JAPANESE SPACE INDUSTRY
ANNUAL SURVEY REPORT
- Fiscal Year 2019 Results -

March 2021

The Society of Japanese Aerospace Companies (SJAC)

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1. Purpose & Method of Research

The Society of Japanese Aerospace Companies (SJAC) has been publishing the ***Japanese Space Industry Annual Survey Report*** every year to grasp the status of the space industry in Japan. This survey report is based on responses to a questionnaire sent in July 2020 to Japanese space industry companies, which are mainly SJAC members.

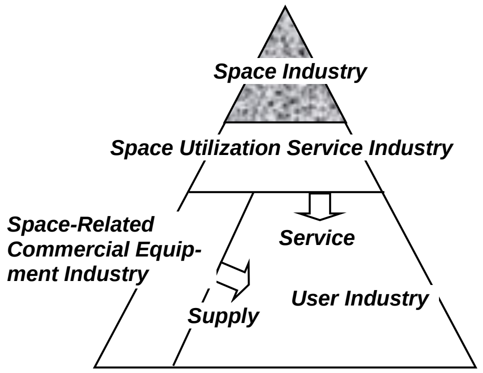
The complete list of companies is presented at the end of this report.

We classified the space-related industry into four groups.

This report deals with the ***Space Industry*** group in the figure "Structure of Japanese Space-related Industries," as shown below.

- Space Industry

Manufactures satellites, launch vehicles (including satellite launch services), transfer vehicles (such as HTV), a space station module, ground facilities and equipment, components, parts, materials, and software; includes trading companies.



Structure of Japanese Space-related Industries

- Space Utilization Service Industry

Provides services utilizing space infrastructure such as satellite communications, broadcasting and Earth observation.

-Space-Related Commercial Equipment Industry

Manufactures hardware to facilitate the use of the above services, such as BS (Broadcast Satellite) and CS (Communication Satellite) TV tuners, car navigation units, and cellular phones with GNSS receivers.

-User Industry

Does business by purchasing and utilizing services provided by the space utilization service industry and the space-related commercial equipment industry, such as satellite broadcasting content services, weather forecasting services, used car information services, cellular phone navigation services, and ship navigation and communication services.

2. Summary, Fiscal Year 2019

(1) Sales in FY2019

Japanese space industry sales in FY2019 (period is from April 1, 2019 to March 30, 2020) totaled ¥328.5 billion (US$3.29 billion at an exchange rate of ¥100 per US$). This amount is ¥25.6 billion less than the previous fiscal year (a 7% decrease).

The breakdown of each sales amount is as follows:

(i) Space vehicle segment sales decreased by ¥23.7 billion.

- Launch vehicle-related sales decreased by ¥21.0 billion.
- HTV-related sales increased by ¥11.9 billion.
- Satellite-related sales decreased by ¥18.1 billion.
- Space station-related sales increased by ¥3.5 billion.

(ii) Ground facilities segment sales increased by ¥1.5 billion.

(iii) Software segment sales decreased by ¥3.5 billion.

(2) Sales by segment

(i) Space vehicles

In the space vehicle segment, total sales have decreased by ¥23.7 billion (-8%) to ¥267.6 billion from the previous fiscal year.

・Launch vehicles

Launch vehicle-related sales in the space vehicle segment decreased by ¥21.0 billion (-19%) to ¥88.8 billion. Two Japanese-made orbital rockets were launched in FY2019. The following table shows the launch records in FY2019.

Date	Launch Vehicle	Payload
September 25, 2019	H-IIB F8	H-II Transfer Vehicle "KOUNOTORI"8 (HTV8)
February 9, 2020	H-IIA F41	IGS (Information Gathering Satellites) - Optical 7

・HTV (H-II Transfer Vehicle)

HTV-related sales in the space vehicle segment increased by ¥11.9 billion (+58%) to ¥32.6 billion.

・Satellites

Satellite-related sales in the space vehicle segment decreased by ¥18.1 billion (-12%) to ¥139.0 billion.

・Space station modules

Space station-related sales in the space vehicle segment increased by ¥3.5 billion (+94%) to ¥7.2 billion.

(ii) Ground facilities

In the ground facilities segment, total sales increased by ¥1.5 billion (+5%) to ¥34.8 billion.

(iii) Software

In the software segment, total sales decreased by ¥3.5 billion (-12%) to ¥26.1 billion from the previous fiscal year.

(3) Domestic demand

Total sales for domestic demand decreased by ¥20.2 billion (-6%) to ¥316.1 billion. Final domestic demand decreased by ¥12.7 billion (-5%) to ¥225.9 billion, which was 71% of total domestic sales. Sales for intermediate domestic demand decreased by ¥7.5 billion (-8%) to ¥90.2 billion, which was 29% of total domestic sales.

(4) Exports

Total exports decreased by ¥5.4 billion (-30%) to ¥12.4 billion.

(5) Imports

Total imports decreased by ¥10.3 billion (-25%) to ¥31.2 billion.

(6) Research and development expenses

Research and development expenses decreased by ¥1.7 billion (-25%) to ¥4.9 billion.

(7) Investment in plant and equipment

Investment in plant and equipment decreased by ¥8.2 billion (-41%) to ¥11.5 billion.

(8) Number of employees

The number of employees decreased by 148 (-2%) to 8,725.

