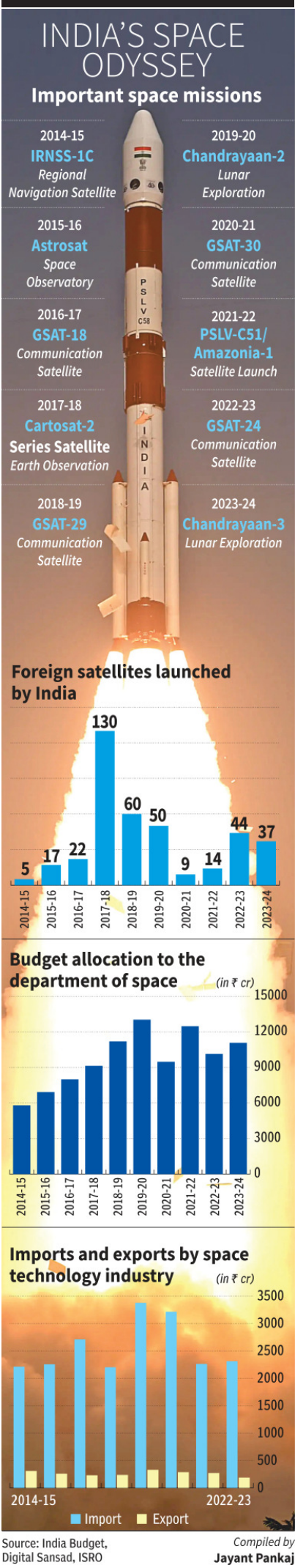


VISUALLY.



Sky is the limit for India's space technology story

EPOCHAL DECADE. In 2023, Chandrayaan-3 and Aditya L-1 missions highlighted India's global space prominence

M Ramesh
Chennai

The period 2014-24 was an epochal decade for the Indian space sector, when the country climbed 'up above the world so high', with a bouquet of mission successes and some path-breaking policy measures. In those 10 years, India built on the foundation laid by the hard work of the previous decades.

One might cleave India's space odyssey into three phases — seeding, flowering and fruiting.

Think of the seeding phase as the period from the sounding rockets of the 1970s to the development of the PSLV rocket. Until the 1990s, India's only badge of honour was the PSLV rocket, whose enduring success till date has earned it the sobriquet, 'workhorse'. For a country that had to bootstrap itself to chart a path into the heavens, the home-grown rocket (which can carry payloads up to 3.25 tonne to low earth orbits or 1.75 tonne to geostationary transfer orbit, 36,000 km above the earth) was a matter of pride, but there was little else to be proud of.

However, scientists were quietly slaving in their labs and their efforts ushered in the flowering phase. In 2001, India launched its first 'heavy rocket', the GSLV, albeit with a Russian upper-stage cryogenic engine. The first didn't leave the launch pad. In the second attempt, the rocket put a (test) satellite in the wrong place. But from then on, the Indian space sector has been steadily climbing the ladder of success. The first moon mission, Chandrayaan-1 (2008) was a cheer, as it did its job and more — of reaching the moon's orbit and then finding proof of existence of water on it. Then followed the Mangalyaan (2013), when India earned global encomiums by slinging the spacecraft to the Martian orbit in the first attempt, a feat no country had achieved.

When the NDA government took over in 2014, the Indian space sector was thus fortified by the two successes and was licking its paws for further kills.



ROARING TO GO. ISRO's upcoming plans include sending Indians to space via Gaganyaan, exploring Venus with Sukrayaan, and missions to asteroids. Longer-term goals involve lunar missions and building Bharat Antariksh Station, an Indian space station

The fruiting phase began.

MOON MISSION

The crowning moment of India's space journey was undoubtedly 18:03 hours on August 23, 2023, when the lander of Chandrayaan-3 gently descended on the moon's surface, making the country only the fourth in the world to do so, after the US, Russia and China. (Japan has since joined the club). The Chandrayaan-3 success (built on the learnings of the failed Chandrayaan-2) was followed by the Aditya L-1 mission's laudable feat of placing a spacecraft (a space telescope) in the L-1 point between the sun and the earth, 1.5 million km from the earth, from where it would constantly observe the

sun. Again, India was only the fourth in the world to do this, after the US, Europe and China.

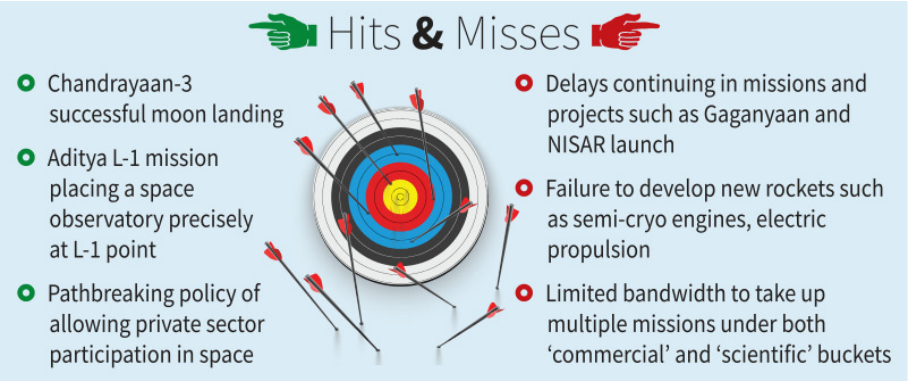
Alongside, India also developed its own regional navigation satellite system (NavIC), a regional version of a 'global positioning system' (GPS). Only the US, Europe, Russia and China have their own global positioning systems, while Japan and India have regional positioning systems. Further, ISRO developed other rockets — a heavier LVM-3 and a small satellite launch vehicle (SSLV) for smaller payloads, for which there is a big market.

