

Maple Capital Advisors



PHD CHAMBER
OF COMMERCE AND INDUSTRY
VOICE OF INDUSTRY AND TRADE



India's Drone Revolution

Investment Trends

October 2023

Foreword



Mr. Rudra Shriram

Chair, Defence & HLS Committee, PHDCCI &
Joint President, DCM Shriram Industries Ltd.

PHDCCI has a very vibrant Defence & HLS Committee with active participation from DPSUs, DRDO, Global OEMs and the Indian Private Defence Companies especially the MSMEs. PHDCCI has been organizing a number of programs in the Defence & Security Sector with the active involvement of all stakeholders of the Indian Defence Industry. We have been organizing a series of Interactive conferences with the Indian Army, Indian Navy, Indian Air Force and the DPSUs on the opportunities for the Indian Defence Industry in domestic procurement and exports.

In this report, I delve into the growing drones market and their applications in both civilian and military contexts. The report highlights key market insights, advantages, challenges, and potential future developments related to drone technology. It also explores the implications for strategic planning and decision-making in an organization and beyond.

I believe the insights contained within this report can provide valuable perspectives on how UAVs are shaping the present and future of numerous sectors. I encourage you to take the time to read through it and consider the opportunities and challenges that UAVs present.

Preface



Pankaj Karna

Founder and MD
Maple Capital Advisors

India does not anymore wait to implement a global template; instead, India is writing its own script. India is on a path of setting ambitious goals and making India a drone hub by 2030 is one of the ambitious goals setup by the Central Government in 2022. Given focus on quality, innovation and indigenization, Indian Government has taken several steps that include favorable regulations, ban on import of drones and production linked incentive (PLI) schemes etc. to make India a global hub for drones as well as increase the commercial market for drones.

India has great potential to evolve as a drone manufacturing hub because it has infrastructure, know-how and has presented itself as cost-effective and trustworthy partner in various industries.

The drone sector is witnessing growth due to the increasing applications of drones in agriculture, infrastructure, healthcare, defense & logistics. Modern defense & homeland security activities lead the industry revenue contribution having fundamentally altered the landscape of modern warfare offering strategic advantages in surveillance, reconnaissance, and precision strikes. Another trend emerging is the last mile delivery opportunities that may driven further by favourable rules for BVLOS trials and tailwinds from the Global drone delivery environment.

Investments in the sector have grown multifold with key players having raised over \$150 Mn in the past 3 years complemented by 3 companies having a successful stock exchange listing in India.

Favorable policy and regulatory environment, increasing number of startups and significant interest from the financial investors have led to a surge in the Indian drone ecosystem and the sector is poised grow multi fold in the next 24-48 months.