3. Result, Fiscal Year 2019

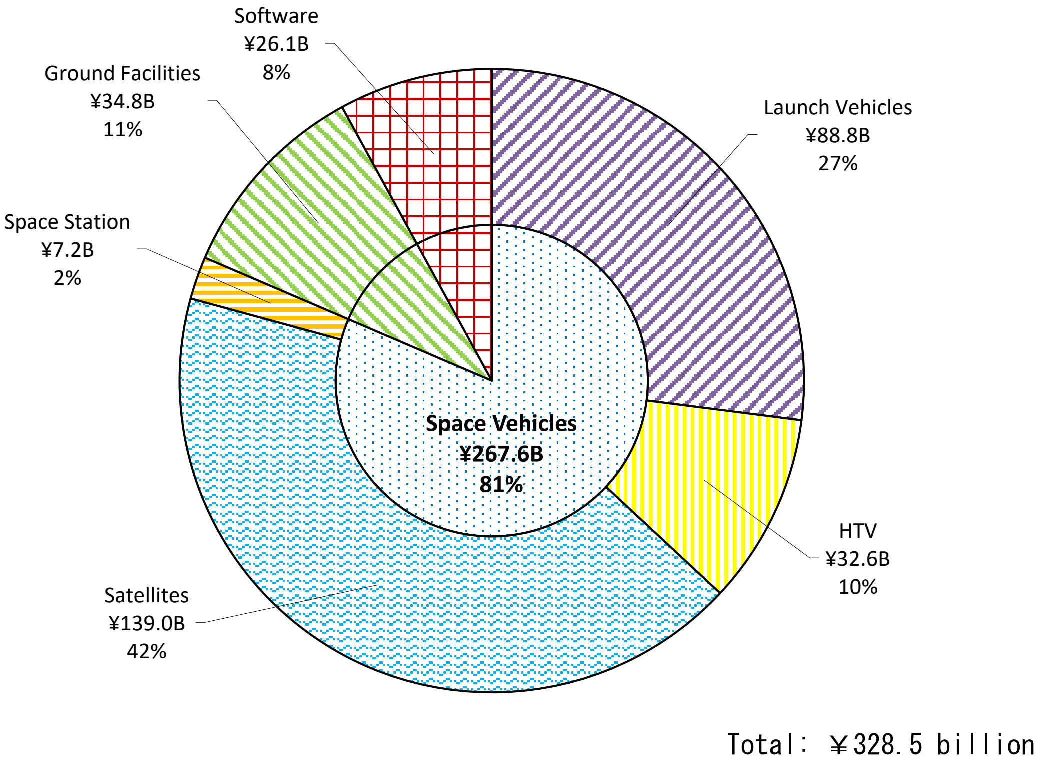
(1) Sales by Segment

As shown in Table 1, Japanese space industry sales in FY2019 were ¥328.5 billion. This is ¥25.6 billion (-7%) less than the previous fiscal year.

In the space vehicle segment, total sales decreased by ¥23.7 billion (-8%) to ¥267.6 billion. The breakdown of sales amount changes in this segment shows that launch vehicle-related sales decreased by ¥21.0 billion to ¥88.8 billion (-19%), and HTV-related sales increased by ¥11.9 billion (58%) to ¥32.6 billion. Also, satellite-related sales decreased by ¥18.1 billion (-12%) to ¥139.0 billion. Space station-related sales increased by ¥3.5 billion (94%) to ¥7.2 billion.

In the ground facilities segment, total sales increased by ¥1.5 billion (5%) to ¥34.8 billion.

In the software segment, total sales decreased by ¥3.5 billion (-12%) to ¥26.1 billion.



Note: Because the values (%) in the circle graph are rounded-off values (%) from the corresponding table, the total value may not be 100%. This applies to all circle graphs.

Fig. 1 Sales by Segment

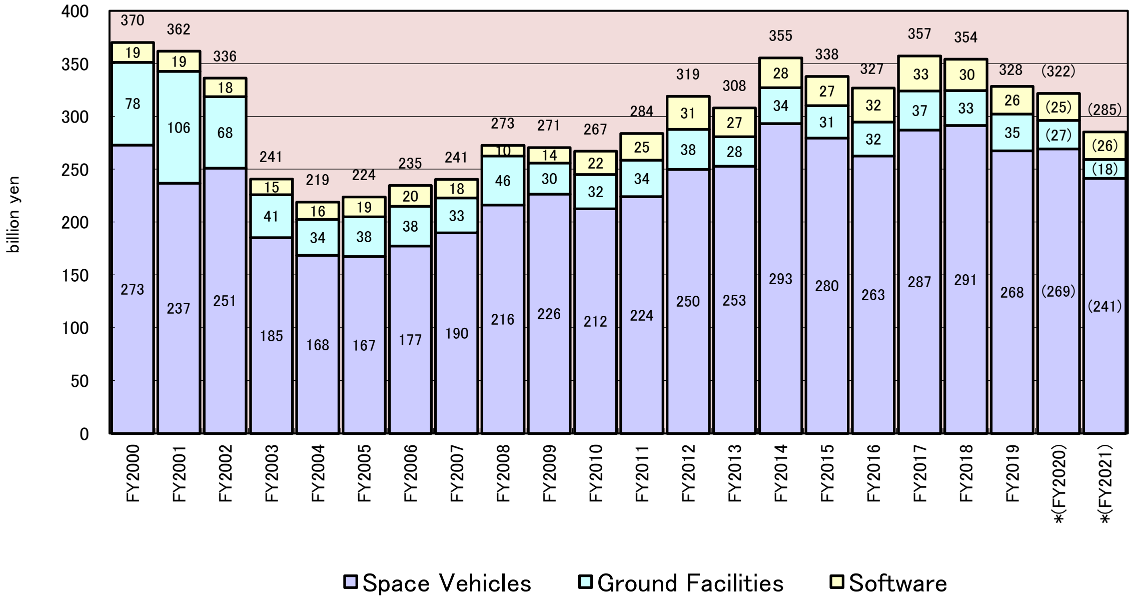
Table 1 Sales by Segment

(Unit: million yen)

(Unit : million yen)

