Embrace the Career Opportunities in India's Drone Revolution

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Have you ever dreamt of stepping into the world of drones- a realm where promising careers and entrepreneurial ventures await? Your wait is over as India is steadily moving in the direction of becoming the 'Global Drone Hub'. Union Information and Broadcasting Minister Shri Anurag Singh Thakur, while flagging off the "Drone Yatra 2.0" in Chennai announced that India will need about 1 lakh drone pilots by 2023 end, creating employment opportunities worth Rs 6,000 crores annually within the drone industry. It is a vision of growth and potential that holds great promise.

Drones, once seen primarily in military contexts or as a recreational gadget, have evolved into versatile tools for real-world challenges. They're no longer just flying gadgets; they're on a mission to combat diseases, protect marine ecosystems, and facilitate efficient deliveries. It is a remarkable fusion of technology and practicality that is reshaping industries.

Recognised for its technological prowess, India is not merely embracing drone technology-it is leading the charge. From capturing breathtaking visuals to aiding disaster management efforts, drones have become indispensable problem solvers across various fields.

Did you know? India commands a significant share of the global drone market, accounting for 22.5% of all drone imports worldwide. This showcases India's pivotal role in driving drone innovation and adoption. Moreover, the commercial aspect of the drone industry, focusing on applications like delivery services, is rapidly outpacing its military counterparts.

With the renewed focus on 'Aatmanirbharta' industry forecasts predict that India's indigenous drone manufacturing capacity is set to augment from the current Rs. 60-80 crore to a substantial Rs. 900 crore by the year 2024.

For young aspirants stepping into the world of jobs, the drone industry presents an enticing avenue. It is a realm where innovation merges seamlessly with practical application, offering ample room for professional growth and exploration. If you are intrigued by the convergence of technology, vision, and real-world impact, the world of drones beckons you to embark on a journey of innovation and possibilities.

The demand for certified drone pilots has surged in India, witnessing an incredible increase of approximately 1365 percent in

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the number of drone pilot licenses since the issuance of the Drone Rules, 2021, and the Drones (Amendment) Rules, 2022. According to Minister of State in the Ministry of Civil Aviation Gen. (Dr.) V. K. Singh (Retd), as of 1st July 2023, more than 5000 Remote Pilot Certificates (RPC) were issued through the Digital Sky Platform, opening up numerous opportunities for drone enthusiasts.

Considering this trend, the Directorate General of Civil Aviation (DGCA) has established authorised Remote Pilot Training Organizations (RPTO) in various States and Union Territories to provide training for aspiring drone pilots. So, get ready to take flight. The sky is no longer the limit!

Steps to Becoming Flight-Ready

Becoming a certified drone pilot in India requires dedication, proper training, and adherence to DGCA regulations. By following the outlined steps and completing the comprehensive training provided by an authorised RPTO, you will be well-prepared to operate drones safely and responsibly. A career as a drone pilot offers exciting opportunities across various industries and contributes to the advancement of technology and aerial applications in India.

Understand the Requirements and Categories: Before embarking on your journey to become a drone pilot, it is crucial to grasp the requirements set by the DGCA. Two main categories of drone pilots are: Category 1 (Visual Line of Sight - VLOS) and Category 2 (Beyond Visual Line of Sight - BVLOS). VLOS pilots operate drones within their direct line of sight, while BVLOS pilots can operate drones beyond their line of sight with advanced training.

Enroll into a Reputable Remote Pilot Training Organisation (RPTO): An RPTO's primary purpose is to provide Remote Pilot Training to individuals who wish to obtain a Remote Pilot Certificate as per Rule 34 of the Drone Rules 2021. To receive proper training, you must enroll in a DGCA-approved RPTO that will guide you through the required curriculum and practical flight training.