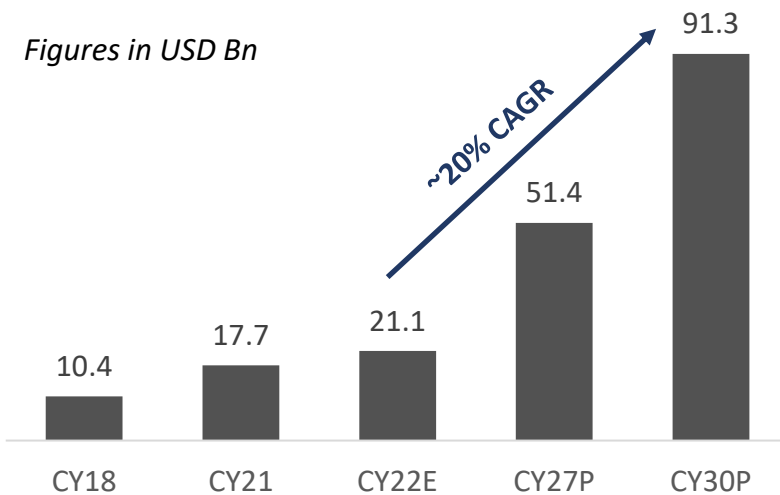


Global Drone Market

Global Drone Market Overview

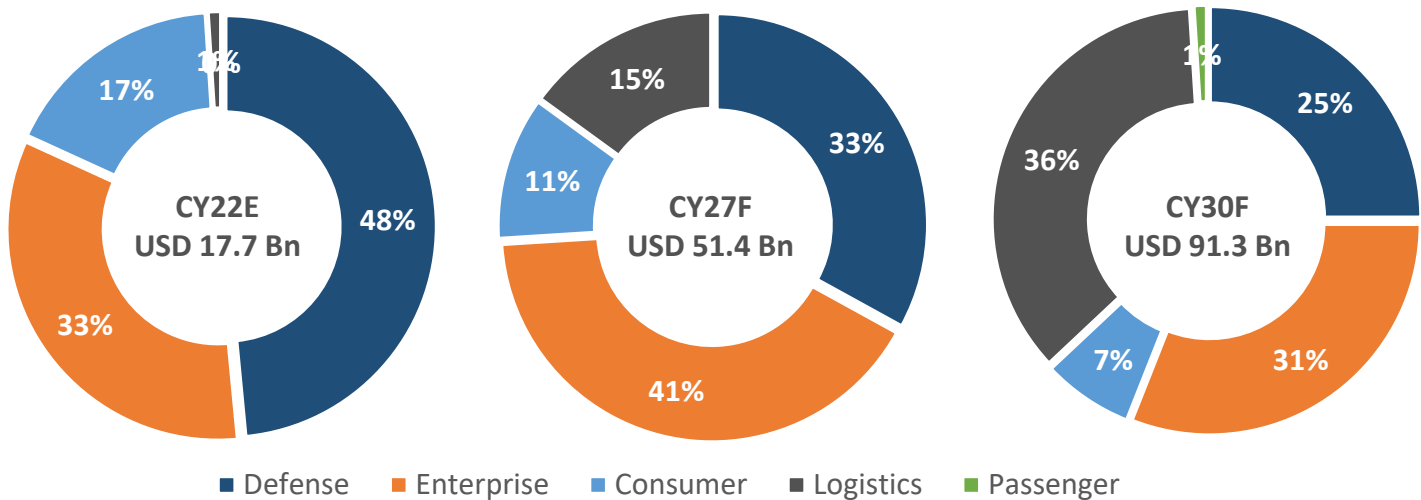
Global Drone Market Size

Figures in USD Bn

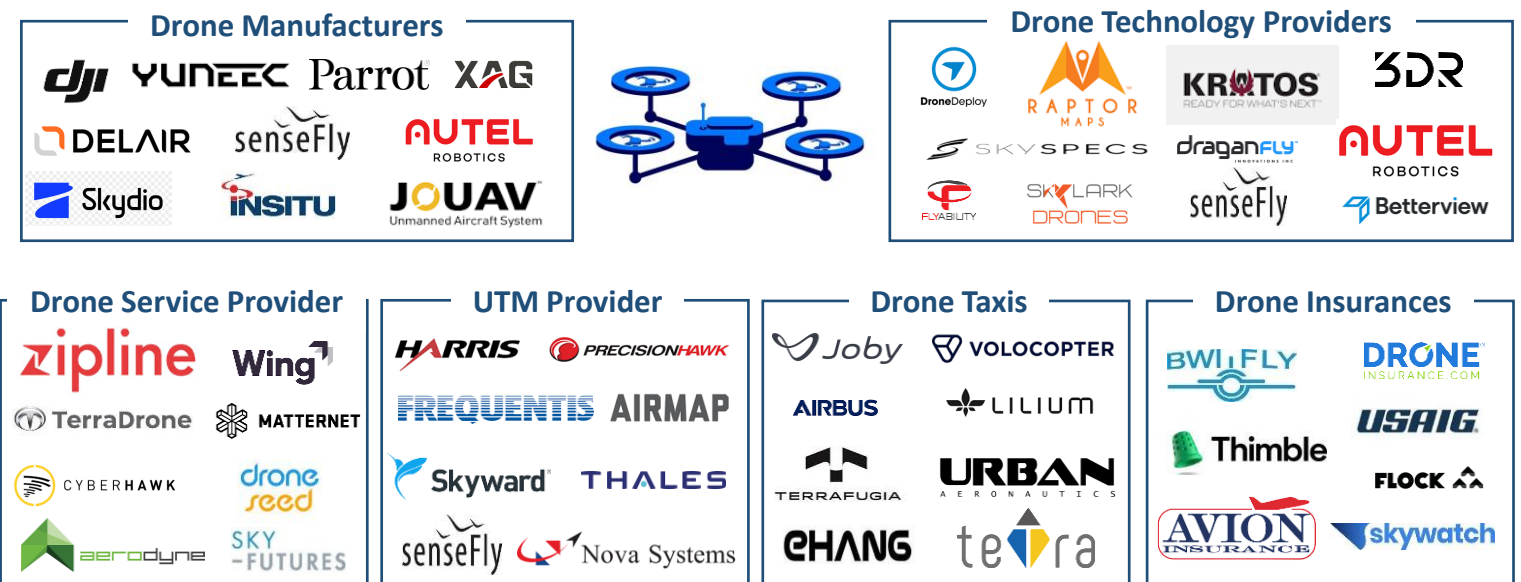


- Global drone market is expected to increase at a CAGR of ~20%, reaching US\$ ~91 Bn by CY30.
- Advancements in technology, favorable regulations, low operational cost, environment friendliness and efficiency are key reasons for increase in drone adoptions.
- Drones were initially created for military purposes but have now also evolved for enterprise and civil usage
- Select applications: Surveillance, mapping, inspection and delivery.
- Seamless drone usage in big cities is evolving even as challenges on air corridors, fail proof technologies will be critical.