Segment	FY2019 Total Sales (A)	FY2019 Percentage (%)	FY2018 Total Sales (B)	FY2018 Percentage (%)	(A)/(B) (%)	(A)-(B)
Solid Rockets	18,046	5.5	23,202	6.6	78	−5,156
Liquid Propellant Rockets	21,272	6.5	32,534	9.2	65	−11,262
Launching Services and Expenditure	49,475	15.1	54,093	15.3	91	−4,618
Launch Vehicles (Subtotal)	88,793	27.0	109,829	31.0	81	−21,036
HTV	32,570	9.9	20,636	5.8	158	11,934
System·Bus Equipment	74,058	22.5	91,400	25.8	81	−17,342
Mission Equipment	56,222	17.1	55,867	15.8	101	355
Tracking & Data Relays	8,681	2.6	9,820	2.8	88	−1,139
Satellites (Subtotal)	138,961	42.3	157,087	44.4	88	−18,126
Space Station	7,249	2.2	3,734	1.1	194	3,515
Space Vehicles (Subtotal)	267,573	81.5	291,286	82.3	92	−23,713
Development Test Devices	1,865	0.6	2,203	0.6	85	−338
Launching Devices	12,591	3.8	10,747	3.0	117	1,844
Satellite Tracking Devices	7,036	2.1	9,233	2.6	76	−2,197
Comm.& Broadcasting Satellite Equipment	224	0.1	318	0.1	70	−94
Satellite Data Handling Equipment	884	0.3	879	0.2	101	5
Satellite Navigation Equipment	0	0.0	0	0.0	0	0
Ground Experimental Devices	0	0.0	5	0.0	0	−5
Other Ground Equipment	12,174	3.7	9,860	2.8	123	2,314
Ground Facilities (Subtotal)	34,774	10.6	33,245	9.4	105	1,529
Software Development	16,918	5.2	19,889	5.6	85	−2,971
Data Processing & Analysis	9,223	2.8	9,706	2.7	95	−483
Software (Subtotal)	26,141	8.0	29,595	8.4	88	−3,454
Space Industry Total	328,488	100.0	354,126	100.0	93	−25,638

Fig. 1.1 and Table1.1 show the sales trend by segment.



*(FY2020) and *(FY2021) are predictions based on responses from companies.

Fig. 1.1 Sales Trend by Segment

Table 1.1 Sales Trend by Segment

(Unit: million yen)

Fiscal Year	Total Sales	Index	Sales by Segment		
			Space Vehicles	Ground Facilities	Software
FY2000	369,944	100	273,045	78,229	18,670
FY2001	361,777	98	236,938	105,637	19,202
FY2002	336,184	91	251,036	67,565	17,583
FY2003	240,684	65	185,216	40,678	14,790
FY2004	218,849	59	168,454	34,063	16,332
FY2005	223,669	60	167,411	37,547	18,711
FY2006	234,794	63	177,216	37,762	19,816
FY2007	240,542	65	189,689	33,211	17,642
FY2008	272,686	74	216,077	46,375	10,234
FY2009	270,542	73	226,445	29,613	14,484
FY2010	267,063	72	212,495	32,387	22,181
FY2011	283,872	77	224,174	34,419	25,279
FY2012	319,017	86	249,960	37,694	31,363
FY2013	308,126	83	252,762	27,963	27,401
FY2014	355,441	96	293,259	33,972	28,210
FY2015	337,793	91	279,708	30,601	27,484
FY2016	326,972	88	262,705	32,154	32,113
FY2017	357,180	97	287,149	37,081	32,950
FY2018	354,126	96	291,286	33,245	29,595
FY2019	328,488	89	267,573	34,774	26,141
**(FY2020)*	*(321,603)*	*(87)*	*(269,126)*	*(27,073)*	*(25,404)*
**(FY2021)*	*(285,486)*	*(77)*	*(241,309)*	*(18,047)*	*(26,130)*

*(FY2020) and *(FY2021) are predictions based on responses from companies.
Including launch services since FY2007 when H-IIA rocket launch services were transferred to a private company.

(2) Domestic Demand and Exports

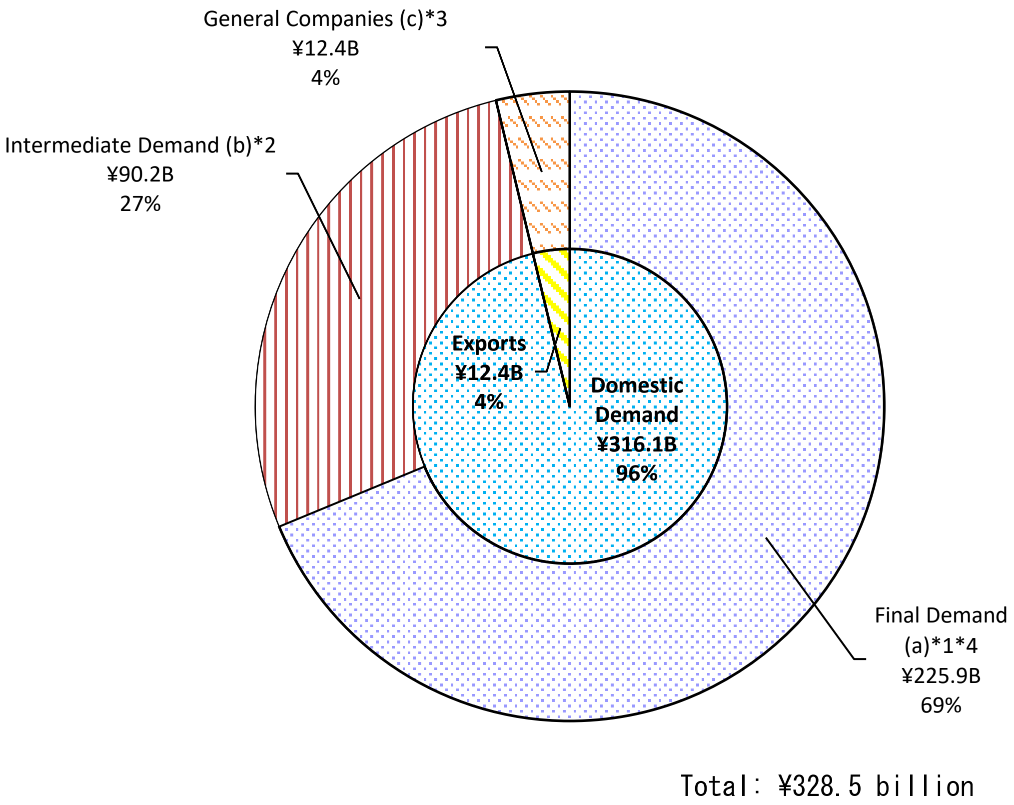
As shown in Table 2, sales for domestic demand decreased by ¥20.2 billion (-6%) to ¥316.1 billion. Exports decreased by ¥5.4 billion (-30%) to ¥12.4 billion.