DGCA Approved Syllabus

Ground Class Syllabus: It is designed to provide you with the essential theoretical knowledge necessary for responsible drone operation. Topics covered include:

- Understanding stakeholders and relevant drone laws
- Comprehending the Drone Rules 2021 and the aviation law
- Familiarising yourself with airspace regulations
- Grasping the basic principles of flight for drones
- Learning ATC (Air Traffic Control) procedures and Radio Telephony
- Understanding weather and meteorology's impact on drone flights
- Mastering Crew Resource Management (CRM)
- Gaining insight into Instrument Flying Techniques
- Learning Risk Assessment and Safety Management
- Exploring Payload Installation and Utilisation
- Introduction to Drone Data Analysis for data-driven operations

Flying Class Syllabus: It focuses on hands-on experience with drones and practical flight training. Key components of the syllabus include:

- **Flight Simulator Training:** Utilise drone simulators to practice various flight scenarios
- **Basic Assembly and Maintenance:** Learn to assemble and maintain drones properly
- **Flight Simulator Instrument Flying:** Practice instrument flying techniques using simulators
- **Dynamic Payload Ground Handling:** Familiarise yourself with handling dynamic payloads on drones
- **Practical Flying with an Instructor and Solo Flying:** Gain flight experience with an instructor's guidance and eventually fly solo

Duration: The training duration varies based on the category and complexity of drone operations.

- **Cat-1 (VLOS):** Training typically spans 5 to 8 days, including 2 days of theory and 3 to 6 days of practical training
- **Cat-2 (BVLOS):** The training duration is more extensive, lasting approximately 150 hours, with 106 hours dedicated to theory and 44 hours for practical training

Competency-Based Training and Assessment: The DGCA emphasises competency-based training to ensure a high level of operational capability among drone pilots. This approach focuses on developing competencies through observable behaviors, skills, and attitudes required for safe and efficient drone operation. RPTOs must create training programs that encourage continuous learning and performance improvement.

Crediting of RPAS (Remotely Piloted Aircraft System) Theory and Flight Time: If you already have some relevant experience, you might be eligible for credits towards your training. Whether you hold a Cat-1 Remote Pilot License, a Private or Commercial Pilot License, have military flying experience, or work as an aerospace or aeronautical engineer, you could receive some credits towards your certification.

List of DGCA Approved RTPOs (as on 1st August 2023)

RTPO	Location
1. Academy of Carver Aviation Pvt. Ltd.	Pune, Maharashtra
2. Acharya N.G. Ranga Agricultural University (ANGRAU)	Guntur, Andhra Pradesh
3. AdiSA Drona Private Limited	Kohlapur, Maharashtra
4. Aerophile Academy Private Limited	Doddaballpur, Karnataka
5. Agni Aero Sports Adventure Academy	Bangalore, Karnataka
6. Airbus Group India Private Limited	Bangalore, Karnataka
7. Aman Aviation and Aerospace Solution Pvt. Ltd.	Mumbai, Maharashtra
8. Autonomous Unmanned Aerial Systems Private Limited	Kasrgod, Kerala
9. Blue Ray Aviation Private Limited	Mehsana, Gujarat
10. CASR Anna University	Chennai, Tamil Nadu
11. Centurion University of Technology and Management	Paralakhemundi, Odisha
12. Clearskies Learning & Research Pvt Ltd	Chikkaballapur, Karnataka
13. CSC Academy	Karnal, Haryana
14. Drogo Drones Private Limited	Guntur, Andhra Pradesh
15. Dronachariya Drone Academy LLP	Meerut, Uttar Pradesh
16. Drone Academy Pvt Ltd (Trade Name: India Drone Academy)	Hyderabad, Telangana
17. Drone Destination Private Limited	Phulpur, Uttar Pradesh
18. Drone Destination Pvt. Ltd.	Punjab
19. Drone Destination Pvt. Ltd.	Gurugram, Haryana
20. Drone Imaging & Information Services of Haryana Limited	Karnal, Haryana
21. Droneacharya Aerial Innovations Pvt. Ltd.	Pune, Maharashtra
22. Dronetech Solutions Private Limited	Nallasopara, Maharashtra
23. Flapone Aviation Private Limited	Sonipat, Haryana
24. Flytech Aviation Academy	Secunderabad, Telangana
25. Fore Institute of Drone Technology and Research (FIDTR)	Gurugram, Haryana
26. Ganpati Aviation Solutions	Haryana
27. Garuda Aerospace Private Limited	Chennai, Tamil Nadu
28. Government Aviation Training Institute (M/s Global Avianautics Ltd.)	Gurugram, Haryana
29. Indira Gandhi Rashriya Uran Akademi (IGRUA)	Madurai, Tamil Nadu
30. Indira Gandhi Rashriya Uran Akademi (IGRUA)	Coimbatore, Tamil Nadu
31. Indira Gandhi Rashtriya Uran Akademi	Gwalior, Madhya Pradesh
32. Indira Gandhi Rashtriya Uran Akademi	Gurugram, Haryana
33. Indira Gandhi Rashtriya Uran Akademi	Bhopal, Madhya Pradesh
34. Indira Gandhi Rashtriya Uran Akademy (IGRUA)	Bengaluru, Karnataka
35. Indira Gandhi Rashtriya Uran Akademy (IGRUA)	Himachal Pradesh
36. Iotechworld Avigation Private Limited	Gurugram, Haryana
37. J VE Konnect Private Limited (OPC)	Navi Mumbai, Maharashtra
38. Kasegaon Education Societys Rajarambapu Institute of Technology	Sangli, Maharashtra
39. Kaushalya The Skill University	Ahmedabad, Gujarat
40. M/s Assam Electronics Development Corporation Limited	Assam
41. M/s Kite Aero Private Limited	Vadodara, Gujarat
42. M/s Marut Dronetech Private Limited	Hyderabad, Telangana
43. Mahatma Phule Krishi Vidyapeeth	Ahmednagar, Maharashtra
44. Multiplex Drone Private Limited	Bangalore, Karnataka
45. Naini Aerospace Limited	Prayagraj, Uttar Pradesh
46. Neosky India Limited	Kolar, Karnataka
47. Pavaman Aviation Private Limited	Hyderabad, Telangana
48. PBC's Aero Hub	Pune, Maharashtra
49. Phoenix Drone Flying LLP	Gurugram, Haryana
50. Pioneer Flying Academy Pvt. Ltd	Aligarh, Uttar Pradesh
51. Rao Industries	Pune, Maharashtra
52. Raxa Security Services Ltd	Andhra Pradesh
53. Redbird Flight Training Academy Private Limited	New Delhi
54. RRU	Droneacharya Gandhinagar, Gujarat
55. Sanskar Dham Campus	Ahmedabad, Gujarat
56. Sph Aviation Private Limited	Gurgaon, Haryana
57. Telangana State Aviation Academy	Hyderabad, Telangana
58. Terna Public Charitable Trust	Osmanabad, Maharashtra
59. The Bombay Flying Club	Mumbai, Maharashtra
60. Ultimate Energy Resource Private Limited	Bhopal, Madhya Pradesh
61. Wissmo Agventure Private Limited	Jaipur, Rajasthan
62. Woahage Aviation Private Limited	Telangana
63. Wow Go Green LLP	Gandhinagar, Gujarat

