28. France

Institutional framework

France became the third country to place a satellite in orbit independently in 1965 (Asterix). Ever since, it has been a driving force behind autonomous European access to space, with the development of the Ariane launchers and continuing support for the European spaceport in French Guyana. In 2013, France had the largest national space budget in Europe and was the second biggest contributor to the European Space Agency, with major aerospace production sites located throughout the country.

The French space agency (*Centre national d'études spatiales* – CNES), established in 1961, is placed under the joint supervision of the Ministry of Higher Education and Research and the Ministry of Defence. It is responsible for formulating and executing space policies and representing French interests in the European Space Agency (ESA). It is responsible for several national and international programmes covering both upstream (launchers and hardware) and downstream activities (applications), in addition to industry development and science. France allocated about EUR 2.2 billion (USD 2.9 billion) to space in 2013, with an estimated EUR 1.1 billion (USD 1.5 billion) going to CNES for national and bilateral programmes. This figure included government subsidies from the Future Investment Plan (PIA) to sustain economic development, and an estimated EUR 400 million (USD 532 million) in revenues from external contracts. The Future Investment Plan granted CNES some EUR 500 million (USD 662 million) in 2010 in French public bonds over a period of several years to stimulate research and future economic growth, via investments in the next generation of European launcher and innovative satellites. Each year, almost half of the total French space budget (EUR 700-800 million) is allocated to ESA. In addition to investments relative to specific military programmes carried out by the General Delegation for Armaments (DGA) in the Ministry of Defence, such as Syracuse III and MUSIS, some EUR 799 million (USD 1.1 billion) were earmarked in 2013 for the European Space Agency and EUR 31 million (USD 40 million) were allocated to EUMETSAT, the European organisation for weather satellites. In constant euros, the French budget decreased by 1.2% between 2007 and 2013. In constant US dollars the fluctuations seem greater, due to the weakening of the US dollar to the Euro during the period.

When looking at France's allocations to ESA and CNES, the biggest programme in 2013 was "Access to Space", the launcher programme, at a total estimated cost of EUR 744 million (USD 990 million). It was followed by Science (EUR 387 million/USD 515 million) and the Defence and earth observation programmes (EUR 292 million/USD 388 million and EUR 253 milllion/USD 336 million respectively). This reflects the main priorities of the French government concerning European independent access to space as a key element (ESA Members States are in 2014 examining the future of the heavy-lift launcher Ariane 5), with strong emphasis on science, and with civil and commercial satellite applications growing in importance.

Notes

28.1 and 28.2: For 2013, a provisional EUR 400 million has been added to the budget. This covers external contracts to CNES in the area of Access to Space' and Security and Defence.

28.3: The main categories have been adapted by OECD. The category "administration and other joint programmes": the national segment covers taxes and payroll, pooled resources in CNES as well as central directorates budget lines; the ESA segment covers the European agency's operations and debt management. The category "mass market" includes investments in telecommunications. Note: includes an estimated EUR 400 million in external contracts to CNES.

Key facts for France

Space budget as a share of GDP (2013): 0.1%.

Space budget per capita (2013): USD 37.4 (PPP).

Number of regional clusters encompassing space industry: 3 (Aerospace Valley in Toulouse; AsTech cluster in Paris; Pégase cluster in Provence).

Share in scientific production in satellite technologies (2013): 7.36%.

Share of space-related patent applications filed under PCT (2009-11): 17.66%.

Subscribers of Direct-to-home (DTH) satellite services (2011): 6.6 million (32.33% of television households).

Number of operational satellites: 54.

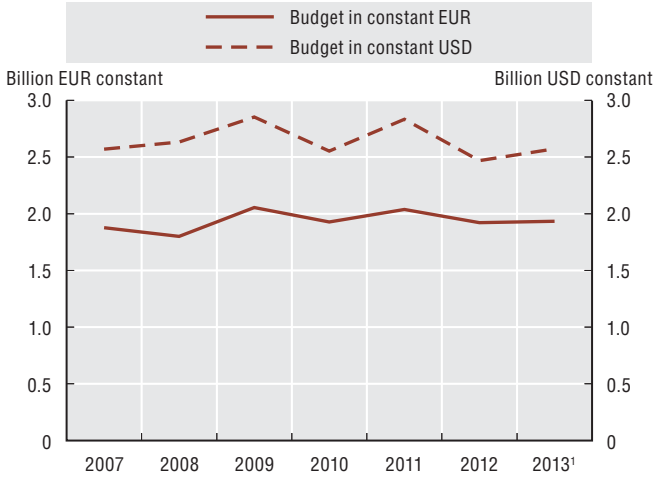
Student performance in science's mean score (PISA 2012): 499 (OECD average of 501).

