

10. Space launch activities worldwide

Ten countries have so far demonstrated independent orbital launch capabilities, and seven countries (i.e. the United States, the Russian Federation, China, Japan, India, Israel and Iran) and the European Space Agency (ESA) have operational launchers. More than 1 100 space launches took place between 1994 and 2010, with the Russian Federation and the United States leading. From a high of 89 in 1994, the rate declined in 2001 to an average of around 60 launches per year. Seventy successful space launches occurred worldwide in 2010 with 119 payloads onboard, although there were four rocket failures (India, Korea and the Russian Federation). The Russian Federation has launched more rockets than any other country every year since 2006 (Figure 10.1) and is planning to launch 50 more satellites in 2011 alone. Countries in Asia led by China (15 launches in 2010, like the United States) are gradually outdistancing Europe in terms of the number of launches and payloads (Figure 10.2). As of 2011, there are six companies able to commercially launch satellites to geostationary orbit (the most profitable orbit, home to large commercial communications satellites): the European Arianespace company (the current market leader, with the Ariane 5 launcher), the Russian Federation's International Launch Services (Proton launcher), the United States' Lockheed Martin (Atlas V) and Boeing (Delta launchers), China Great Wall (Long March launchers) and Sea Launch, an international consortium (Norway, the Russian Federation, Ukraine and the United States) (Figure 10.3). Other companies can launch satellites in lower orbits (e.g. Orbital Sciences) or are planning to (e.g. Space Exploration Technologies). SpaceX conducted in 2010 the first launch of its Falcon 9, but also sent the commercial Dragon test capsule into orbit, which successfully re-entered the earth's atmosphere and landed in the Pacific Ocean. Governments tend to prefer using domestic launcher when they have one, and not rely on foreign commercial providers for their governmental payloads (military satellites, for examples). So the international market remains relatively small despite the abundance of launchers. Revenues from the 23 commercial launch events in 2010 amounted to an estimated USD 2.45 billion (Figure 10.4) (FAA, 2011). The relatively lively activity of space launches worldwide should continue over the next decade, as more governments fund

earth observation, navigation, meteorological and other scientific and military satellites and develop new launchers. Already by the end of 2011, Europe could have three different rockets operating from its French Guiana spaceport (i.e. Ariane 5, the Russian Soyuz vehicle and the new smaller Vega launcher); India aims to enter the commercial market for geostationary satellites with a new rocket, and both Brazil and Korea aspire to develop their own national launchers over the next five years.

Methodological notes

Data are based on the Federal Aviation Administration's Office of Commercial Space Transportation (FAA/AST) and other public sources (*Air&Cosmos*, *Space News*). The data include worldwide orbital launch events that are conducted during a given calendar year, but not space shuttle launches, which carry astronauts (i.e. five space shuttle launches in 2010).

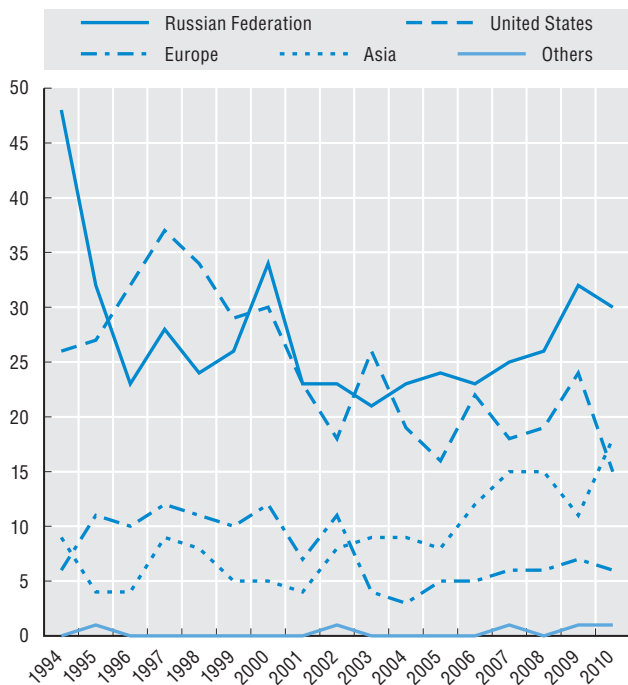
Sources

- De Selding (2011), *Space News*, January.
- Federal Aviation Administration (FAA) (2011), *Commercial Space Transportation: 2010 Year in Review*, Federal Aviation Administration's Office of Commercial Space Transportation (FAA/AST), Washington DC.
- Lardier (2011), *Air&Cosmos*, January.