Skilling for Roles beyond Drone Piloting

In addition to drone pilot training offered by Remote Pilot Training Organisations (RTPOs), the Ministry of Skill Development and Entrepreneurship (MSDE) is playing a crucial role in enhancing skills within the drone sector. The MSDE has introduced six short-term skilling courses to address the growing demand for skilled personnel in the drone industry. These courses are designed to equip individuals with specialised skills required for various roles in the drone sector. The courses approved by the MSDE and

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available at various various Industrial Training Institutes (ITIs) across different states and union territories are:

- Drone Developer (Software) - Duration: 510 Hours
- Drone Manufacturing and Assembly Technician - Duration: 390 Hours
- Drone Monitoring and Maintenance Associate - Duration: 390 Hours
- Drone Operator- Multi Rotor - Duration: 390 Hours
- Drone Service Technician - Duration: 400 Hours
- Kisan Drone Operator - Duration: 390 Hours

Scope for Research and Development

The drone sector stands as a prime example of remarkable innovation and burgeoning start-ups in recent years. It offers educational courses, academic degrees, and avenues for substantial research and development. Notable academic institutions engaging in drone-related education and research include the Indian Institute of Science (IISc) in Bangalore, Indian Institutes of Technology (IIT) campuses in Bombay, Kanpur, and Madras, the Defence Institute of Advanced Technology (DIAT) in Pune, the International Institute of Information Technology (IIIT) in Hyderabad, and Anna University.

