GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH
RAJYA SABHA
UNSTARRED QUESTION NO. 926
TO BE ANSWERED ON 09.02.2023

DEVELOPING DRONES OR UAVs IN THE COUNTRY THROGH NAL

926. SHRI SANJAY RAUT

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

a) The details of the number of National Aerospace Laboratories (NAL) across the country, State/UT-wise including Maharashtra;

b) the details of the funds sanctioned, allocated and utilized by these laboratories during the last three years, State/UT-wise;

c) whether Government plans to develop drones or Unmanned Aerial Vehicles (UAVs) by these laboratories, if so, the details thereof and if not, the reasons therefor; and

d) the funds which are likely to be sanctioned along with deadlines, the details thereof?

ANSWER

MINISTER OF STATE (INDEPENDENT CHARGE) OF
SCIENCE AND TECHNOLOGY & EARTH SCIENCES

(DR. JITENDRA SINGH)

a) CSIR-National Aerospace Laboratories (CSIR-NAL), Bengaluru, a constituent laboratory of the Council of Scientific & Industrial Research (CSIR) is the only public funded and civilian aerospace R&D laboratory in the country.

b) The details of the funds sanctioned, allocated, and utilized (allocated funds are fully utilized) by CSIR-NAL for the last three years are as under:

(Rs. in crore)

	2019-20	2020-21	2021-22
Special Projects	61.96	16.99	51.47
Capital .	9.05	23.87	17.03
Revenue	39.31	32.49	48.92
Salary	127.52	162.91	166.33
Total	237.84	236.26	283.75

c) Yes, Sir. CSIR-NAL has developed medium class Beyond Visual Line of Sight (BVLOS) multi-copter Unmanned Aerial Vehicles (UAVs). The brief details are at Annexure-I.

d) The following two R&D projects have recently been completed by CSIR-NAL related to UAV and its applications:

(Rs. in lakh)

Project Name	Sanctioned Budget
Development of Octacopter Drones for Demonstration of Covid-19 Vaccine/Emergency Medicine Delivery	65.00
UAV Based High Resolution Remote Sensing for Modernized and Efficient Cultivation Practices of Commercially Important Medicinal and Aromatic Crops	122.00

Under CSIR's Mission Project on "AI enable Technologies and Systems", CSIR-NAL is a participating laboratory in the project vertical titled "Development of Drone Related Technologies for Society-oriented Smart Sensing and Physical Interventional Applications". The aim of this project vertical is to develop a drone setup for society-oriented smart sensing and physical intervention applications. The details of the funds likely to be released under this project vertical are as under:

(Rs. in lakh)

Project Name	Financial Year	
	2023-2024	2024-2025
Development of Drone Related Technologies for Society-oriented Smart Sensing and Physical Interventional Applications under CSIR Mission Project 'AI enable Technologies and Systems'	54.106	35.106

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Annexure-I

CSIR-NAL has developed medium class Beyond Visual Line of Sight (BVLOS) multi-copter Unmanned Aerial Vehicles (UAVs). The UAV is made out of light weight carbon fiber foldable structure for ease of transportation and has unique features like autonomous guidance through dual redundant micro-electro-mechanical system (MEMS) based digital Autopilot with advanced flight instrumentation systems. Directorate General of Civil Aviation (DGCA), Ministry of Civil Aviation, Govt. of India has granted conditional permission to CSIR-NAL for conducting Beyond Visual Line of Sight (BVLOS) flight trials on 13th September, 2021. CSIR-NAL's octa-copter can carry a payload loads upto 5.0 kg and 20.0 Kg with hovering endurance of 40 minutes. It can fly at an operational altitude of 500 m AGL (Above Ground Level) and at maximum flying speed of 36 kmph. Its regulatory compliance includes Directorate General of Civil Aviation (DGCA)-No Permission-No Take (NPNT), Geo fencing and digital sky with 360 degree Collison avoidance making it one of the best UAV in its class. The developed Quad-Copter is extensively used in acquiring Arial Multi-Spectral images of selected medicinal and aromatic crops covering 1,99,754 m2 area maintained by CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur.

The developed drones by CSIR-NAL have made successful field demonstrations for agri applications and last-mile medicine / vaccine delivery. CSIR-NAL's Oct-Copter UAV system that can carry a maximum payload of 20 kg and fly for the endurance of around 20 minutes has a provision to house either a hyperspectral camera for crop health monitoring or a fertilizer. First field demonstration of CSIR-NAL's Octacopter has been carried out for the farmers of Alur Agricultural Produce Market Committees (APMC), Bengaluru. In medical application, CSIR-NAL has teamed with Department of Health & Family Welfare, Govt. of Karnataka for aerial delivery of covid-19 vaccine's in remote area. The Octacopter has successfully delivered 50 vials of Covid-19 vaccines along with syringes in a special container from Chandapura Primary Health Centre (PHC) to Haragadde PHC on 13th November 2021.

On the similar lines, CSIR-NAL has teamed with CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu and Department of Health & Family Welfare, Govt. of Jammu for aerial delivery of covid-19 vaccine's in remote border area. The Octacopter has successfully delivered 50 vials of Covid-19 vaccines along with syringes in a special container from CSIR-IIIM, Jammu to Sub-District Hospital, Marh, Jammu on 27th November 2021.

The developed multi-copter technology has been licensed to four MSMEs for exploitation in agriculture and medical applications in the country.

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