28.1. France's space budget

In billion EUR (current), 2007-13

28.2. France's inflation-adjusted space budget

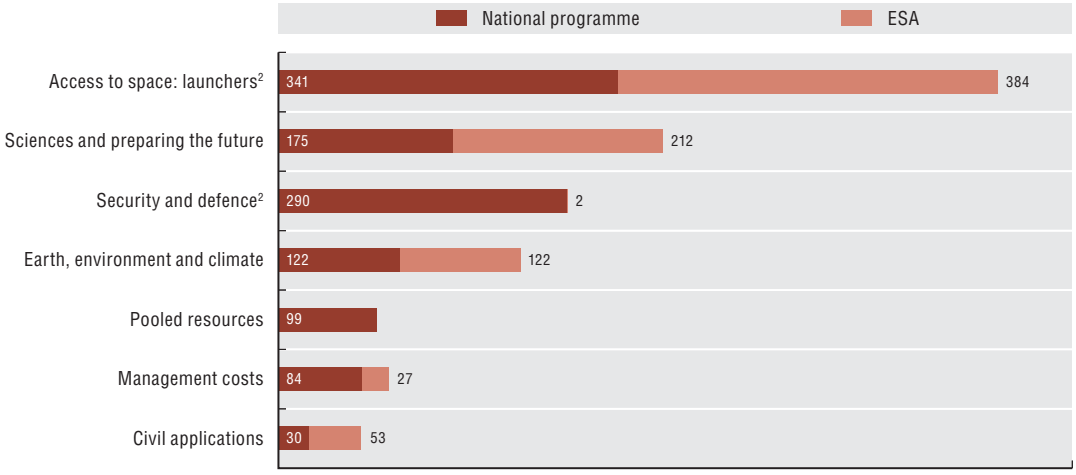
In billion EUR and USD (constant), 2007-13



Source: OECD calculations based on French government sources.

28.3. CNES budget by main programmes

In million EUR (current), 2013



Source: OECD estimates, adapted from CNES, 2014.

French space industry

Space manufacturing remains a niche industry accounting for about 14% of revenues and 8% of total full-time employment in 2012 in the French aerospace sector, based on data from GIFAS, the French aerospace trade organization. Unconsolidated revenues reached EUR 6 billion (USD 7.7 billion) in 2012, a 40% increase compared to 2011 (GIFAS, 2013). Some 13 205 persons were employed in the space manufacturing industry in France in 2012 (Eurospace, 2014). Overall, it is estimated that some 16 000 persons work in the French space sector in metropolitan France and the European spaceport in French Guyana employs about 1 700 people (CNES, 2014). This estimate does not take into account the many French universities, research institutions and defence-related administrations also involved in space research, development and in some cases spacecraft operations.

French aerospace industry

The aerospace sector represents an important source of economic growth for the French economy, remaining robust during the economic crisis. The sector generated EUR 43 billion (USD 55 billion) in unconsolidated revenues in 2012 and employed 170 000 people (GIFAS, 2013). There are aerospace companies located throughout the country, however France is home to three major regional aerospace clusters: the *Aerospace Valley* in the Aquitaine and Midi-Pyrenees regions, with Toulouse representing the first aerospace pole in Europe, with more than 210 French and international companies; the *ASTech* cluster in Paris and its region, representing half of the French R&D aerospace employment; and finally the*Pégase* cluster in Provence-Alpes-Côte-d'Azur, with more than a hundred companies. In these clusters, large companies' revenues are in many cases derived from aeronautics and space activities, space currently representing for example 16% of companies' revenues in the Great South-West region of Aquitaine and Midi-Pyrenees (INSEE, 2012). Based on OECD data, France exported aerospace goods for a total value of USD 64 billion and imported goods for USD 38.8 billion in 2012. Main trading partners were Germany, the United States and China. Trade with Germany accounted for a third of exports and more than half of total imports, reflecting particularly the intra-European Airbus aircraft production value chains (OECD, 2014).

Methodological notes

Eurospace, in co-operation with GIFAS, conducts annual surveys on the European space manufacturing industry. The national statistical office INSEE conducts regional surveys in Midi-Pyrenees (annual since 1982), Aquitaine (annual since 2000) and French Guyana (regular, not annual) specifically on manufacturers, subcontractors, and service providers in the aeronautical and space sectors. These surveys provide snapshots of the French aerospace industry, an important sector for the economies of those three French regions in terms of revenue and employment.

Sources

Centre national d'études spatiales (CNES), *www.cnes.fr*.

Eurospace, *www.eurospace.org*.