Policy Push for Drone Entrepreneurship

The Government of India is actively pursuing its vision of establishing India as a global drone manufacturing hub, thereby creating a favorable environment for business opportunities in this promising sector. A series of strategic initiatives have been undertaken to facilitate the growth of domestically produced drones, exemplified by the following measures:

- **Production-Linked Incentive (PLI) Scheme:** In September 2021, the government introduced the PLI scheme specifically tailored for drones and their components. This initiative offers a financial incentive of Rs 120 crores distributed over a span of three financial years. Notably, the beneficiaries encompass drone manufacturers as well as manufacturers of drone components.
- **Agricultural Drones Monetary Grant Programme:** The Ministry of Agriculture & Farmers' Welfare (MoAFW) announced a monetary grant program in January 2022, aimed at facilitating the acquisition of agricultural drones. This move underlines the government's commitment to harness drone technology for enhancing agricultural practices.
- **Drone Shakti:** The Drone Shakti scheme announced in Budget 2022, represents the government's viewpoint on consolidating efforts within the drone ecosystem. Essentially, it involves institutionalising and establishing a framework wherein multiple stakeholders can collaborate. Furthermore, it facilitates cost-effective adoption of drones for customers and offers incentives to manufacturers and service providers to engage in an ongoing cycle of innovation.
- **Import Restrictions:** To fortify the domestic drone manufacturing ecosystem, the Directorate General of Foreign Trade (DGFT) issued a notification (No. 54/2015-2020) on 9th February 2022. This notification effectively restricted the import of drones, except for designated purposes such as research and development, defense, and security.
- **Streamlined Business Environment**: A pivotal step toward fostering a conducive business environment involves the elimination of import license requirements for drone components. This strategic decision was aimed at enhancing the Ease of Doing Business, thereby bolstering indigenous drone manufacturing efforts.

These concerted efforts by the Indian government underscore its ambition to position the country as a premier global player in the drone manufacturing domain. By incentivising production, facilitating agricultural applications, imposing import restrictions for certain categories, and streamlining administrative processes, the government is proactively nurturing a fertile ground for the growth of domestic drone manufacturing while simultaneously kindling a diverse array of business prospects and employment opportunities.

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Views expressed are personal.

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tics (VTDs), aiming for equitable access.

- Form international and national committees for universal digital access to inclusive healthcare.
- Adopt a multisectoral 'One Health' approach, addressing human, animal, and ecosystem health.
- Accelerate research investment in non-communicable diseases (NCDs) through sustainable financing models.
- Implement the Global Biodiversity Framework (GBF) with ample funding for biodiversity preservation.
- Strengthen national statistical offices to collect and provide credible data for effective SDG monitoring.
- Promote synergies across G20 workstreams to minimise trade-offs and enhance SDG progress.

ELIMINATE GENDER DIVIDE

- Promote female workforce participation through gender budgeting, transformative policies, and inclusive care systems.
- Eliminate the gender digital divide through targeted digital literacy and assets for women.
- Establish a fund to finance women-owned micro/small enterprises in G20 countries.
- Prioritise funding for maternal, child, and adolescent health and well-being, including education and menstrual hygiene support.

REFORMED MULTILATERALISM

In the pursuit of stability, peace, and economic growth, multilateralism remains crucial. However, adapting current frameworks to reflect today's world order and address emerging challenges is essential. The existing international system faces various obstacles, and the G20 plays a vital role in reforming and revitalising effective multilateralism. T20 India proposes a roadmap for 'Multilateralism 2.0' that includes concrete actions:

- Establishment of an expert group to reform global governance, including UN Security Council membership and veto power.
- Ensuring representation from developing countries, particularly through the inclusion of under represented regions like the African Union in the G20.
- Utilising digital development experiences, such as that of India's, for the benefit of marginalised sectors through Public-Private Partnerships.
- Adapting the World Health Organization (WHO) to contemporary challenges and promoting traditional medical systems.
- Creation of an Intergovernmental Panel on Pandemic Risk and Preparedness akin to the IPCC for climate change.
- Enhancing coordination between the WTO and other global economic organisations.
- Tasking the WTO with coordinating trade rules reform in alignment with G20 objectives.

In a world rife with complexity and interwoven crises, the T20 India Communique emerges as a clarion call for multilateral cooperation. The global landscape is marred by a confluence of challenges - from the reverberations of the COVID-19 pandemic to evolving geopolitical dynamics triggering crises in energy, food, and fertilizers, and the looming specter of climate change. *T20's Communique underscores the pressing need* for coordinated action, as fragmenting geopolitical and geo-economic relationships threaten global stability.

Embodying India's G20 presidency motto, *'Vasudhaiva Kutumbakam'* - 'One Earth • One Family • One Future' - the Communique echoes a call for collaborative action to restructure our relationship with the planet and forge new pathways for sustainable economic systems. Guided by these principles, T20's Task Forces have outlined priorities that resonate deeply with the global agenda, including green development, climate finance, women-led development, digital transformations, and more.

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