In domestic demand, sales for final domestic demand decreased by ¥12.7 billion (-5%) to ¥225.9 billion, which was 71% of total domestic sales. Sales for intermediate domestic demand decreased by ¥7.5 billion (-8%) to ¥90.2 billion, which was 29% of total domestic sales.

Exports excluding trading companies decreased by ¥3.7 billion (-23%) to ¥12.4 billion, which equals 100% of total exports. Exports of trading companies were ¥0 billion and equal to 0% of total exports.

Combined sales ("total sales (a) + (c)" in Table 2) for domestic final demand and the export amount of manufacturing companies are nearly equal to the net market size of the space industry, and decreased by ¥16.4 billion (-6%) to ¥238.3 billion. This is equal to 73% of total space industry sales.\\\\\\\\\\\\\\\\\\\\\\\\\\

Fig. 2.1 and Table 2.1 show the sales trend for domestic demand and exports. Fig. 2.2 shows the trend in the sales ratio of domestic demand to exports, and Fig. 2.3 shows the breakdown of the sales trend of domestic demand and exports.



*1 Final demand in this report is JAXA, other government agencies, other public organizations, and satellite communications and broadcasting.
*2 Intermediate demand in this report is from special organizations for space activities, major rocket manufacturers, major satellite manufacturers and other clients.
*3 "General Companies" in this report means the space industry, and does not include trading companies.

Fig. 2 Sales for Domestic Demand and Exports

Table 2 Sales for Domestic Demand and Exports

(Unit: million yen)

Category		FY2019 Total Sales (A)	FY2019 Percentage (%)	FY2018 Total Sales (B)	FY2018 Percentage (%)	(A)/(B) (%)	(A)-(B)
	Final Demand (a)*1*4	225,906	68.8	238,634	67.4	95	−12,728
	Intermediate Demand (b)*2	90,188	27.5	97,709	27.6	92	−7,521
Domestic Demand(Subtotal)		316,094	96.2	336,343	95.0	94	−20,249
	General Companies (c)*3	12,394	3.8	16,099	4.5	77	−3,705
	Trading Companies (d)	0	0.0	1,684	0.5	0	−1,684
Exports(Subtotal)		12,394	3.8	17,783	5.0	70	−5,389
Total Sales (a)+(c)		238,300	72.5	254,733	71.9	94	−16,433
Total Sales (a)+(b)+(c)+(d)		328,488	100.0	354,126	100.0	93	−25,638

*1 Final demand in this report is JAXA, other government agencies, other public organizations, and satellite communications and broadcasting.
*2 Intermediate demand in this report is from special organizations for space activities, major rocket manufacturers, major satellite manufacturers and other clients.
*3 "General Companies" in this report means the space industry, and does not include trading companies.
*4 Including all launch services, domestic demand and exports.

