

China Space Industry Development Analysis

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Abstracts

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The space Industry today plays an important role in China's comprehensive development strategy. The space sector enjoys a special status and its contribution and performance cannot be judged by macroeconomic and other aggregate national level indicators. China's investment in space in the last 2-3 decades have focused on capabilities that directly serve economic goals, aid development and have potential for contribution to economic development. However economic development was not the chief factor guiding the civil space program initially. The government's focus on civil space industry has not been consistent with developmental priorities since 1992 when the human spaceflight program was started. Space technology related to specific applications such as telecommunications satellites and remote - sensing satellites for resource management and weather monitoring can generate direct and visible contributions to economic development.

Apart from the main space programs, the Chinese space industry is looking at further commercializing its space initiatives including the export of satellite components, to Western markets. The space industry is also likely to look at expanding into export sectors outside space for high-technology sectors such as clean energy products, solar panels etc.

While the government and space agencies are promoting commercial space ventures in China, the participation of Chinese enterprises in international commercial activities in the space field is encouraged and opening up new commercial vistas. China is a major player in satellite exports and has exported whole satellites and made in-orbit delivery of communications satellites to Nigeria, Venezuela and others. The country has also provided commercial launch services for the Palapa-D satellite of Indonesia and the W3C satellite of Eutelsat. Besides these China has signed export contracts with Bolivia,

Laos, Belarus and other countries for its commercial satellite and ground system.

China's space program objective is to build a permanent space station by 2020 and from there send an astronaut to the moon in the next few years. China is now attempting to promote a narrative of the country being a rising global power in space technology. Its plan in this regard includes launching freighters and manned-vessels in the next 5-6 years, conducting major research on black holes, forecasting environmental disasters, and other space operations. In recent years China's space exploration program has seen significant advances with its ambition to land a lunar rover on the moon. For China its forays into space is an important part of its continuing development, and the country has some ambitious plans along those lines.

“China Space Industry Development Analysis” Report Highlights:

Civil & Military Space Industry Emerging Trends

Space Industry Formal Plan

Space Industry Capabilities Analysis

Launch Vehicles, Satellite Launch & Monitoring Centers

Space Laboratory Module: Tiangong Space Station

Ongoing & Future Projects

Government Initiatives & Budgetary Support

Space Industry Technologies & Trends

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About

China's space endeavors started in the late 1950s. By mid 1998 China had conducted 60 space launches, with about xx of them being completely successful. China sees a relatively low domestic launch demand and it typically launches xx satellites annually. However the capabilities and rate of progress are expanding, partly due to commercial reasons. China now has a range of launch vehicles to support both LEO and GEO missions. China Academy of Launch Vehicle Technology [CALT] and the Shanghai Academy of Spaceflight Technology [SAST], subsidiaries of the China Aerospace Corporation are the prime institutions behind the design and production of China's Long March (Chang Zheng or CZ) family of launch vehicles. The table gives details of the launch vehicles of China and their different roles.

In launch vehicles, China's mainstay has been the Long March rocket. The country has managed 67 successful launches, sending 79 spacecrafts into planned orbits in the last 8 years. The Long March vehicles have seen changes and improvements since 2006 and these rockets have been at the forefront of China's new-generation launch vehicles.

China's Long March rocket was involved in the launch of four satellites recently. This included Ecuador's first satellite, two CubeSats, one built by students in Turkey, and a technology demonstration platform from Argentina. Earlier, between August 1996 and August 2009, Long March was involved in about 75 consecutive successful launches, and this number is more than 100 now. More and more foreign customers are expected to use China's inexpensive rockets for future satellite launches in the years to come.

In the years ahead, China plans to build a stronger space launch system, work on improving its launch vehicle series and enhancing the capabilities of these launch vehicles in entering space. This initiative is expected to make the launch vehicles reliable and adaptable and to develop a new line of launch vehicles. It is also expected to boost the upper stages and in implementing the first flight of the Long March-5, Long March-6 and Long March-7 launch vehicles. The next launches of Long March-5 are expected to be also capable of placing 25 tons of payload into the near-Earth orbit or 14 tons of payload into the GEO orbit. These are expected to feature non-toxic and pollution-free propellants.

Long March-6 is expected to have a payload capacity of about 1 ton or more in an orbit synchronous with the sun.

After its first experimental communications satellite launch in January 1984, China has launched four additional communications satellites. The first two were based on experimental design and had limited capacity but the subsequent ones have been based on a more advanced design. China's communication satellites are put to use for television broadcasts, besides serving the needs for special services for the Chinese People's Bank, and other telephone and data circuits. Over the years China has acquired the capability to successfully develop, launch, and maintain communications satellites in orbit and this gives the country the tag of a true space-faring nation. China is now amongst the nations that have the capability to offer foreign space launch services and is also a key player in that market.

China's next generation satellite is expected to be put in commission for operation with increased capabilities, requirements and longer life span. They would support the increasing demand for domestic communications besides commercial and educational television. In recent times, in 2014, China launched a Shijian-11 class satellite. This was launched by a CZ 2C (Long March 2C) rocket. DongFangHong Satellite Company of the China Aerospace Science and Technology Corp developed an 'experimental satellite' that was the sixth in a series of satellites. A series of satellites named the Shijian-11 series have been used for scientific research and technological experiments and are a part of a set of operational early warning satellites. The first of the Shijian-11 satellite was launched in November 2009 using the Long March-2C while the second satellite, ShiJian 11-03 was put into orbit in July 2011 using the Long March-2C.

The third in the series, Shijian 11-02 was launched in July 2011 from Jiuquan using the Long March-2C (Y24) launch vehicle. Though the next one, Shijian 11-04 was lost in August 2012 following a mishap to Long March-2C Shijian 11-05 the next one was successfully launched in July 2013 using a Long March-2C (Y23). In the short term, China is expected to have at least 18 launches line up through the remainder of 2014.

China has an Anti-Satellite (ASAT) program that was started in 1964. It includes Program 640 and many other programs up to Program 863 and the General Armaments Department and the State Administration for Science, Technology and Industry for National Defense (SASTIND, formerly known as COSTIND) are part of this program. The ASAT program is built around the development of three ASAT capable Systems: Direct Fire, Directed Energy, and Micro-Satellites. The country has also developed technologies that can be used on Anti-Satellite (ASAT) weaponry. China has also made strides in weather satellite system, the first of which Fengyun 1A, was launched in 1988. Since then it has launched 10 Fengyun satellites and these have been of increasing capability. By July 2010 there were five of these Fengyun 1D, 2C, 2D, 2E, and 3A were

still operational Fengyun 1D is a weather satellite on a polar LEO used for observation of clouds, land surfaces, and oceans while Fengyun 2C, 2D, and 2E are in GEO.

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