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India needs a comprehensive National Aerospace Policy to make a 'Made in India' passenger aircraft a reality and propel the local aerospace ecosystem to maturity. A year ago, Prime Minister Narendra Modi, while inaugurating the Shivamogga airport in Karnataka, said the day is not far when Indians will travel in Made in India planes. Several senior ministers and government functionaries stress it will not be long before Airbus and Boeing set up final aircraft assembly lines (FALs), in India.

The need for a domestic commercial aircraft programme is undisputed. India is the fastest growing aviation market in the world with the largest order-book for new aircraft, at a whopping \$70 billion over the next decade. Its existing airports are buzzing with travellers even as new ones are being built or are on the planning board.

But how soon India will be able to achieve the Prime Minister's proclamation of a Made in India commercial aircraft is linked to a host of factors.

Europe and the US lead in commercial aerospace manufacturing, while China has emerged a new challenger. China's journey began in 2002 with the ARJ21, a regional jet, followed by the C919, a larger narrow-body aircraft. Although the ARJ21 faced delays and is considered a partial achievement at best, the C919, with over one thousand orders, stands as a notable success. Both programmes heavily rely on foreign technologies from global original equipment manufacturers (OEMs), emphasising the importance of collaborations and making it attractive for foreign companies to operate domestically.

#### INDIAN REALITY

Few realise that India's own aerospace endeavour predates China's by more than 70 years. Hindustan Aeronautics Ltd (HAL), started off in 1940 as the privately promoted Hindustan Aircraft Ltd. Given this early start, one would have expected India to be a major force in aerospace manufacturing. However, Indian companies currently account for just over 1 per cent of the global aerospace design and manufacturing market. With their roots in IT services, some companies have moved up the value chain to render engineering design services. Then there are those who have made a mark in manufacturing and are a part of the global aerospace supply chain and deliver build-to-print detail parts, sub-assemblies and smaller assemblies to global OEMs. Every OEM operates its own captive engineering/design arm in India. Therefore, aerospace engineering capabilities, across the value chain, exist in India albeit in silos.

There are very few Indian companies

# The path to a 'Made in India' passenger aircraft



**CHALLENGING.** An ecosystem of design expertise, manufacturing acumen, component supply base and regulatory system must be in place. For this, govt support is vital

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that operate in both design and manufacturing. There are still fewer who can boast of any worthwhile aerospace IP.

To be able to conceive and execute an independent commercial aircraft programme is a stupendous task given the complexities in making an air-plane. Sample this: an average commercial aircraft (Airbus 320) consists of upwards of 340,000 parts, while the Boeing 737 MAX is said to have 500,000 parts. Each is a complex machine that needs to work in perfect harmony with everything else onboard for at least 20 years under demanding conditions. To build an aircraft an entire ecosystem of design expertise, raw materials supply base, component suppliers, and end-to-end manufacturing acumen apart from a regulatory system for certifications (life-cycle programme management expertise of design to retire) is needed.

#### UNIQUE NEEDS

And then India is a unique market that needs a unique aircraft programme. India has a high density of flyers who typically want to travel over short distances — from the hinterland to the metros. The number of operational airports is projected to grow to 230-240 from the current 140 as air travel expands to Tier-2 and Tier-3 cities. So, a commuter aircraft that caters to the Udaan segment (high

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volume/high frequency connectivity between 500+ district HQs to State capitals/metros) is a crying need.

The government's focus on developing a regional transport aircraft (RTA), designed by the National Aerospace Lab (NAL), and manufactured by HAL, which has been on the anvil for some time now, is thus in the right direction. However, while the government's nudge to Airbus and Boeing to set up FALs may raise doubts on the future of the RTA, there is space for all. One needs to consider the market segmentation and distinguish between Make in India for India and Make in India for the world. More importantly, developing an aircraft design from scratch is a long and expensive affair. It calls for a collaborative approach both in the interests of cost and time to take-off. Either way, both the NAL-HAL combine for the RTA, and the global OEMs for their own platforms, will have to leverage the local supply chain for their respective endeavours and ride on the domestic capacity and capabilities for profitability.

But graduating to 'design and build' is a lengthy process fraught with risks. Indian aerospace supply chain companies tend to invest capital for the short-term, minimal risk opportunities. Sustaining a full-fledged aircraft programme is a long haul and needs long-term risk capital with ample support from the government as has been the case in most developed markets. According to one estimate, COMAC received \$49-72 billion in state-related support over its lifetime. Airbus in contrast received \$22 billion over many years from the EU, according to a WTO estimate.

Likewise, the government of India will

have to go the extra mile to make a National Passenger Aircraft Programme a reality by taking several measures. Among these, the following will be critical:

**A comprehensive National Aerospace Policy** integrating elements from various other policy approaches like the National Aviation Policy, the MRO Policy, etc.

**A National Aircraft Programme** that is well funded through innovative mechanisms including grants, subsidies, and preferential buying arrangements with airlines.

**A dedicated fund** to promote investments in aerospace and defence projects with a particular emphasis on R&D and IP generation.

**Extending PLI** for aerospace manufacturing with substantial allocations.

**This apart,** the programme needs to be in PPP mode with involvement of all ecosystem elements.

**Emphasis on** at least 75 per cent in-country value addition is essential to grow the ecosystem.

**There is also a case** for classifying both commercial and defence aerospace as infrastructure to enable companies access long term funding of over 20+ years at attractive interest rates.

**The government** will have to pave the runway for the supply chain to take risks and partner a domestic commercial aircraft programme on priority, while it also 'designs and builds' for the world.

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