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The age of drones

A liberalised government policy has helped the drone ecosystem take off in India. How will it change our lives?

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Drone use has skyrocketed, and they are now used in crop spraying to land surveys to maintenance of powerlines, oil pipelines and even against locust swarms

Believe it or not, the shaadi drone isn't just a popular innovation at receptions but also the most well-known avatar of unmanned flying vehicles in India in recent years. But that aerial quest for a wedding shot isn't why most drones are taking off these days. Consider the pace that Mumbai-based manufacturer ideaForge is setting--every six minutes, one of its drones is hovering somewhere over rural India, mapping villages. Or take Gurugram-based Skye Air Mobility which has clocked 1,500 flights in the last six months, mostly trial-runs for transporting goods in various settings; its experimental cargo list including pathology specimens, dry turmeric and groceries.

Every so often, those whirring rotors are in the news—like IndiaPost trying out a 46-km mail despatch between two villages in Kutch district, Gujarat, a couple of months ago. Or the civil aviation ministry in June awarding the first type certificate, or airworthiness approval, for a 'made in India' drone model—a hexacopter designed by start-up IoTechWorld Avigation for agricultural spraying, a frontier that's primed for an unmanned makeover. Other uses, like mapping and survey, have already had a headstart—a year ago, the National Highways Authority of India made monthly drone surveys mandatory to monitor its highways for progress reports and maintenance. The Indian Railways too has been deploying drones for surveys and bridge inspections. "You pick up any sector and drones can impact them," says Smit Shah, president, Drone Federation of India (DFI), which represents 200 companies and 2,000 drone pilots in the country. Of course, the complexity varies depending on the uses and air space management is a critical part of that.

Shah points to Project Sanjeevani, a pilot project for a flight corridor between the All India Institute of Medical Sciences (AIIMS) in New Delhi and its extension campus in Jhajjar, some 50 km by road which currently takes 1.5-2 hours. A drone would take less than half the time, even via the circuitous route around the two aerodromes on the flight path—Indira Gandhi International Airport and Safdarjung airport—and the urban sprawl in between. The flight, of course on auto-pilot, will be a closely coordinated sortie—once the drone travels beyond the pilot's visual line of sight, it will need active coordination with the airport's air traffic control (various approvals needed are in place). The trials, involving drone logistics start-up TechEagle, will start next month. The primary aim is to lay down a blueprint for flying drones in such complex scenarios, says Shah. The eventual use-case: ferrying rare blood units and diagnostics samples from the regional hospital to AIIMS New Delhi which has a high-capacity robotic testing laboratory.

Liberal policy

"Before September 2021, drone delivery was merely a concept, though R&D was active around it," says Ankit Kumar, CEO, Skye Air Mobility. In just under a year, however, there's a rush of activity to explore commercial operations. As to how that happened, here's the long story short: unmanned aerial vehicles for military uses and aeromodelling have been around for years but consumer drones began picking up around 2010 with mostly Chinese-made drones appearing in the market. Following a pizza delivery episode back in 2014 in Mumbai, India's aviation regulator responded with a ban on drones until the government laid down a policy. This eventually came in 2018 but while it allowed manufacture and sale of drones, flying operations remained a grey area.

This chicken-and-egg situation carried on till March 2021 when a fresh set of rules were notified, but the list of mandatory permissions and licences only grew. Finally, in August 2021, this time with the prime minister's office taking keen interest, a new liberalised policy which relaxed most of the restrictions came out. Since then, India's drone ecosystem has taken off.

> ***The Drone Federation of India estimates a revenue potential of Rs 50,000 crore for the drone ecosystem in the next five years***

In quick succession, a slew of policies followed—these included opening up 90 per cent of the Indian airspace as a green zone for flying operations up to a height of 400 ft, online applications via a drone management platform called DigitalSky, guidelines on Unmanned Aircraft System Traffic Management (UTM), a ban on imported drones, a production-linked incentive (PLI) scheme for manufacturers and subsidies for agriculture drones. The government's stated goal is to make India a global drone hub by 2030.

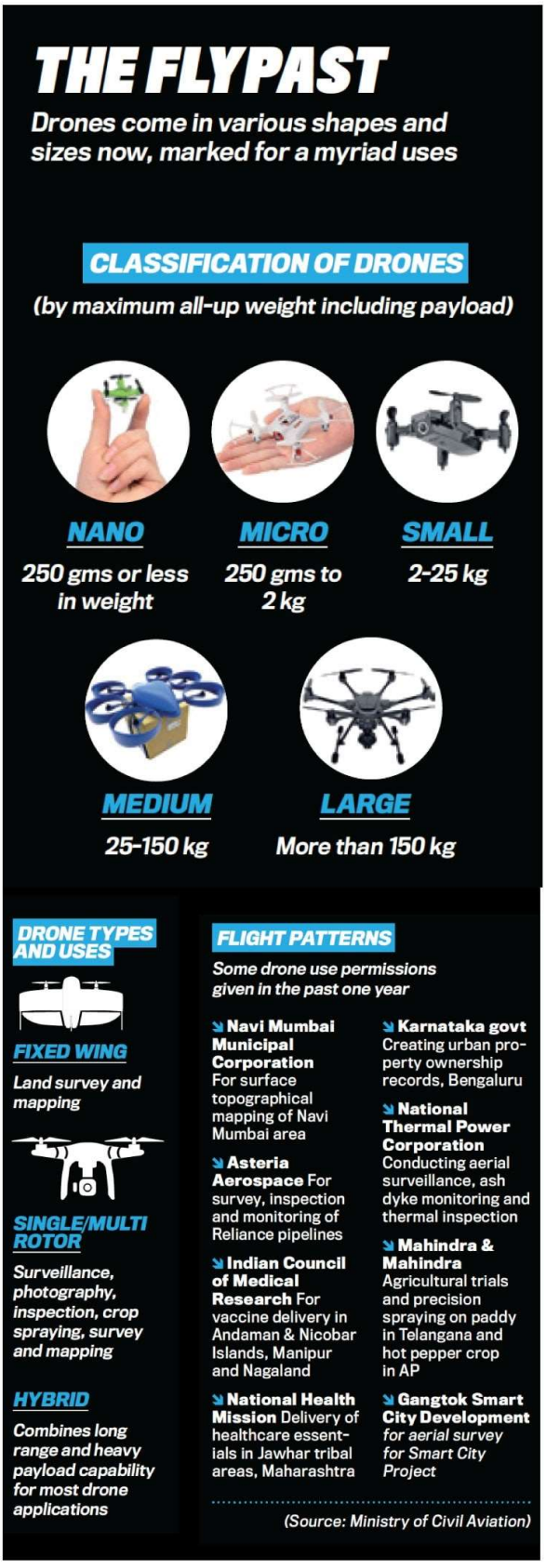
"India was behind the rest of the world in terms of how to operationalise these things," says Ankit Mehta, co-founder of IdeaForge which was an early entrant into the UAV space. "But now we have leapfrogged all of them with a far more implementable regime." By that, he's referring to the calibrated policy steps that many countries had taken.