In the meantime, in March 2019, India demonstrated its anti-satellite capability, chasing and hitting a flying (defunct Indian) satellite in the low-earth

orbit. Once again, India was only the fourth country to do this, after the US, Russia and China. (India has a bunch of inter-continental ballistic missiles that fly to space and come back, which were developed on the back of the country's space programme).

FUTURE PLANS

ISRO has exciting plans — the closer ones are sending two or three Indians to space (Gaganyaan) and bringing them back and missions to explore Venus (Sukrayaan) and an asteroid but on a longer timescale, there are plans to send robotic and manned missions to the moon and build an Indian space station (Bharat Antariksh Station). The developed world,



which once balked at giving India technology, is now eager to collaborate. A NASA-ISRO Synthetic Aperture Radar (NISAR), which will provide "an unprecedented view" of the earth below; the French CNES and ISRO have shaken hands to build a Thermal Infrared Imaging Satellite for High-resolution Natural resource Assessment (TRISHNA), for use in climate monitoring and operational applications.

PRIVATE PARTICIPATION

However, even all these successes would be enough to earn 2014-24 the 'epochal decade' tag. The epoch-making part of the story is India opening its space sector to private participation. After announcing its intention in June 2020 and setting up the space regulatory, Indian National Space Promotion and Authorisation Centre (IN-SPACe) in October 2021, the Union government unveiled the India Space Policy-2023, in April. The policy set the broad framework for non-government entities' participation in areas like space vehicles, satellites, dissemination of data and setting up ground stations. The rules for activating the policy were brought out in May 2024. Earlier, the role of the private sector was limited to making components for ISRO.

Now the private sector is rubbing its hands in glee. There are over 400 Indian space companies — about half of them are start-ups (including two rocket manufacturers), which have attracted \$330 million in investments in the last three years. ISRO is building a new launch station at Kulasekarapatnam, Tamil Nadu, for small rocket launches. IN-SPACe has received about 500 applications for authorisation and has signed over 50 technology transfer agreements. According to Invest India, the official investment promotion body, India's space economy was worth \$9.6 billion in 2020; the country aspires this number to increase to \$44 billion by 2033.

This is the 20th article in the '10 years of NDA' series

EXPERTSPEAK.

'Reduce delays, expedite R&D'

M Ramesh
Chennai

Dr Chaitanya Giri, Associate Professor, FLAME University and Advisory Board Member of Satcom Industry Association, spoke to *businessline* on the growth of the space sector:

How would you review India's space journey in the last 10 years?

The achievements span from structural reforms that have taken place since 2018-19, encouraging the private sector, making sure that there is ease of doing space business, demonstration of some cutting-edge space missions, to the great successes of Chandrayaan-3 and Aditya L-1. A notable achievement has been in terms of setting the plinth for an overall tripartite space programme, helmed by the military, the civilian side, which is now operated by ISRO, and the commercial sector which was a distant third player all this while.



Listen to Chaitanya Giri's views here:



<http://lnkiyi.in/GiriNDA10>

What is the unfinished agenda?

The space programme is always a work-in-progress. I don't think there is any agenda that is pending, but there are lot of things that need to be done. Number one, since the government has been able to convince the country that there is a great scope to make India a major space economy, we must ensure that India Inc and the Indian start-up ecosystem are seamlessly integrated into the space programme. So, cutting down on the delays, expediting R&D, making them commercially ready should be a prime agenda of the Indian government in the next five years.

How do you see the future of the Indian space sector?

I see a lot of Indian companies that have been around in a variety of domains, are now getting into the space sector — not only purely out of excitement that has been generated over the past few years, but these companies are now thinking quite strategically.

The visibly successful space missions like Chandrayaan-3 and Aditya L-1 have given India Inc the confidence to enter the sector. They know for sure that the Indian government is supportive. It will give them the opportunity to grow, to diversify from the core sectors.

NEWS.

Indian Bank eyes emerging segments for loan growth

G Balachandrar
Chennai

Indian Bank will be expanding its loan portfolio in several new segments such as renewables, ethanol, smart metering, and e-commerce and associated areas to drive incremental growth.

The Chennai-headquartered bank has reported 13 per cent growth in advances in FY24 and has indicated that it would strive to maintain the same level of growth in loans during this fiscal too.

With strong economic growth and buoyant GST collections, the public sector lender expects a healthy de-



SL Jain, MD & CEO

mand for credit this fiscal. While the traditional segments are likely to maintain their growth levels, the bank is also focusing on emerging segments for additional growth opportunities.