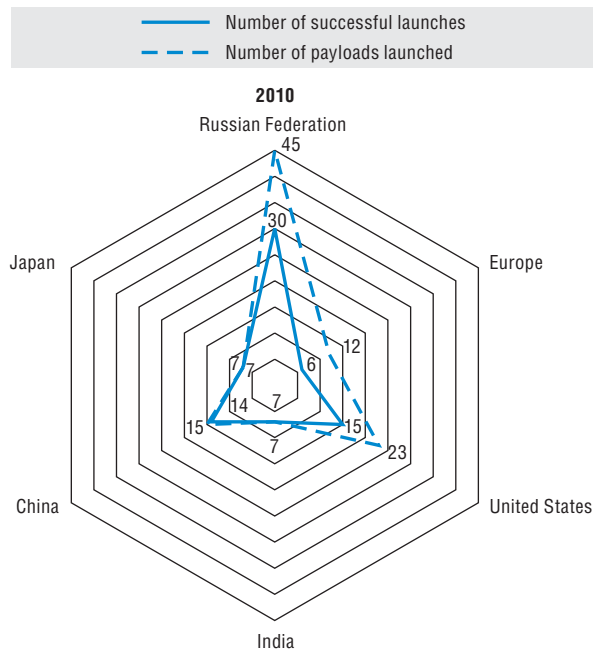
Notes

- 10.1: Asia: China, India, Japan.
- 10.2: One additional successful launch (including one payload) from Israel took place in 2010. Four launches were unsuccessful (1 from Korea, 2 from India and 1 from the Russian Federation).

10.1 Number of successful space launches (1994-2010)

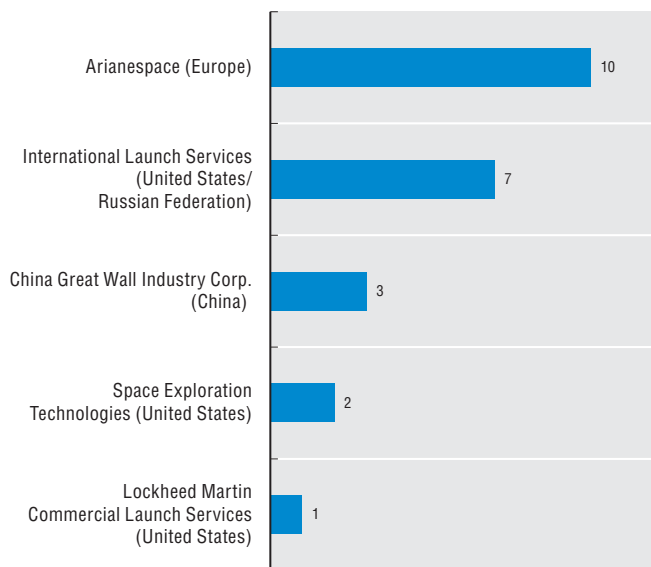


10.2 International distribution of successful space launches and payloads in 2010

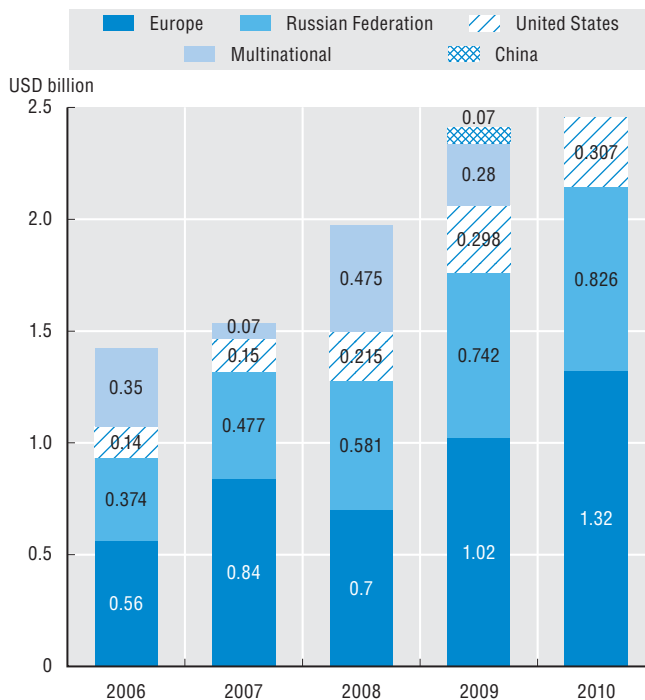


10.3 Commercial launch contracts signed in 2010

Number of contracts which may include one or more satellites to be launched over the coming years



10.4 Launch industry revenues' estimates





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