Global Drone Market Size

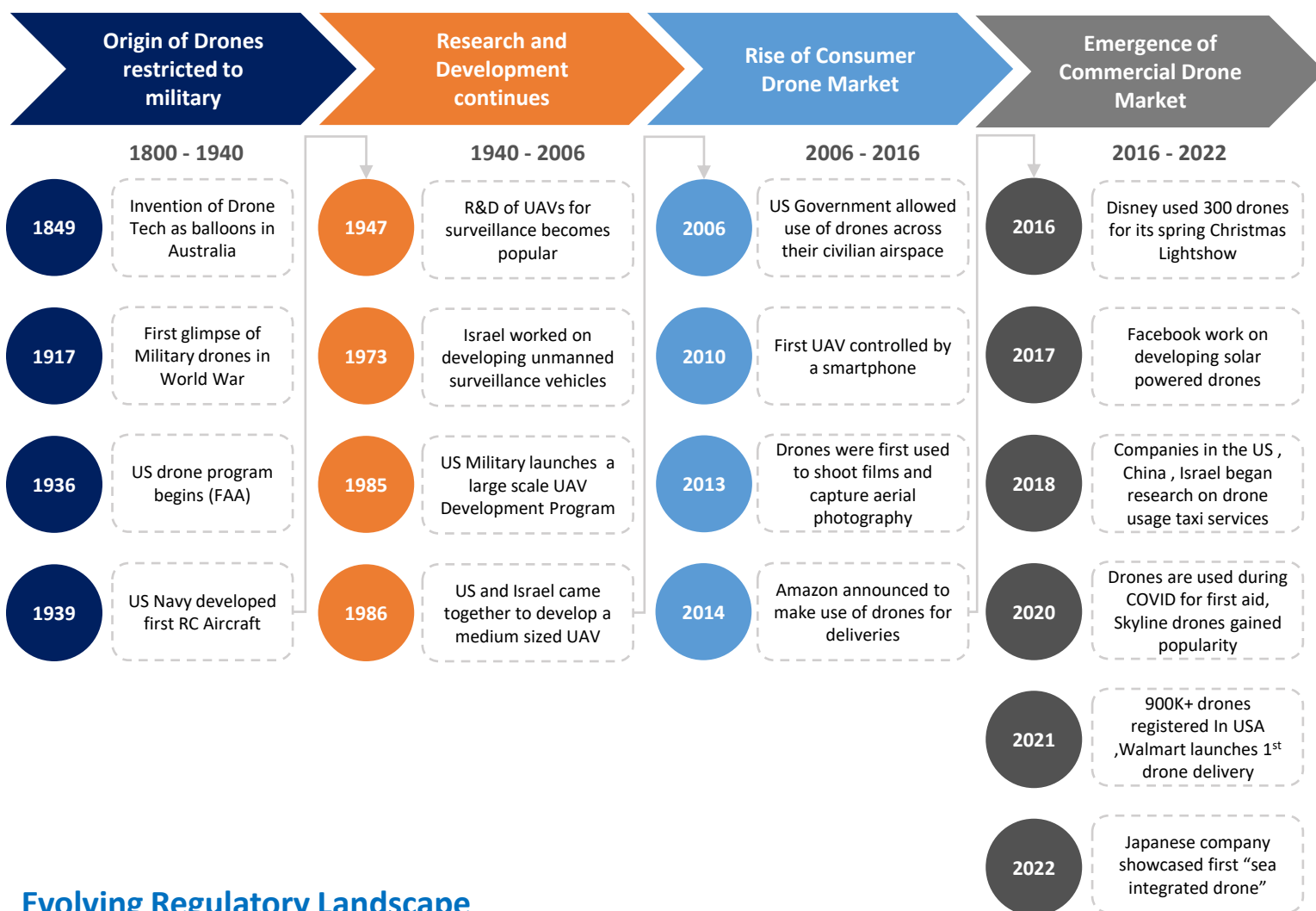


Drone Ecosystem



Evolution of Drone Market & Regulatory Landscape

Evolution of Drone Market



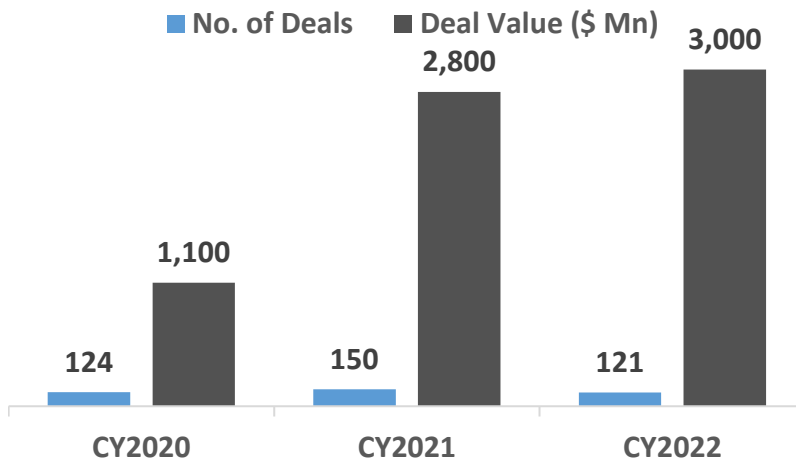
Evolving Regulatory Landscape











| Parameters | Australia | China | UK | USA | India |
|------------------------------------|-----------|-------|----|-----|-------|
| Ease of BVLOS Operations | | | | | |
| Regulations for drone flight area | | | | | |
| Ease of Obtaining Drone License | | | | | |
| Ease of Drone Registration Process | | | | | |
| Ease of delivery via drones | | | | | |
| Overall | | | | | |

Source: 1Lattice Report, Public Sources

Low High
Degree of Favourability

Funding in Select Companies – Globally



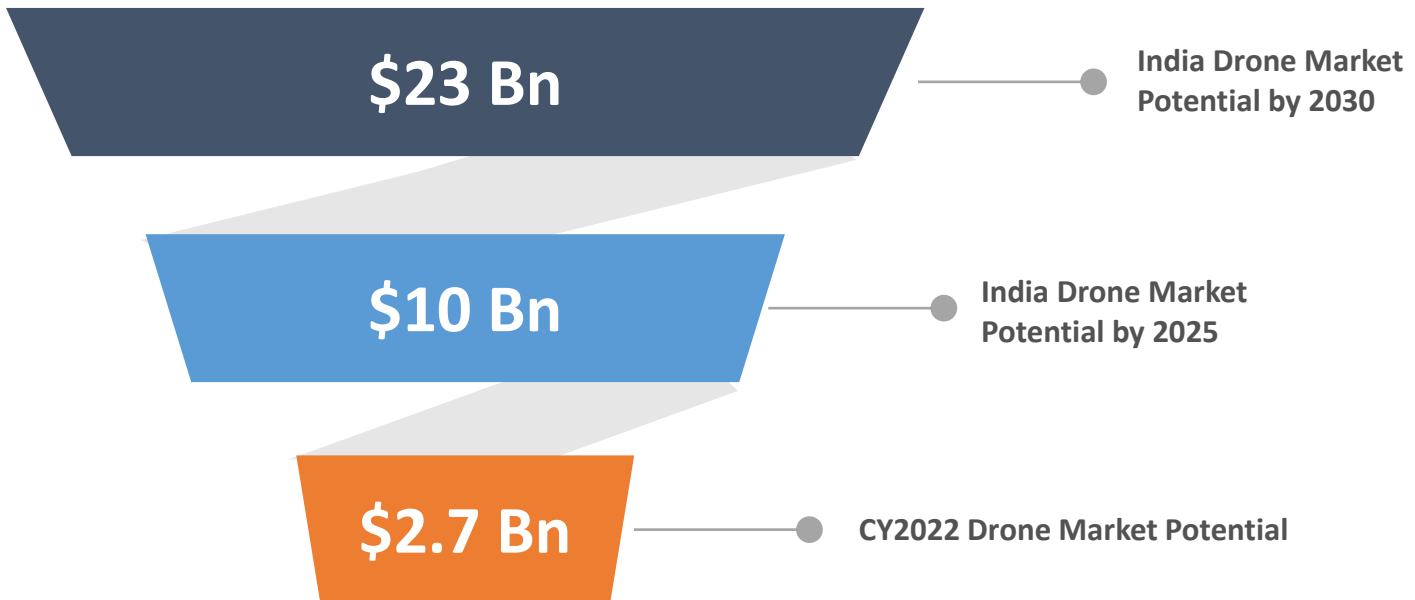
| Target | Description | Total Funding | Last Round | Select Investors |
|---|---|---------------|-----------------------|--|
|  | Segment: Manufacturing & Logistics USA - Designs, manufacture & operates drones for automated delivery | \$821 Mn | \$330 Mn Apr 2023 | Fidelity, Temasek, Rise fund, Baillie Gifford, etc. |
|  | Segment: Manufacturer USA – Uses AI to manufacture drones for consumer, enterprise, govts. | \$570 Mn | \$230 Mn Feb 2023 | Linse Capital, Andreessen Horowitz, Levitate Capital, Next47 |
|  | Segment: Software Transforming business collection and interpretation through aerial drones | \$142 Mn | \$50 Mn Feb 2021 | Energize , Airtree , Bessemer ,Bluepointe |
|  | Segment: Manufacturing & Logistics developer of logistics solutions through autonomous drone deliveries | \$75 Mn | \$ 50 Mn Sept 2020 | One Planet Group and Graphene , Icon |
|  | Segment: Manufacturing & Logistics manufacturing drones to provide safe and reliable aerial logistics systems | \$200 Mn | \$100 Mn Nov 2021 | Team Global, International Aviation |
|  | Segment: Manufacturer largest agriculture drone service provider | \$248 Mn | \$ 46 Mn Mar 2021 | GL Ventures ,Guangzhou Yuexiu Industrial |
|  | Segment : Services geographic data acquisition, industrial inspections, imagery, using drones | \$94.2 Mn | \$14 Mn Jan 2023 | Wa'ed Ventures |
|  | Segment: Manufacturing & Logistics developing autonomous cargo aircraft systems for logistics | \$61 Mn | \$40 Mn Aug 2021 | Prosperity7, Lockheed Martin , MarlinSpike |
|  | Segment : Services DT3 provider, uses drone data , AI analytics to resolve industrial challenges | \$60 Mn | \$30 Mn Sept 2022 | North Summit , Arc, Leave a Nest , InterVest PETRONAS |
|  | Segment: Services & Logistics develops drone delivery systems that simplify deliveries | \$68 Mn | \$40 Mn Nov 2021 | BRM Capital , Tal , BackBone Ventures |

