Aerospace: Regulatory & Policy Benchmarking

The aerospace sector in India is in the early stages of development and most of the domestic demand is being met through imports. In contrast, China is fast emerging as an important player in global aerospace manufacturing. The government policies have played an important role in shaping the current shape and structure of aerospace sector in both countries. A comparative assessment of aerospace sector dynamics (industry structure, regulatory environment, policy measures, etc.) in India, China and developed markets like USA, Germany and France reveals the major competitive advantages enjoyed by the competing countries vis-à-vis India in this sector.

USA's aerospace industry is the largest in the world and is a leading exporter of civil aircrafts and aerospace components. Since the 1970s, USA has negotiated and entered into a number of major international agreements that have significantly liberalized trade of civil aircraft products and reduced government intervention in the civil aerospace market. In contrast, Germany's aerospace sector occupies a prominent place in country's politics. Two federal ministries, viz. the Federal Ministry of Economics and Technology (BMWi) and the Federal Ministry of Education and Research (BMBF) pursue policies for the development of the sector. The BMBF defines programmes on basic technologies, such as micro-systems, optics, Nano-technology, new-materials etc., and BMWi offers support via a specific research program for the aerospace industry (Luftfahrtforschungsprogramme)(LuFo)).

China's aerospace industry has also benefited from the focused approach of the government over the last two decades. During this period, the industry has witnessed several structural changes led by the government to consolidate the country's capabilities in military as well as commercial aerospace. As discussed in the earlier section, Aviation Industry Corporation of China (AVIC) is the major aircraft organization involved in R&D and production of civil and military aircrafts. China has also centralized its aerospace activities under one ministry at the Government level.

On the other hand, Indian aerospace sector is comparatively fragmented. Moreover, there are several authorities as stakeholders in the development of the sector, which has hindered the formulation of core national aeronautical policy aimed at industry growth and self-reliance. Consequently, Indian aircraft manufacturing as well as assembly is way behind that of China, as illustrated in the table below.

Manufacturing capabilities in Aerospace sector: China and India

	China	India
Aircraft Manufacturing	• Avichas emerged as a world-class aircraft manufacturer with aviation products including a 150-seat jumbo jet • China flew its first passenger ARJ21 regional jet in September 2008 and also plans to develop 150 seater mainline jets in the medium term • China started developing turbo propelled regional aircraft Modern Ark 700 (MA 700) for	• India maintains capabilities in designing and manufacturing military aircrafts (by HAL) but has been unable to establish its presence in passenger aircrafts. • Recently, CSIR approved a plan for its Bangalore aerospace lab to design an airplane that can carry 90 passengers on short flights. • NAL is also building the regional transport aircraft. India is expected to launch its first

	the high-end international market	series of regional jets only in 2012 in partnership with Bombardier and Embraer
Assembly	• Airbus assembly plant in China (Airbus Tianjin Final Assembly Company) began operations in September 2008. The new plant is can assemble 44 aircraft a year. • China also jointly assembles the Embraer ERJ-145 regional jet.	• India still does not have a complete assembly line set up by any global OEM though the Government is looking to set up an assembly unit for 25-60 seater turboprop aircraft in collaboration with EADS. • India plans to assemble 108 Medium Multi Role Combat Aircrafts (MMRCA) out of IAF's purchase of 126 planes. • BAE Systems partnered with HAL to produce Hawk which involves assembling 11,000 components sourced by BAE Systems from UK.

Source: Changing Dynamics: India's Aerospace Industry – Report by CII

Huge government investments have boosted industry growth in competing countries

The aerospace industry is highly capital intensive and requires huge investments at the growth phase as well as during regular intervals in order to maintain the planned growth rate. The Chinese government has made huge investments in research and development and in creating a supportive environment, through introduction of large amount of foreign equipment at major institutes, design offices, and universities and colleges (Civil Aviation University of China), and increased joint R&D activities by the Chinese Aeronautical Establishment with several foreign organisations from France, Germany, Italy and others. Similar efforts in India would be required for building self-reliance and capabilities in commercial aerospace manufacturing.

