 500** has ranked us in tier 1 for Investment Funds, Tax and Technology-Media-Telecom (TMT) practices (2011, 2012, 2013, 2014)
- **International Financial Law Review (a Euromoney publication)** in its **IFLR1000** has placed Nishith Desai Associates in Tier 1 for Private Equity (2014). For three consecutive years, IFLR recognized us as the Indian “Firm of the Year” (2010-2013) for our Technology - Media - Telecom (TMT) practice.
- **Chambers and Partners** has ranked us # 1 for Tax and Technology-Media-Telecom (2015 & 2014); #1 in Employment Law (2015); # 1 in Tax, TMT and Private Equity (2013); and # 1 for Tax, TMT and Real Estate – FDI (2011).
- **India Business Law Journal (IBLJ)** has awarded Nishith Desai Associates for Private Equity, Structured Finance & Securitization, TMT, and Taxation in 2015 & 2014; for Employment Law in 2015
- **Legal Era** recognized Nishith Desai Associates as the Best Tax Law Firm of the Year (2013).

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# Research @ NDA

**Research is the DNA of NDA.** In early 1980s, our firm emerged from an extensive, and then pioneering, research by Nishith M. Desai on the taxation of cross-border transactions. The research book written by him provided the foundation for our international tax practice. Since then, we have relied upon research to be the cornerstone of our practice development. Today, research is fully ingrained in the firm's culture.

Research has offered us the way to create thought leadership in various areas of law and public policy. Through research, we discover new thinking, approaches, skills, reflections on jurisprudence, and ultimately deliver superior value to our clients.

Over the years, we have produced some outstanding research papers, reports and articles. Almost on a daily basis, we analyze and offer our perspective on latest legal developments through our "Hotlines". These *Hotlines* provide immediate awareness and quick reference, and have been eagerly received. We also provide expanded commentary on issues through detailed articles for publication in newspapers and periodicals for dissemination to wider audience. Our *NDA Insights* dissect and analyze a published, distinctive legal transaction using multiple lenses and offer various perspectives, including some even overlooked by the executors of the transaction.

We regularly write extensive research papers and disseminate them through our website. Although we invest heavily in terms of associates' time and expenses in our research activities, we are happy to provide unlimited access to our research to our clients and the community for greater good.

Our research has also contributed to public policy discourse, helped state and central governments in drafting statutes, and provided regulators with a much needed comparative base for rule making. Our *ThinkTank* discourses on Taxation of eCommerce, Arbitration, and Direct Tax Code have been widely acknowledged.

As we continue to grow through our research-based approach, we are now in the second phase of establishing a four-acre, state-of-the-art research center, just a 45-minute ferry ride from Mumbai but in the middle of verdant hills of reclusive Alibaug-Raigadh district. The center will become the hub for research activities involving our own associates as well as legal and tax researchers from world over. It will also provide the platform to internationally renowned professionals to share their expertise and experience with our associates and select clients.

We would love to hear from you about any suggestions you may have on our research reports.

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