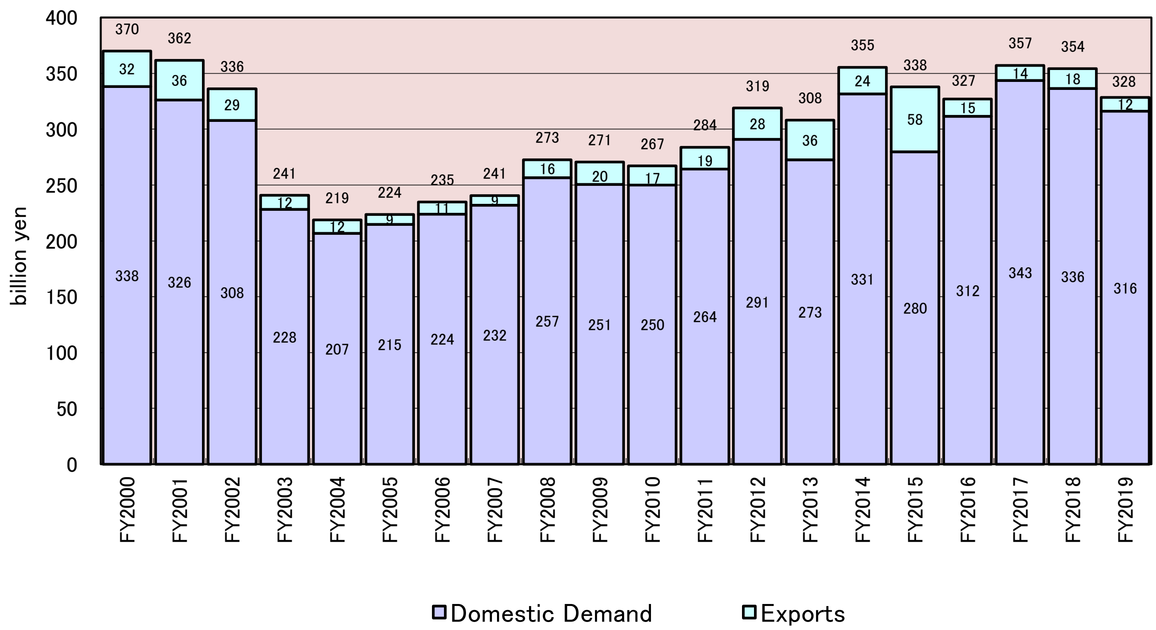


Fig. 2.1 Sales Trend for Domestic Demand and Exports

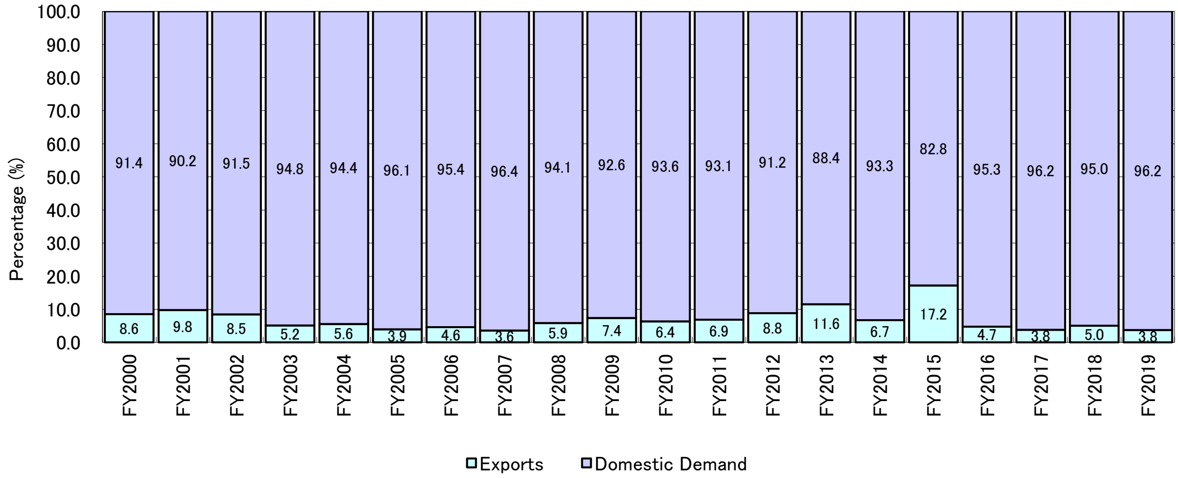


Fig. 2.2 Trend in Sales Ratio of Domestic Demand to Exports

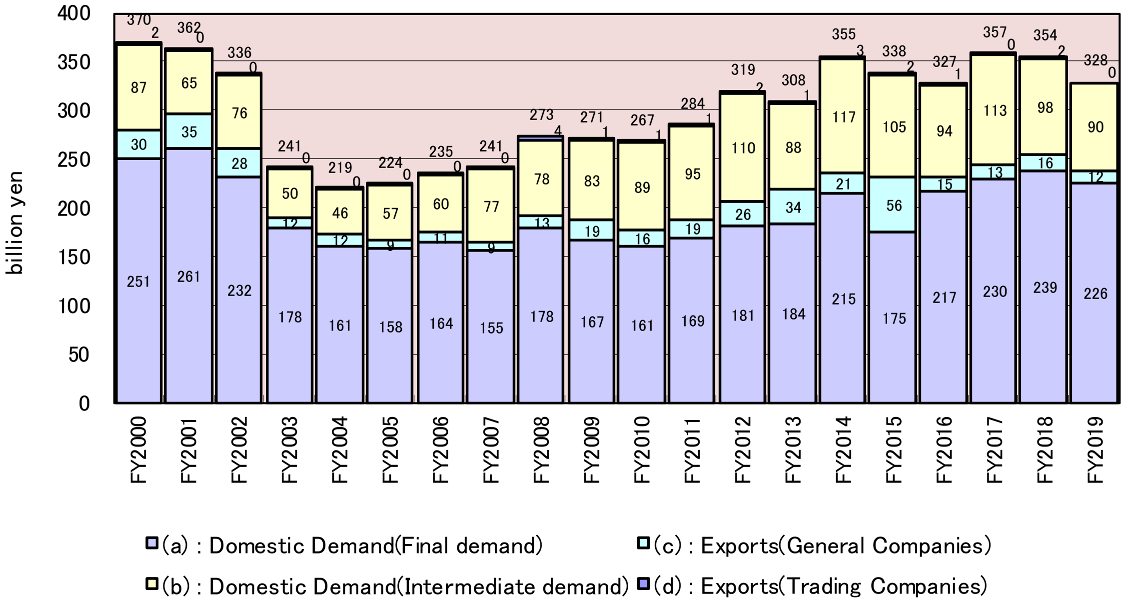


Fig. 2.3 Sales Trend of Domestic Demand and Exports Breakdown

Table 2.1 Sales Trend for Domestic Demand and Exports

(Unit: million yen)

Fiscal Year	Total Sales (a)+(b)+(c)+(d)	Total Sales (a)+(c)	Domestic Demand			Exports			Percentage(%)					
									Domestic Demand			Exports		
			Final Demand (a)*1*4	Inter-mediate Demand (b)*2	Total	General Companies (c)*3	Trading Companies (d)	Total	Final Demand *1	Inter-mediate Demand *2	Total	General Companies *3	Trading Companies	Total
FY2000	369,944	280,419	250,792	87,470	338,262	29,627	2,055	31,682	67.8	23.6	91.4	8.0	0.6	8.6
FY2001	361,777	296,063	261,028	65,241	326,269	35,035	473	35,508	72.2	18.0	90.2	9.7	0.1	9.8
FY2002	336,184	260,229	231,904	75,779	307,683	28,325	176	28,501	69.0	22.5	91.5	8.4	0.1	8.5
FY2003	240,684	190,478	178,135	50,139	228,274	12,343	67	12,410	74.0	20.8	94.8	5.1	0.0	5.2
FY2004	218,849	172,715	160,699	45,936	206,635	12,016	198	12,214	73.4	21.0	94.4	5.5	0.1	5.6
FY2005	223,669	166,364	157,768	57,071	214,839	8,596	234	8,830	70.5	25.5	96.1	3.8	0.1	3.9
FY2006	234,794	174,547	164,013	59,966	223,979	10,534	281	10,815	69.9	25.5	95.4	4.5	0.1	4.6
FY2007	240,542	163,672	155,148	76,693	231,841	8,524	177	8,701	64.5	31.9	96.4	3.5	0.1	3.6
FY2008	272,686	190,963	178,456	78,201	256,657	12,507	3,522	16,029	65.4	28.7	94.1	4.6	1.3	5.9
FY2009	270,542	186,470	167,050	83,452	250,502	19,420	620	20,040	61.7	30.8	92.6	7.2	0.2	7.4
FY2010	267,063	176,752	160,764	89,311	250,075	15,988	1,000	16,988	60.2	33.4	93.6	6.0	0.4	6.4
FY2011	283,872	188,142	169,486	94,940	264,426	18,656	790	19,446	59.7	33.4	93.1	6.6	0.3	6.9
FY2012	319,017	206,978	180,705	110,122	290,827	26,273	1,917	28,190	56.6	34.5	91.2	8.2	0.6	8.8
FY2013	308,126	218,246	184,101	88,407	272,508	34,145	1,471	35,616	59.7	28.7	88.4	11.1	0.5	11.6
FY2014	355,441	235,488	214,883	116,593	331,476	20,605	3,360	23,965	60.5	32.8	93.3	5.8	0.9	6.7
FY2015	337,793	231,307	174,936	104,866	279,802	56,371	1,620	57,991	51.8	31.0	82.8	16.7	0.5	17.2
FY2016	326,972	231,981	217,192	94,337	311,529	14,789	654	15,443	66.4	28.9	95.3	4.5	0.2	4.7
FY2017	357,180	243,602	230,171	113,327	343,498	13,431	250	13,681	64.4	31.7	96.2	3.8	0.1	3.8
FY2018	354,126	254,733	238,634	97,709	336,343	16,099	1,684	17,783	67.4	27.6	95.0	4.5	0.5	5.0
FY2019	328,488	238,300	225,906	90,188	316,094	12,394	0	12,394	68.8	27.5	96.2	3.8	0.0	3.8

*1 Final demand in this report is JAXA, other government agencies, other public organizations, and satellite communications and broadcasting.