Still, experiments and specific operations have been going on for a longer period globally than they have in India. For instance, American drone manufacturer Zipline says it has completed over 300,000 commercial deliveries, many of them serving medical facilities in African countries such as Rwanda and Ghana. Besides, when it comes to key components for drones, Indian manufacturers currently rely on imports, a scenario that the PLI scheme hopes to reverse.

Emerging sectors

Mehta reckons the disruption from the pandemic played a key role in pushing the case for using drones—be it monitoring containment zones or delivering medicines to remote places or even tackling a locust swarm, it suddenly became a useful proposition. "It (the pandemic) completely changed the game," he says, "drones started becoming a technology with a million uses." Around the same time, the Survey of Villages Abadi and Mapping with Improvised Technology in Village Areas (Swamitva) scheme was announced. So far, drone surveys of 160,000 villages have been completed.

Mapping and surveys are currently the most lucrative commercial market for drones. They are used by mining companies and not too long ago Indian Oil deployed drones to monitor its 120 km Delhi-Panipat pipeline. "While a few government schemes are among the largest users of drones, the private sector is also picking up at a fast rate," says Shah. The Drone Federation of India estimates revenue potential of Rs 50,000 crore for the drone ecosystem in the next five years. Some of the



early action is visible. In 2019, Reliance Industries Ltd picked up a strategic stake in Asteria Aerospace while in May this year Adani Defence Systems and Technologies Ltd acquired a 50 per cent stake in General Aeronautics, an agri-platform drone services provider. Both are Bengaluru-based companies.Needless to say, cost and feasibility are going to dictate where drones are deployed. By that same token, getting a pizza delivered to your terrace isn't going to happen anytime soon. But it doesn't stop people from experimenting. Ankit Kumar of Skye Air says his firm is working with quick-commerce companies such as Swiggy to figure out ways to ferry orders in an urban setting, challenging as it is with wires, towers and buildings all in the way. "Flying in cities is 50 times more difficult than flying in rural or semi-urban environments," he says. The idea of hyperlocal delivery they are pursuing isn't so much about delivering to the customer's doorstep but ferrying groceries from a warehouse (dark store in industry parlance) to the nearest feasible point to a customer, so that the delivery boys can take over from there. Urban flying involves a detailed manual recce to mark out obstacles and garbage dumps where bird hits are possible, before venturing out. Over 80 per cent of Skye Air's 1,500 flights have been in urban centres like Gurugram, Noida and Bengaluru, he says. For logistics, Kumar reckons the early adopter is likely to be the medical diagnostics sector—with labs looking for a faster way to connect to their franchise offices spread out in various regions.

At the moment, the big thrust appears to be in agriculture. Here too, cost can be a crucial factor. With the subsidy, a farmer producer organisation (FPO) can now buy a Rs 10 lakh drone for about Rs 6 lakh and avail of fin-ance options too. "Drone technology has proved to be viable in other Asian countries with smallholder farms," says Asitava Sen, CEO, CropLife India, an association of agro-tech firms. Several of them have approached the regulator for product approvals while trials are being held by start-ups, agriculture universities and FPOs, he says. "It's the perfect time as the policy framework is in place."

Deepak Bhardwaj of IoTechWorld explains that drones offer greater control and speed in crop-spraying compared to manual methods. The drones typically save water because the droplet size can be adjusted and the spray is targeted towards the canopy or stems of the plants thereby increasing the efficacy. Widespread adoption of kisan drones will depend on creating a network of service providers plus awareness through Krishi Vigyan Kendras, he says. “First let them get a taste of the technology, see the results and then they will come in,” he says. Since June 14 when his agri-drone received type certification, IoTechWorld has generated about 100 unique identification numbers (UINs), he adds. The UIN is to a drone what a registration number is to a car with the registrations done on the DigitalSky platform.

The drone ecosystem in India is still in its early phase but growing. From a policy perspective, things are on par with what’s happening globally, says Shah of DFI. “With the experiments happening for BVLOS (beyond visual line of sight) and air space integration, we will soon catch up aggressively on newer technologies.” Drones, he says, are here to stay.