Source: Crunchbase, CB Insights, Company Website, Mint, Public Sources



Indian Drone Market

Indian Drone Market is Growing Leaps & Bounds



Key Players



Select Growth Drivers



Make in India

In 2022, Govt. banned importing drones in India. This gave a push for drones to be domestically manufactured.



Favorable Regulations

Favorable policies such as Drone Rules 2021, PLI Scheme, Drone Shakti Scheme are making the sector more attractive.



Growth in Number of Startups

India has witnessed a 69% surge in number of drone startups from 157 in Aug-21 to 265 in Aug-23.



Emerging New Applications

Search & rescue, drone logistics, disaster management, insurance surveys, research & science, etc.



Surge in Drone as a Service

Drone services industry (operations, data processing, traffic management etc.) is expected to grow to over INR 300 Bn

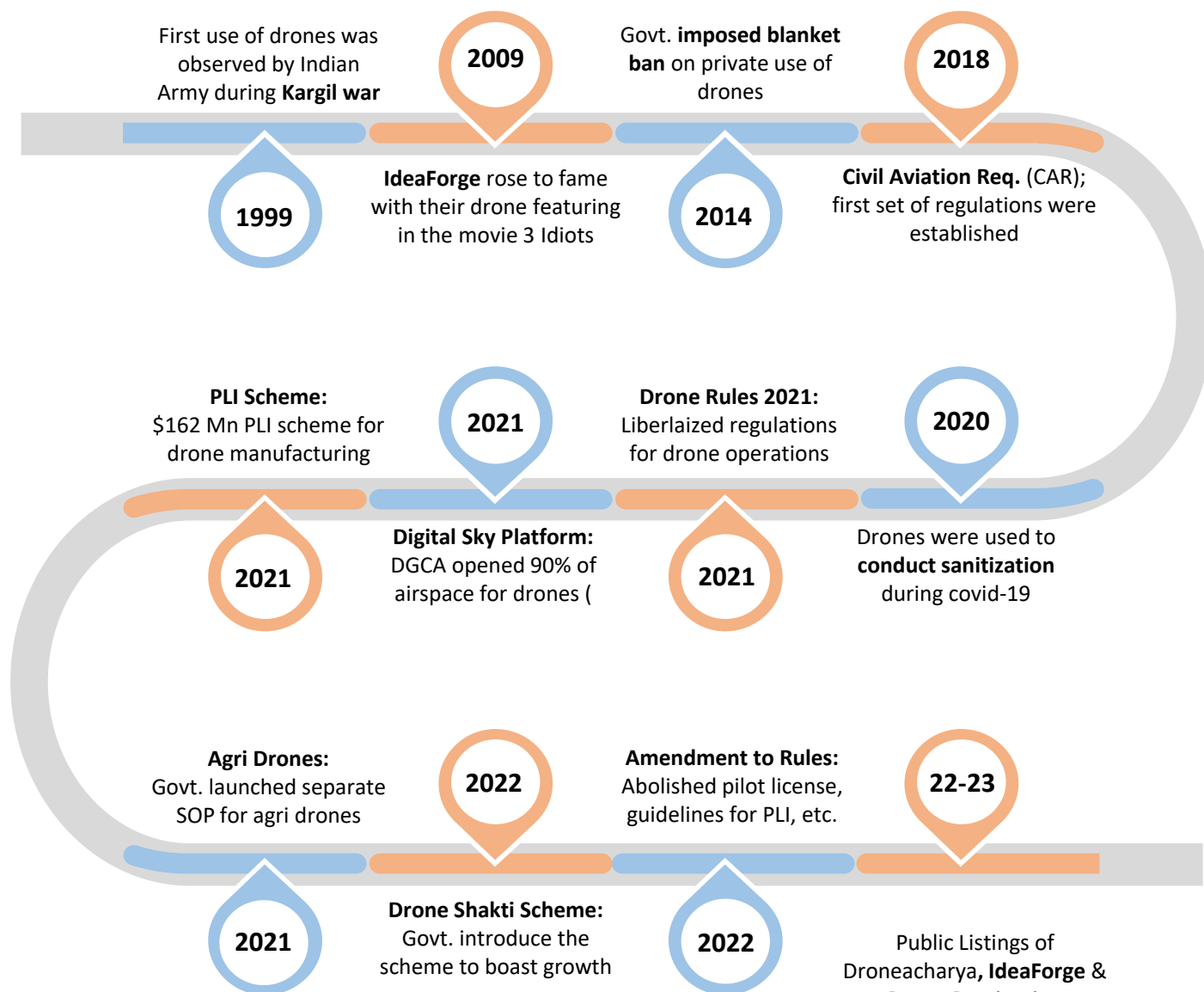


Increase in Employment

Government and private players are beginning to provide drone training and courses in the understaffed sector