The United States government focuses on aerospace R&D by making investments in development of long-term breakthrough technologies that benefit the public. U.S. government-funded civil aeronautical basic research programs are open to foreign firms and the results generally are broadly available to the U.S. and foreign competitors.

Modern technology gives a competitive edge to China vis-à-vis India

Indian aerospace industry lacks in latest technology across the design lifecycle, which is a major obstacle in its growth and development. The FDI restrictions do not allow foreign companies a majority control in Indian entities, due to which they are reluctant to transfer state-of-the-art technologies and have given licenses only for older technologies. In case of Tier-3 suppliers especially, which are generally small family-owned businesses in US and Europe, there is little incentive to transfer know how or invest in local Indian companies.

On the other hand, China's government has tried to leverage large commercial aircraft purchases in exchange for arrangements leading to technology transfer with a view to modernise its aerospace industry. China's aerospace industry began with production of military aircrafts way back in 1950s and

though China did not have access to western technology and design/ development capabilities at that time, it build up its technology base through in-house R&D and reverse engineering of foreign products.

The aerospace market in the US has attracted foreign firms because it is the largest in the world and has a skilled and hospitable workforce, extensive distribution systems, diverse offerings, and strong support at the local and national level for policy and promotion.

Subsidies have helped the growth of industry in competing countries

Besides huge investments, the aerospace sector in China has enjoyed substantial subsidies as well as liberal state funding comprising very low interest rate bonds. As a result, the country has been able to gain a competitive edge against other nations in global exports.

The developed markets also provide substantial subsidies to their aerospace sector. For instance, the US government subsidies have helped Airbus in developing and manufacturing commercial jet aircraft. Germany too offers numerous incentives for all investors including cash incentives for the reimbursement of direct investment costs, incentives for labour and research and development (R&D). The sector also receives various indirect subsidies from the government. German airports benefit from indirect subsidies of not paying land property taxes. Indirect subsidies to airlines relate to the tax exemptions (kerosene tax, VAT on the price of tickets for international flights). Other types of indirect support include provision of land at lower costs, VAT exemptions on deliveries, construction work, maintenance activities and extraordinary depreciation of aircraft.

Lack of international certifications deters growth of aerospace industry in India

Tie-ups and joint ventures with foreign aerospace manufacturers has helped China in keeping high quality standards and receiving international certifications for processes and parts, which is a key to maintaining global competitiveness for higher exports. However, Indian suppliers have faced difficulties in getting international airworthiness certifications and often the international airworthiness approvals for parts manufactured in India takes too long as approvals are not done within the country. The delay in approvals often leads to high costs for OEMs, which deters the outsourcing of components to Indian suppliers.

R&D has been a key to aerospace development in major countries

Research and Development have been at the forefront in aerospace industry in most leading countries. The US government has provided significant funding for aerospace R&D and so have European countries like Germany and France. The German Aerospace Center (DLR) is directly involved in research projects and runs the expensive research facilities that are indispensable for advanced R&D activities. Apart from these, the universities and research institutions foster industry-specific innovation and house more than 700 aerospace scientists.

France too has specialist schools, including the ISAE and the ENAC and the ENSMA that provide training for specialist engineers in France, while the professional federation GIFAS contributes to promoting and defending the interests of the sector. Public bodies are also very active in research, particularly the ONERA (National Aerospace Research Office), the CNES (National Space Exploration Center which actively participates in European Space Agency programs), as well as CNRTs (National Centres for Specialized Research and Technologies). Sectors in which French research excels include

propulsion and combustion, composite materials, aerodynamics, acoustics, and embedded electronic and IT systems.

In India too, there are numerous government research institutes and organisations that carry out intensive research and development for the aerospace sector, namely Hindustan Aeronautics Limited (HAL), Defence Research and Development Organisation (DRDO), National Aerospace Laboratories (NAL), ISRO, etc. However, the progress on R&D front has been relatively slow and thus recently the government has invited private sector participation from domestic as well as foreign players in research and development activities, providing 80% funding to the projects.