*2 Intermediate demand in this report is from special organizations for space activities, major rocket manufacturers, major satellite manufacturers and other clients.

*3 “General Companies” in this report means the space industry, and does not include trading companies.

*4 Including launch services since FY2007 when H-IIA rocket launch services were transferred to a private company.

(3) Domestic Demand by Client

As shown in Table 3, sales to the Japan Aerospace Exploration Agency (JAXA) in final domestic demand decreased by ¥12.7 billion (-7%) to ¥175.3 billion, which accounted for 55% of total domestic demand sales. Combined sales to JAXA, other government agencies and public organizations accounted for 71% of total domestic demand sales.

Sales to satellite communications and broadcasting companies in final domestic demand decreased by ¥5.5 billion (-83%) to ¥1.2 billion, equal to 0.4% of total domestic demand sales.

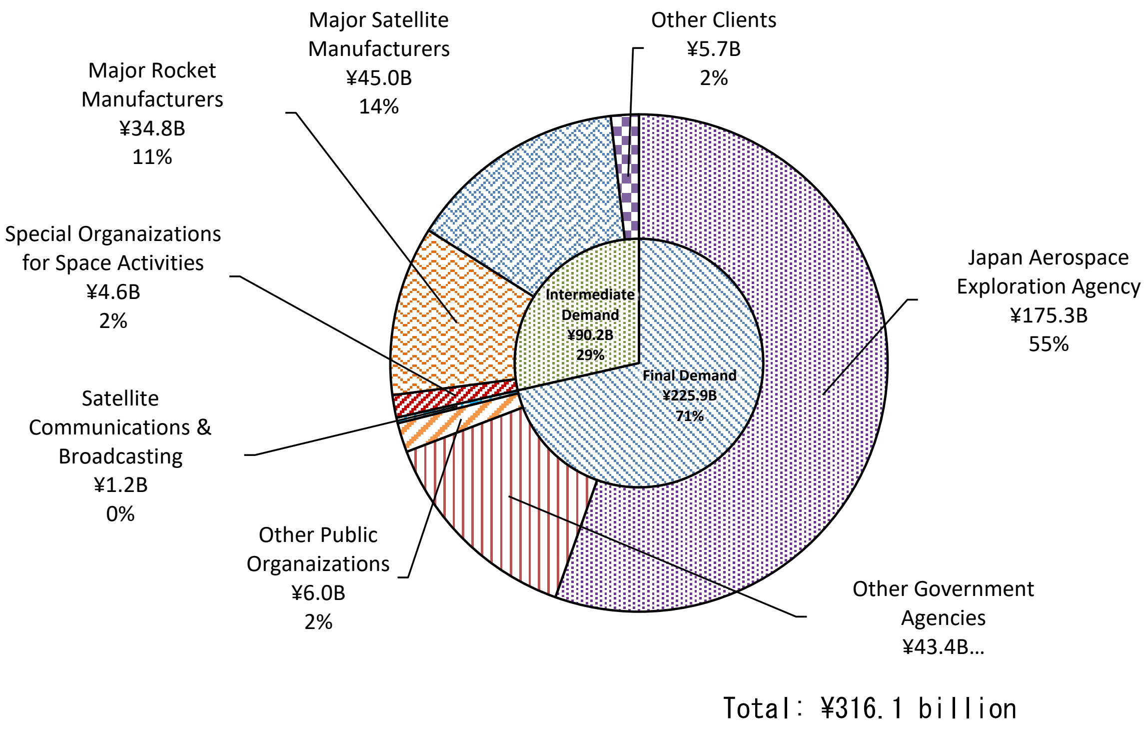


Fig. 3 Sales for Domestic Demand

Table 3 Sales for Domestic Demand

(Unit: million yen)

Category	FY2019 Sales (A)	FY2019 Percentage (%)	FY2018 Sales (B)	FY2018 Percentage (%)	(A)/(B) (%)	(A)-(B)
Japan Aerospace Exploration Agency	175,291	55.5	187,951	55.9	93	−12,660
Other Government Agencies	43,413	13.7	43,034	12.8	101	379
Other Public Organaizations	6,045	1.9	1,003	0.3	603	5,042
Satellite Communications & Broadcasting	1,157	0.4	6,646	2.0	17	−5,489
Final Demand (Subtotal)	225,906	71.5	238,634	70.9	95	−12,728
Special Organaizations for Space Activities	4,640	1.5	3,488	1.0	133	1,152
Major Rocket Manufacturers	34,848	11.0	38,314	11.4	91	−3,466
Major Satellite Manufacturers	44,956	14.2	49,762	14.8	90	−4,806
Other Clients	5,744	1.8	6,145	1.8	93	−401
Intermediate Demand (Subtotal)	90,188	28.5	97,709	29.1	92	−7,521
Total	316,094	100.0	336,343	100.0	94	−20,249

(4) Exports

As shown in Table 4, exports in FY2019 decreased by ¥5.4 billion (-30%) to ¥12.4 billion.
Satellite-related exports totaled ¥10.1 billion and accounted for 81% of total exports.
Launch vehicle-related exports totaled ¥2.3 billion and accounted for 19% of total exports.
The combined exports of satellites and launch vehicles accounted for 99.9% of total exports.