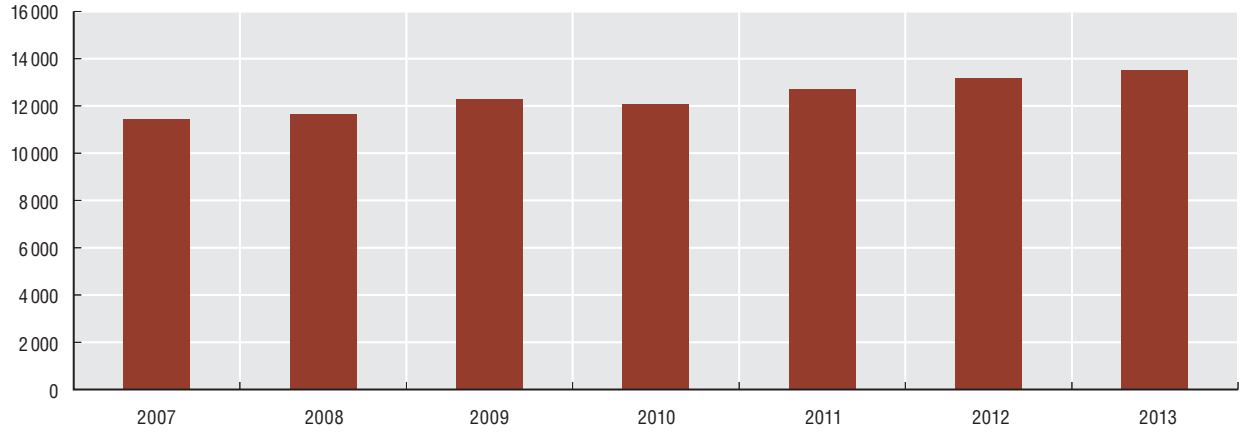
Groupement des industries Françaises Aéronautiques et Spatiales (GIFAS), *www.gifas.asso.fr*.

OECD *STAN Bilateral Trade Database by Industry and End-use (BTDIxE)*, data extracted April 2014, *www.oecd.org/sti/btd*.

OECD Main Science and Technology Indicators database, *www.oecd.org/sti/msti*.

28.4. French space manufacturing industry employment

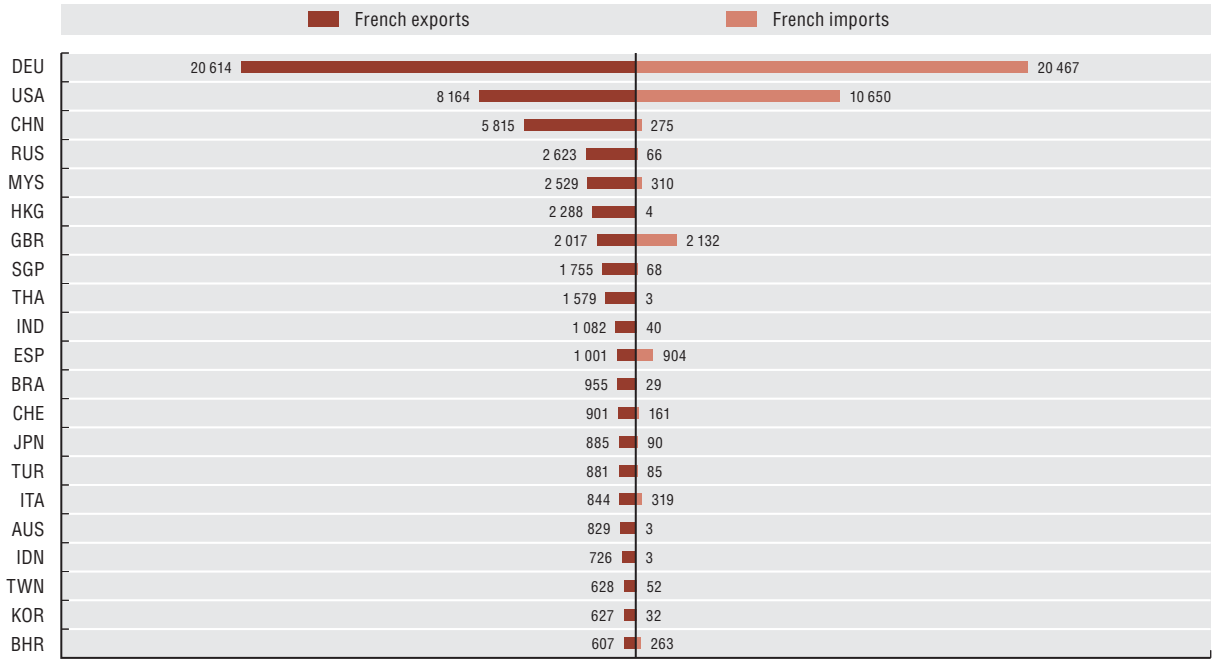
In full-time equivalents, 2007-13



Source: Eurospace, 2014.

28.5. France's main aerospace trade partners

In USD million (current), 2012



Source: OECD STAN Database, 2014,*www.oecd.org/sti/btd*.

StatLink http://dx.doi.org/10.1787/888933142064