Source: 1Lattice Report, Company Website, FICCI, DRHP & Public Sources

Evolution of Sector in India



Key Listings: Data as on 18th September 2023



Droneacharya

| Particulars | Details |
|---------------------------|--------------|
| Issue Size | INR 339 Mn |
| Issue Price | INR 54 |
| IPO Subscription | 244x |
| Listing Price | INR 102 |
| Listing Gain | ~98% |
| First Day Closing Price | INR 107 |
| Current Stock Price | INR 175 |
| Current Market Cap | INR 4,198 Mn |
| Market Price/ Issue Price | ~224% |
| EV/ Revenue | ~22.5x |
| EV/ EBITDA | ~83.3x |



IdeaForge

| Particulars | Details |
|---------------------------|---------------|
| Issue Size | INR 5,670 Mn |
| Issue Price | INR 672 |
| IPO Subscription | 107x |
| Listing Price | INR 1,300 |
| Listing Gain | ~93% |
| First Day Closing Price | INR 1,295 |
| Current Stock Price | INR 991 |
| Current Market Cap | INR 41,321 Mn |
| Market Price/ Issue Price | ~48% |
| EV/ Revenue | ~22.6x |
| EV/ EBITDA | ~89.4x |



Drone Destination

| Particulars | Details |
|---------------------------|--------------|
| Issue Size | INR 442 Mn |
| Issue Price | INR 65 |
| IPO Subscription | 124x |
| Listing Price | INR 108 |
| Listing Gain | ~57% |
| First Day Closing Price | INR 102 |
| Current Stock Price | INR 126 |
| Current Market Cap | INR 3,050 Mn |
| Market Price/ Issue Price | ~93% |
| EV/ Revenue | ~24.5x |
| EV/ EBITDA | ~63x |

Key Drone Applications



Agriculture

Crop monitoring & assessment, spraying, plantation, output estimation, irrigation, etc.
Feb-23: FMC Corporation launched drone spraying services for farmers. 3-4 acres of land can be sprayed in 15-20 mins making spraying easier & efficient.



Infrastructure

Visual inspection, surveillance, data collection, construction monitoring, maintenance etc.
Jun-21: NHAI mandated the use of drones for monthly video recording of all NH highway projects during their different stages of development, construction, & maintenance



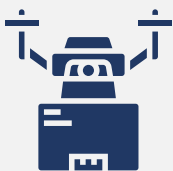
Defence & Homeland Security

ISTAR, law enforcement, border/ city surveillance, bomb detection, logistical support etc.
Apr-22: Delhi Police had deployed drones to keep a close watch after during communal clashes in old Delhi; also, drones were used to scan streets & rooftops in south Delhi.



Healthcare

Medical supplies & organ deliveries, diagnostic samples, surveying of disaster areas, etc.
Feb-23: Drone were used for transporting anti-TB drugs from AIIMS Rishikesh to district Hospital Tehri Garhwal; drone delivery resulted 2 hrs conventional travel to 30 mins.



Logistics

Prescription drugs, packages, groceries, food, healthcare supplies, e-commerce, etc.
Jan-23: Skye Air a drone logistics company started drone delivery for Redcliff Labs, bringing diagnostics samples from Uttarkashi to Dehradun; Reducing conventional travel time of 480 mins to 40 mins.



Consumer

Media & entertainment, aerial photography, recreation, etc.
Movies like the Expendables 3, Transformers, Age of Extinction, and Captain America were shot using drones to provide a real-life experience to the viewers.

Defence & Homeland Security – Global Overview

The modern defence & homeland security is all targeted towards accomplishing the goal of engaging with enemies without endangering their soldier's lives; Advancements in AI and Robotics sectors have accelerated the adoption in defence.