SUNRISE SECTORS

SL Jain, Managing Director & CEO of Indian Bank, outlined

opportunities in segments such as renewable energy, ethanol, smart metering, city gas distribution, e-commerce sector, and associated infrastructure areas such as warehouses.

Data centres and solar panel manufacturing are also new and upcoming areas where the bank is giving loans and the margins are slightly better. Food processing is another segment the bank intends to grow its portfolio.

Renewable energy is a key focus, with the bank's outstanding loans in this sector increasing to ₹1,260 crore as on March 31, 2024, from ₹132 crore in March 2023. The bank's loan book in the ethanol segment

doubled to ₹906 crore in March 2024. The share of advances in the infrastructure category, including power, port, roads, and others, have remained steady at 12 per cent in gross advances

over the past couple of years. The bank's advances to the infrastructure segment stood at ₹54,857 crore in FY24 against ₹61,254 crore in the previous year.

TATA POWER
THE TATA POWER COMPANY LIMITED
(Corporate Contracts Department)
Sahar Receiving Station, Near Hotel Leela, Sahar Airport Road, Andheri East, Mumbai-400059, Maharashtra, India (Board Line: 022-67173941) CIN: L2820MH1919PLC000567

NOTICE FOR INVITING BIDS

Tender ref no: Tender / Trombay/ Coal/ 04/ 24-25
The Tata Power Company Limited, intends to source low calorific value with low Sulphur and low ash Imported Thermal coal for its 750 MW coal based Thermal Power Plant at Trombay, Mumbai, Maharashtra.
Bids are invited from reputed Coal suppliers for supply of 1.6 lacs Metric Ton (+/-10%) Indonesia origin coal, with typical coal specification - Gross Calorific Value of 5000 Kcal/Kg (GAR), 0.30% Sulphur (Air dried basis) and 4.0% Ash (Air dried basis) from the delivery period within July 2024 to September 2024. The interested bidders are requested to visit the website <https://www.tatapower.com/tender/tenderlist.aspx> for further details. Eligible Bidders willing to participate may submit their expression of interest latest by 17:00 Hrs. (IST) 14th May 2024. Future corrigendum's (if any), to the above tenders will be published on Tender section on our website- <https://www.tatapower.com> only.

Malabar Regional Co-operative Milk Producers' Union Ltd.
Head Office, Perungulam, Kunnamangalam, Kozhikode-673 571
Kerala. Website: www.milbamilma.com
E-mail: mrcmpu@malabarmilma.coop
Phone 0495-2805407, 420, 428

TENDER NOTICE

Tenders are invited from eligible bidders for the following works.

Item	Closing Date	Source of Bid Documents
SITC of IP PBX with Telephone Network E-tender Id:2024_KCMMF_672420_1	22.05.2024	www.etenders.kerala.gov.in
Supply of Lab Equipment's for Milk Powder Plant E-tender Id:2024_KCMMF_672432_1	22.05.2024	
SITC of 60Ki Silo with Accessories (1 No) E-tender Id:2024_KCMMF_672451_1	29.05.2024	
SITC of Evaporative Condensers (3 Nos) (Re-tender) E-tender Id:2024_KCMMF_672463_1	22.05.2024	
Computer Hardware, Software, Networking items and its Service. E-tender Id:2024_KCMMF_672124_1	31.05.2024	
SITC of Crate Washer E-tender Id:2024_KCMMF_672496_1	30.05.2024	
SITC of Servo Stabilizer E-tender Id:2024_KCMMF_672490_1	23.05.2024	
Shifting of Homogenizer and Tank from Wayanad Dairy to Malappuram Dairy MRU/ENG/Homogenizer & Tank/T07/2024-25	18.05.2024	MRCMPU Ltd, Head Office, Kozhikode

For further enquiries, visit our website or contact Head Office, MRCMPU Ltd, Managing Director

Tech spends to remain stable in 2024-25, says Red Hat CEO

Our Bureau
Mumbai



Matt Hicks

Matt Hicks, President and CEO of Red Hat noted that tech spends are expected to "remain stable, within the larger macroeconomic constraints."

Speaking at the Red Hat Summit 2024 in Colorado, Hicks noted that how and where businesses allocate these tech spends will be a far greater change.

He said, "I think that spending will still remain strong, especially for software-based services which allow companies to reach a global audience more efficiently; however, you will see that more funds are allocated to AI and automation."

At the summit, Red Hat, a subsidiary of IBM, revealed several announcements related to generative AI. Red Hat announced that it is going to open source its InstructLab project for enhancing large language models (LLMs).

The InstructLab open source project will provide a cost-effective way for enter-

prises to align LLMs with data for their specific use cases and it will open the door for people with minimal GenAI experience to get involved.

Red Hat also announced the setting up of Podman AI Lab. It gives developers the ability to build GenAI applications in containers, using their own laptops.

Speaking on the impact of AI on tech jobs and the recruitment process of new engineers, Hicks noted, "Having AI models which can understand and summarise code will solve the modernisation and maintenance challenge in IT jobs and open up time for IT workers, including myself, to spend more on the creative side of the business."

