

Senate Foreign Affairs, Defence and Trade References Committee  
ANSWERS TO QUESTIONS ON NOTICE  
Department of Industry, Science, Energy and Resources  
Inquiry into Opportunities for strengthening Australia's relations with the Republic of France  
24 June 2020

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**AGENCY/DEPARTMENT:** DEPARTMENT OF INDUSTRY, SCIENCE, ENERGY AND RESOURCES

**TOPIC:** Commercial Satellites

**REFERENCE:** Question on Notice (Hansard, 24 June 2020, Page number 27)

**QUESTION No.: ROF-1**

**CHAIR:** No, that was really interesting. On notice—you might already have the answer—I'm interested in how many commercial satellites are held, even just proportionally. I don't know, but I imagine there would be some countries that have companies that have commercial satellites and some countries with very few. For example, I'd be interested to know how many Chinese companies have commercial satellites or how many satellites are owned by Chinese commercial interests and how many are owned by Australian companies.

**Mr Murfett:** We'll take that on notice. Some of the data might not be available.

**CHAIR:** Yes—and how many do French commercial entities have?

**Mr Murfett:** We'll have a look at that and come back to you with a rough overlay of different countries and their satellites for you.

**CHAIR:** That would be fantastic if you could include more countries, such as American commercial interests. I don't know, but I just wonder if it would be possible, if you're a company that has a satellite, that your government may be interested in using that at some point.

**Mr Murfett:** Just to help me with the question on notice, I'll just give an example. We look at SpaceX, who are about to release 10,000 small satellites. We might just give, if it's okay for the committee, an overview of the key countries that are involved in space and the satellites that they own, because that will give you a feel for what the market's looking like. There are some really good reports, for example, from Bryce Space and Technology that provide the state of the smallsat market and where that's going. So there are some good reports that provide some of this information that we'll be able to draw on.

**ANSWER**

There is no completely comprehensive, internationally recognised database on satellites. The Australian Space Agency (the Agency) refers the Committee to the United Nations Office of Outer Space Affairs (UNOOSA) and the Convention on Registration of Objects Launched into Outer Space.

Since 1962, UNOOSA has maintained a Register of Objects Launched into Outer Space (the Register), it is publically available at the [Online Index of Objects Launched into Outer Space](https://www.unoosa.org/oosa/osoindex/) – available at <https://www.unoosa.org/oosa/osoindex/>. The register indicates that it tracks more than 86 per cent of all satellites, probes, landers, crewed spacecraft and space station flight elements launched into Earth orbit or beyond. However it does not distinguish between military, scientific, and commercial interest.

According to the Register, as of 3 July 2020, the top ten countries, with Australia for reference, with the highest number of operational satellites in geosynchronous orbit (GSO) and orbit around Earth were:

<i>Count of Top Ten Countries by International Designator in GSO &amp; Orbit</i>			
<b>Country</b>	<b>in GSO</b>	<b>in orbit</b>	<b>Grand Total</b>
USA	388	2060	2448
Russia	164	1327	1491
China	79	380	459
Japan	61	122	183
UK	31	128	159
India	43	54	97
France	21	71	92
European Space Agency	16	47	63
Germany	6	57	63
Canada	24	28	52
Australia	8	11	19
<b>Grand Total</b>	<b>841</b>	<b>4285</b>	<b>5126</b>

This does not include satellites where ownership is shared or under a joint structure.

### **Bryce Space and Technology Report – Smallsats by the Numbers 2020**

Bryce Space and Technology released the [Smallsats by the Numbers 2020](https://brycetek.com/reports) report – available from <https://brycetek.com/reports>. This report presents historical information on smaller satellites, under 600kg ('smallsats'). Smallsats are an expanding commercial market. According to the report, the smallsat market is currently dominated by the USA (60 per cent), China (10 per cent), and Japan (4 per cent) and Russia (4 per cent). The overall share of smallsats providing commercial services grew from 6 per cent in 2012 to 62 per cent in 2019. There are 113 commercial operators in the sector including SpaceX, Spire and Planet who own 71 per cent of the market. There was a total of 899 commercial smallsats launched within that period, 685 for remote sensing with 81 per cent of them manufactured in by US companies. It is assumed the Register will continue to include future objects launched into outer space, including smallsats from private enterprise.

The smallsat market is expected to continue to grow. Smallsats, as percentage of total upmass (the payload mass carried up to orbit from Earth), have doubled three years in a row from 2017 (2 per cent), 2018 (5 per cent), and 2019 (11 per cent).