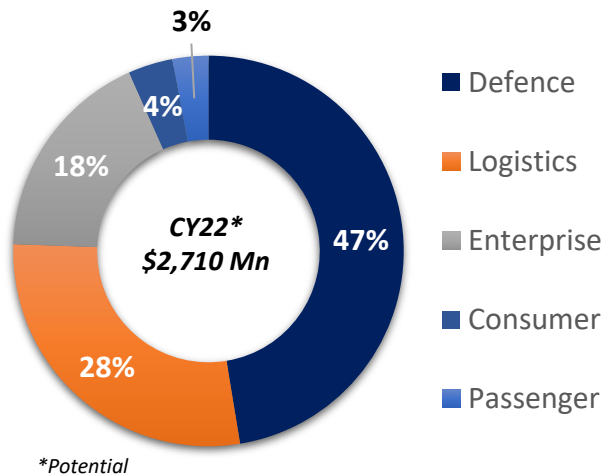


AI

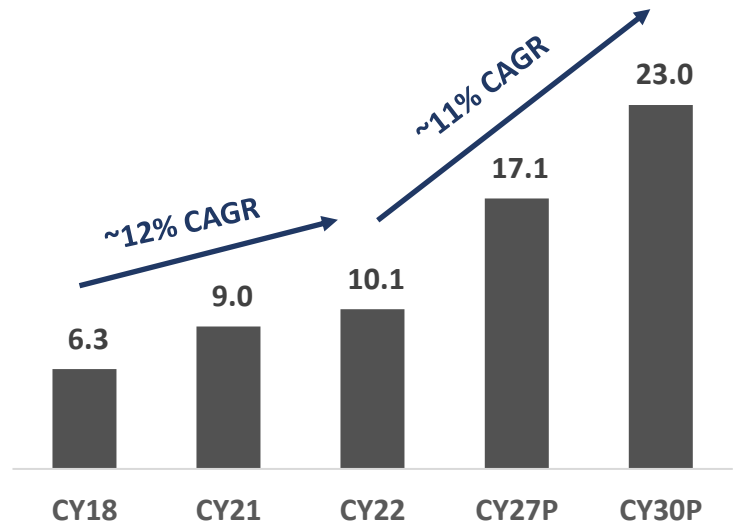


Robotics

India Drone Market led by Defense

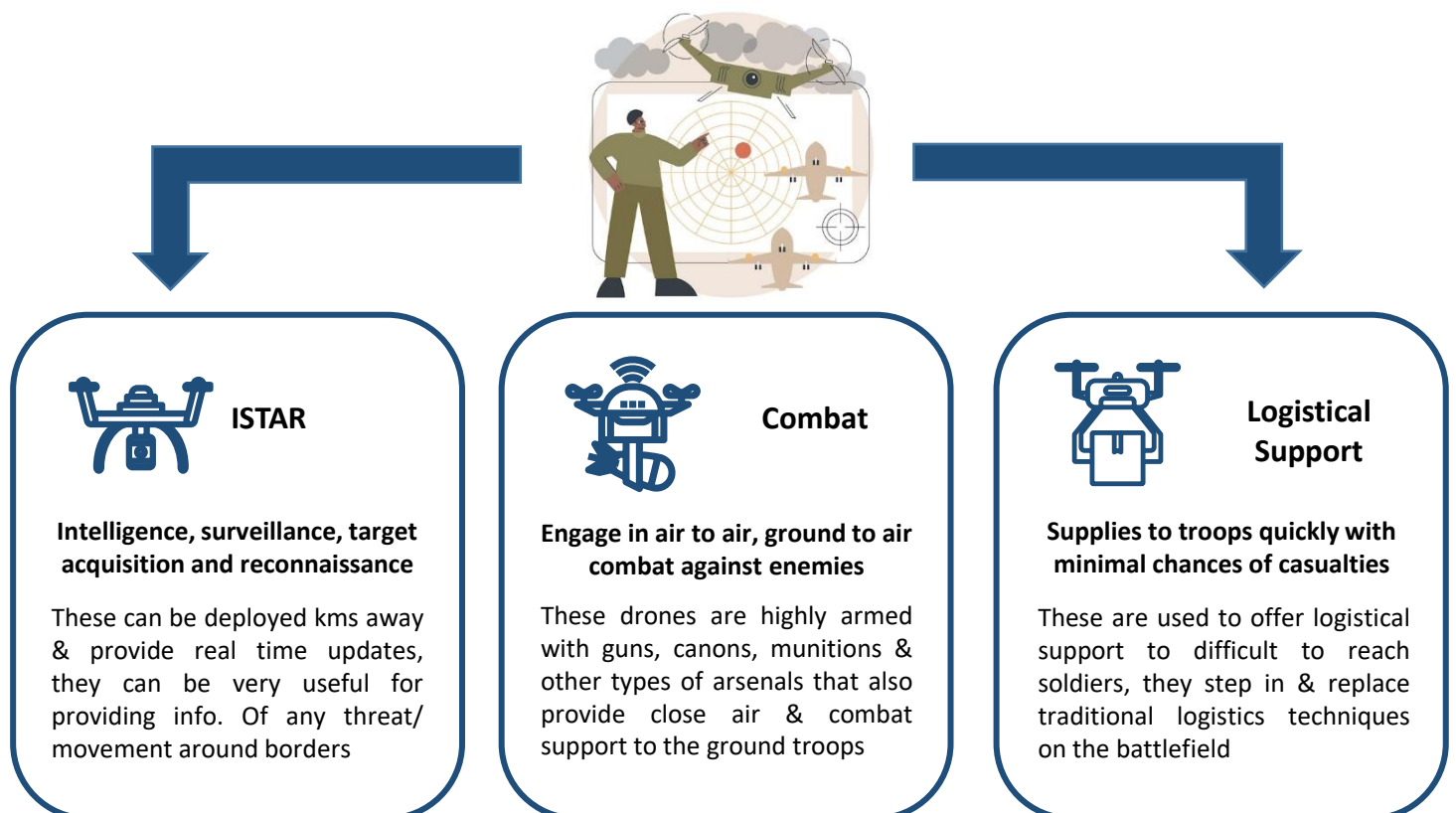


Global Defense Drone Market Size



Currently both globally and in India, defence continues to be the largest segment. The Indian army has as part of its Make II program has significant requirements for the purchase of drones and also has published requirements for the purchase of integrated surveillance and loitering munition systems

Drones In Defense Can Be Broadly Categorized Into 3 Categories



Source: 1Lattice Report, DRHP, & Public Sources

Defence & Homeland Security – India

The Indian defense drone market currently has a potential of \$1.28 Bn; Drone technology in India is at an inflection point specially with its homegrown technological potential post ban on imports of drones



Surveillance

With the skirmishes between India & China at the border, India realized the importance of surveillance & recon for high altitude combats



Acquisition Of New Drones

The Navy acquired two MQ-9B SeaGuardian drones from General Atomics Aeronautical Systems to survey the Indian Ocean.



Intrusions

Recently, 53 drone incursions were noticed along the India – Pakistan border & the Border security forces shot these UAV 9 times



Remotely Piloted Aerial Systems

Indian government issued request for proposal (RFP) for 80 mini RPAS & 750 RPAVS to be deployed with the Indian army's spl. forces



Logistics

The clash in Galwan Valley and the border standoff with China compelled India to strengthen logistic technologies



Budget approvals & Increase

Defence Ministry approved a budget of ~US\$ 88M to buy drones having the armed forces partner with indigenous drone companies

Today, drones are having an immense impact on our Defense capabilities

Watch: Drones used by security forces to locate hideouts of terrorists in Kashmir's Anantnag

By [Singh Rahul Sunilkumar](#) | Edited by Aniruddha Dhar

Anantnag encounter updates: Drones capture live locations of terrorists in counter-terrorist operation in Jammu and Kashmir's Kokernag.