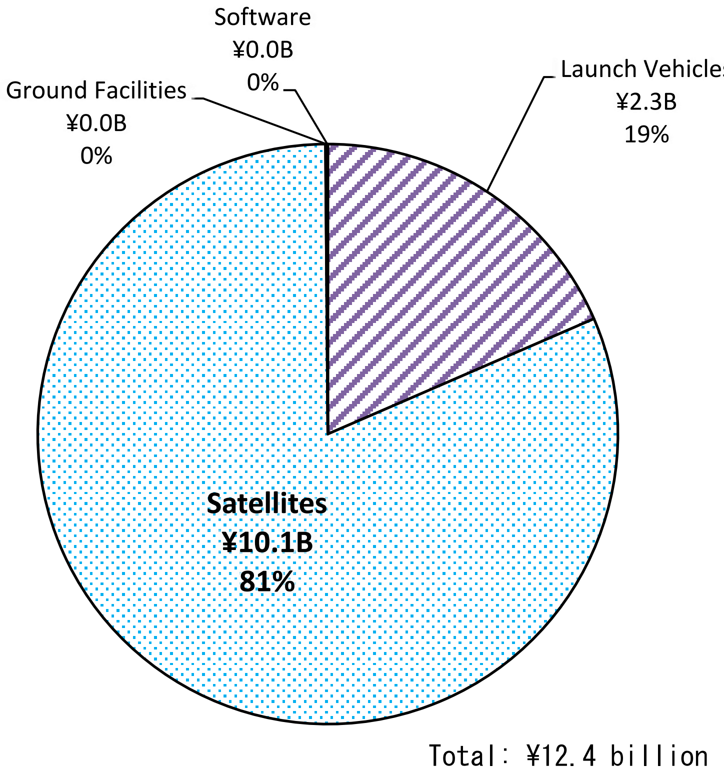


Fig. 4 Exports by Segment

Table 4 Exports by Segment

(Unit: million yen)

Segment	FY2019 Exports General Companies *1	FY2019 Exports Trading Companies	FY2019 Exports Total (A)	FY2019 Percentage (%)	FY2018 Exports General Companies *1	FY2018 Exports Trading Companies	FY2018 Exports Total (B)	FY2018 Percentage (%)	(A)/(B) (%)	(A)-(B)
Solid Rockets	0	0	0	0.0	0	0	0	0.0	0	0
Liquid Propellant Rockets	1,292	0	1,292	10.4	2,337	0	2,337	13.1	55	−1045
Launching Services and Expenditure *2	1,000	0	1,000	8.1	0	0	0	0.0	0	1000
Launch Vehicles (Subtotal)	2,292	0	2,292	18.5	2,337	0	2,337	13.1	98	−45
HTV	0	0	0	0.0	0	0	0	0.0	0	0
System･Bus Equipment	4,669	0	4,669	37.7	8,473	0	8,473	47.6	55	−3,804
Mission Equipment	5,417	0	5,417	43.7	5,233	1,684	6,917	38.9	78	−1,500
Tracking & Data Relays	0	0	0	0.0	0	0	0	0.0	0	0
Satellites (Subtotal)	10,086	0	10,086	81.4	13,706	1,684	15,390	86.5	66	−5,304
Space Station	0	0	0	0.0	0	0	0	0.0	0	0
Space Vehicles (Subtotal)	12,378	0	12,378	99.9	16,043	1,684	17,727	99.7	70	−5,349
Development Test Devices	5	0	5	0.0	3	0	3	0.0	167	2
Launching Devices	0	0	0	0.0	0	0	0	0.0	0	0
Satellite Tracking Devices	3	0	3	0.0	0	0	0	0.0	0	3
Comm.& Broadcasting Satellite Equipment	0	0	0	0.0	0	0	0	0.0	0	0
Satellite Data Handling Equipment	0	0	0	0.0	0	0	0	0.0	0	0
Satellite Navigation Equipment	0	0	0	0.0	0	0	0	0.0	0	0
Ground Experimental Devices	0	0	0	0.0	0	0	0	0.0	0	0
Other Ground Equipment	0	0	0	0.0	0	0	0	0.0	0	0
Ground Facilities (Subtotal)	8	0	8	0.1	3	0	3	0.0	267	5
Software Development	0	0	0	0.0	43	0	43	0.2	0	−43
Data Processing & Analysis	8	0	8	0.1	10	0	10	0.1	80	−2
Software (Subtotal)	8	0	8	0.1	53	0	53	0.3	15	−45
Total	12,394	0	12,394	100.0	16,099	1,684	17,783	100.0	70	−5,389

*1 "General Companies" in this report means the space industry, and does not include trading companies.
*2 Launch services exports are combined into domestic demand.

Figs. 4.1, 4.2 and Table 4.1 show export trend.