18 News18

[A Pak Terrorist Has 'Fallen': Lashkar-e-Taiba Dropped Him Off A Drone in Punjab | Exclusive](#)

Pakistan-based terror outfit Lashkar-e-Taiba (LeT) outfit has dropped a terrorist in Punjab using a drone, an intelligence source told...

THE The Hindu

[India facing 'serious challenge' preventing drone-driven cross-border supply of illicit weapons: Ambassador Kamboj at UNSC](#)

Speaking at the UN Security Council, India's Permanent Representative to the UN Ruchira Kamboj asserted that "certain states with dubious...

WION

[BSF shoots down drone along India-Pakistan border in Punjab](#)

Border Security Force (BSF) has shot down a Pakistani drone which was apparently trying to sneak into Indian territory, officials said on...

Source: Public Sources

Drone Logistics is Real & Evolving

- Instant deliveries via drone may sound like science fiction, but the sector is real and growing.
- Over the past few years many startups have evolved providing trials/ commercial operations in the drone delivery space.
- Current drones have capabilities to deliver a payload upto 200 Kgs; covering a maximum distance of 100 Kms
- Government incentives are driving various industries, such as healthcare, agriculture, e-commerce and transportation, to explore the potential of drones.
- Drones while not entirely replacing conventional last mile delivery methods, will rather revolutionize operations by providing faster, more efficient, & environmentally friendly delivery options.

Select Items that can be Delivered by Drones



Medical Supplies & Vaccines



Diagnostic Samples



Daily Grocery



Food from Restaurants



E-Commerce Small Size Items



Fresh Agri Produce

Growth Drivers for Drone Delivery



Favorable regulations: opening 90% air space in India to fly drones, drone shakti scheme, etc. boosting demand for drone delivery



Drone delivery is quicker and more efficient as compared to conventional logistics, offering **15% - 40%** cost savings.



India's Q-commerce market size is expected to be \$5.5 Bn by 2025. Drone delivery stabilizes last mile delivery cost & order consolidation.



Drones can play significant role in reducing CO2 emissions; In India transport sector contributes 1/3rd of CO2 emissions.

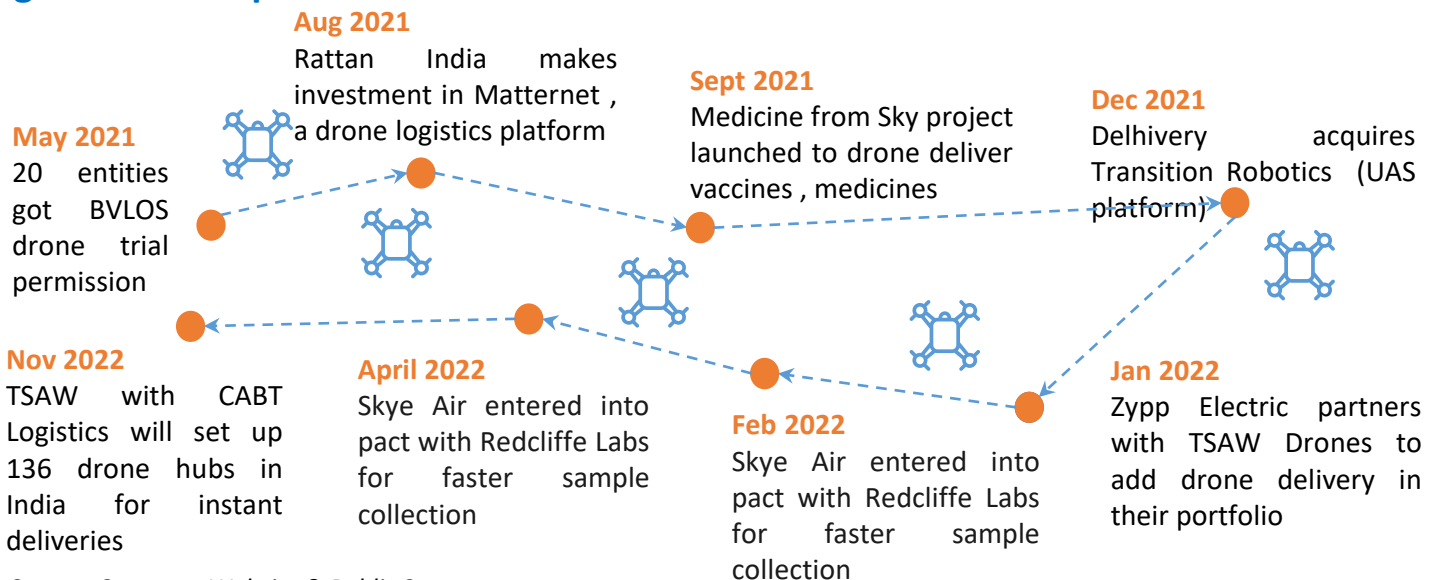


Advancement in technology such as IoT, Geospatial mapping, battery etc. will improve drone deliveries and boost demand.



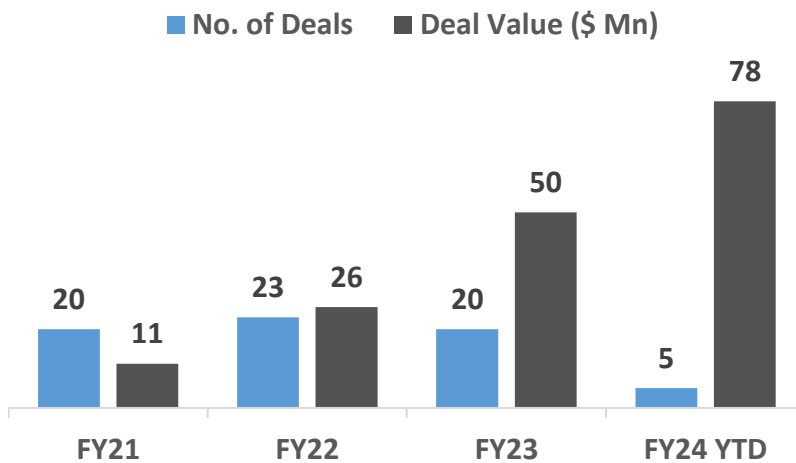
As drone delivery is gaining traction, will increase demand for drone pilots. India to have **1 Lakh** drone pilots by 2024.










Segment Developments



Source: Company Website & Public Sources

Funding – India Overview



| Date | Target | Description | Deal Size | Select Investors |
|-----------|---|---|-----------|---|
| July 2023 |  | Segment: Services Provides decorative lightshows in the sky via a swarm of drones, used for events etc. | \$2.5 Mn | Rajasthan Global Securities, Nay Capital, Resonance, Neomile, Chhatisgarh Investments |
| Feb 2023 |  | Segment: Manufacturer Focuses on the design, build and customization of drones for across sector applications | \$17 Mn | SphitiCap, Ocgrow, Silverstone Capital, HNIs & Angel Investors |
| Feb 2023 |  | Segment: Manufacturer & Services Manufactures drones with applications for aerial surveys and mapping | \$845 K | MapmyIndia |
| Nov 2022 |  | Segment: Services Provides drone delivery platform for deliveries across healthcare, e-comm, q-comm, etc. | \$1.7 Mn | Chiratae Ventures, Lead Angels, O2 Angels, Agility Ventures |
| Aug 2022 |  | Segment: Manufacturer & Services Manufactures survey-grade drones & provides drone-based solutions across sectors | \$ 1.7 Mn | Jalal Dani , Addverb Technologies |
| July 2022 |  | Segment: Manufacturing & Logistics Manufactures drones for defense applications & logistics services | \$ 20 Mn | Florintree , Celesta, Infosys, Qualcomm, Infina, |
| Apr 2022 |  | Segment: Manufacturer & Services Designs and manufactures drones for mapping, security, and surveillance applications, etc. | \$21 Mn | QRG Investments, Pavestone Capital, Mankind Pharma Limited |
| Feb 2022 |  | Segment: Manufacturer Designs and develops Persistent Drones for Earth Observation and Communications | \$500 K | India Accelerator, Value Investors Network, Sitics Logistic Solutions |
| Sep 2021 |  | Segment: Services Provides on-demand Drone delivery solutions for healthcare & essential packages | \$204 K | ah! Ventures |
| Sep 2021 |  | Segment : Services Provides services like drone inspection, aerial survey, aerial thermography in India | \$3 Mn | InfoEdge Ventures and IAN Fund |
| Jul 2021 |  | Segment: Manufacturer & Services manufacturing drones for Survey, Agriculture, Inspection (using AI models), and Defense | \$ 497 K | Elgi Electric And Industries Limited, LetsVenture, Q Business WLL |

Source: Company Website, Mint, Private Circle, Crunchbase & Public Sources

Key Takeaways & Way Forward



01

Global Drone Hub

India is expected to become global drone hub by 2023. A \$30 Bn opportunity, drone manufacturing and drone as a services to be the key contributors.



02

Favorable Regulations

Government policies such as drone liberalization rules 2021, ban on import of drones, Drone Shakti Scheme, PLI scheme, etc. are key elements for growth in the sector.



03

Drone As a Service

Indian startups are now moving from drone manufacturing towards drone as a service. We believe this segment is going to grow multifold in the next 12-24 months.



04

Evolving Use Cases

Agri – livestock management & crop spraying, mining, shipping, weather forecast, inspection & surveillance, delivery etc. are the evolving use cases in the sector



05

Increase in Employment

Given the increase in adoption of drone technology & evolving use cases, sector is expected to be on spree of employing resources, estimated 100,000 jobs by 2024.



06

Strong Investor Traction

Favorable regulations are driving investor traction in the sector; In 2023, \$78 Mn has been invested, majority being in 3 significant IPOs. We see this investment momentum to continue for next 2-3 years.



07

Challenges

Sector faces challenges such as availability of drone components, limited options on the battery, expensive drone insurance cost, lack of qualified pilots, fail proof/fail mitigated technologies in big cities etc.



08

Way Forward

We expect that drone sector in India will become a multi billion dollar market and drone services will gain significant momentum in next 12 – 24 months.

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Mergers & Acquisitions - Focusing on both sell and buy side, Joint Ventures, Alliances, Partnerships, we cover domestic and cross border markets with sectoral focus on Consumer, Consumer Tech, Manufacturing, Financial Services, Business Services, New age sectors such as Drone tech, Coworking and Gaming.

Accelerator – Investing in promising early stage scalable tech driven ideas

Private Equity - Working closely with PE funds and Advising on induction of equity or like instruments

LEverage Capital - Advising on structured debt spectrum covering, acquisition financing, convertibles, special situations

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PHD CHAMBER
OF COMMERCE AND INDUSTRY
VOICE OF INDUSTRY AND TRADE

About Us

PHD Chamber of Commerce and Industry (PHDCCI) has been working as a catalyst for the promotion of Indian industry, trade and entrepreneurship for the past 118 years. It is a forward looking, proactive and dynamic PAN-India apex organization. As a partner in progress with industry and government, PHDCCI works at the grass roots level with strong national and international linkages for propelling progress, harmony and integrated development of the Indian economy.

PHDCCI, acting as the “Voice of Industry & Trade” with a large membership base of 1,50,000 direct and indirect members consisting of large, medium and small industries, has forged ahead leveraging its legacy with the industry knowledge across multiple sectors to take Indian Economy to the next level.

At the global level, we have been working with the Embassies and High Commissions in India and overseas to bring in the International Best Practices and Business Opportunities.

PHD Chamber has special focus on the following thrust areas:

- | | | |
|---------------------------------------|---------------------------------|---|
| • Economic & Business Policy Advocacy | • Health | • ICT |
| • Industry | • Education & Skill Development | • International Trade |
| • Infrastructure | • Agriculture & Agri-business | • Defence & HLS |
| • Housing | | • Banking, Financial Services and Insurance |

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