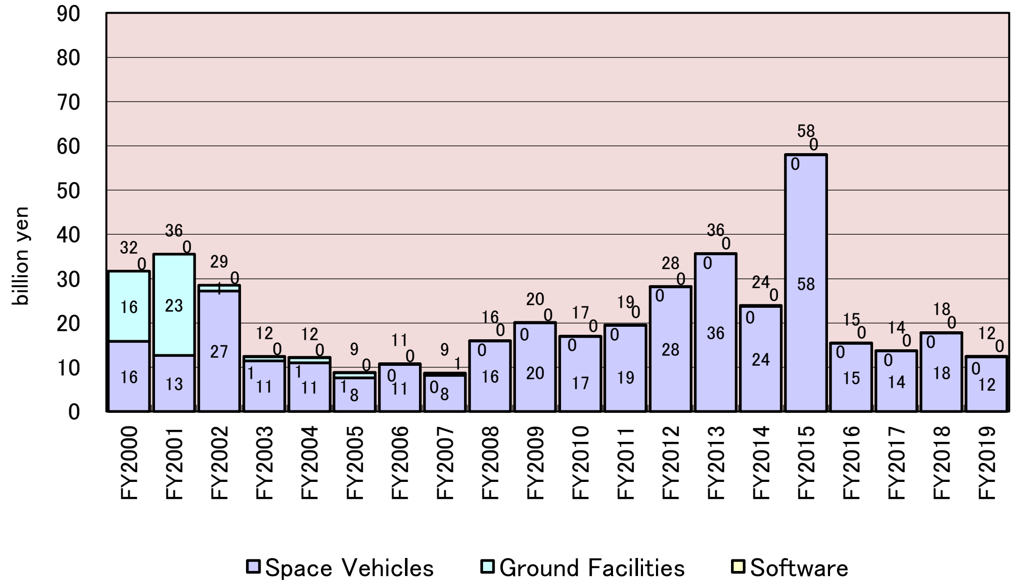
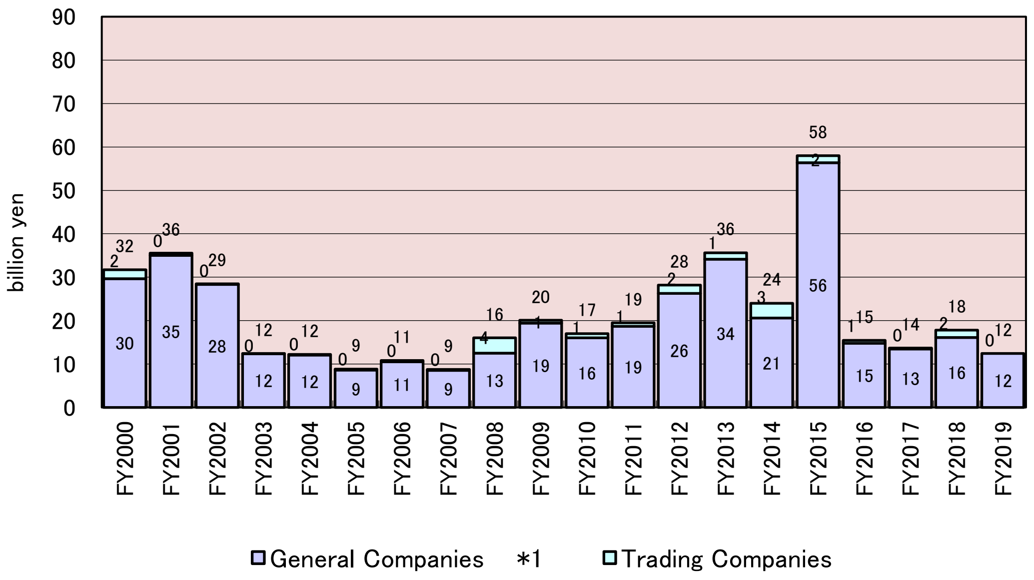


Fig. 4.1 Export Trend by Segment



*1 "General Companies" in this report means the space industry, and does not include trading companies.

Fig. 4.2 Export Trend

Table 4.1 Export Trend by Segment

(Unit : million yen)

Fiscal Year	Exports			Index	Exports by Segment		
	General Companies *1	Trading Companies	Total		Space Vehicles	Ground Facilities	Software
FY2000	29,627	2,055	31,682	100	15,872	15,810	0
FY2001	35,035	473	35,508	112	12,684	22,824	0
FY2002	28,325	176	28,501	90	27,249	1,252	0
FY2003	12,343	67	12,410	39	11,470	935	5
FY2004	12,016	198	12,214	39	11,026	1,169	19
FY2005	8,596	234	8,830	28	7,618	1,130	82
FY2006	10,534	281	10,815	34	10,672	51	92
FY2007	8,524	177	8,701	27	8,164	0	537
FY2008	12,507	3,522	16,029	51	15,947	0	82
FY2009	19,420	620	20,040	63	20,039	0	1
FY2010	15,988	1,000	16,988	54	16,970	0	18
FY2011	18,656	790	19,446	61	19,438	0	8
FY2012	26,273	1,917	28,190	89	28,154	6	30
FY2013	34,145	1,471	35,616	112	35,580	0	36
FY2014	20,605	3,360	23,965	76	23,753	160	52
FY2015	56,371	1,620	57,991	183	57,937	0	54
FY2016	14,789	654	15,443	49	15,412	0	31
FY2017	13,431	250	13,681	43	13,675	0	6
FY2018	16,099	1,684	17,783	56	17,727	3	53
FY2019	12,394	0	12,394	39	12,378	8	8

*1 “General Companies” in this report means the space industry, and does not include trading companies.

In terms of regions, as shown in Figs. 4.3, 4.4 and Table 4.2, exports to Europe, North America, the Middle East and Asia accounted for 100% of total exports. Export to Latin America and Oceania is zero.

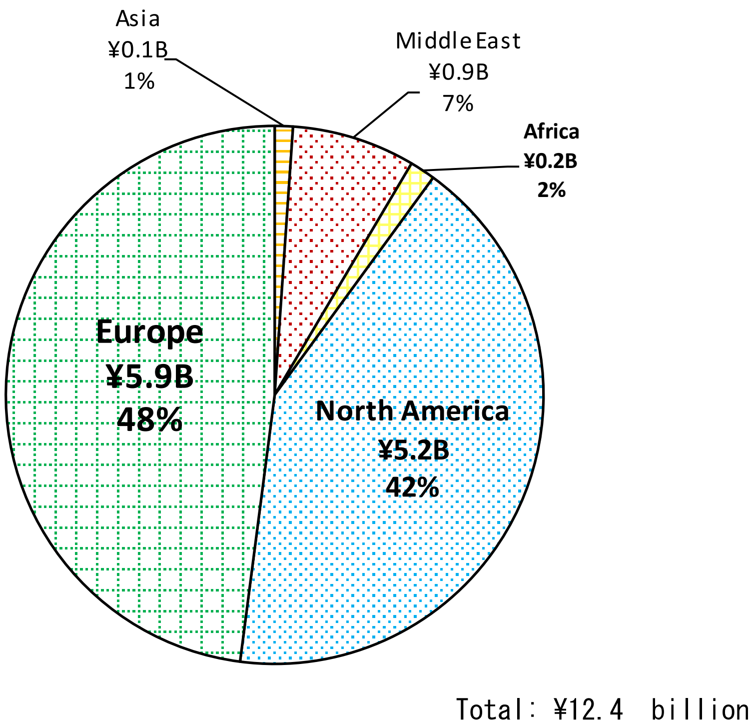
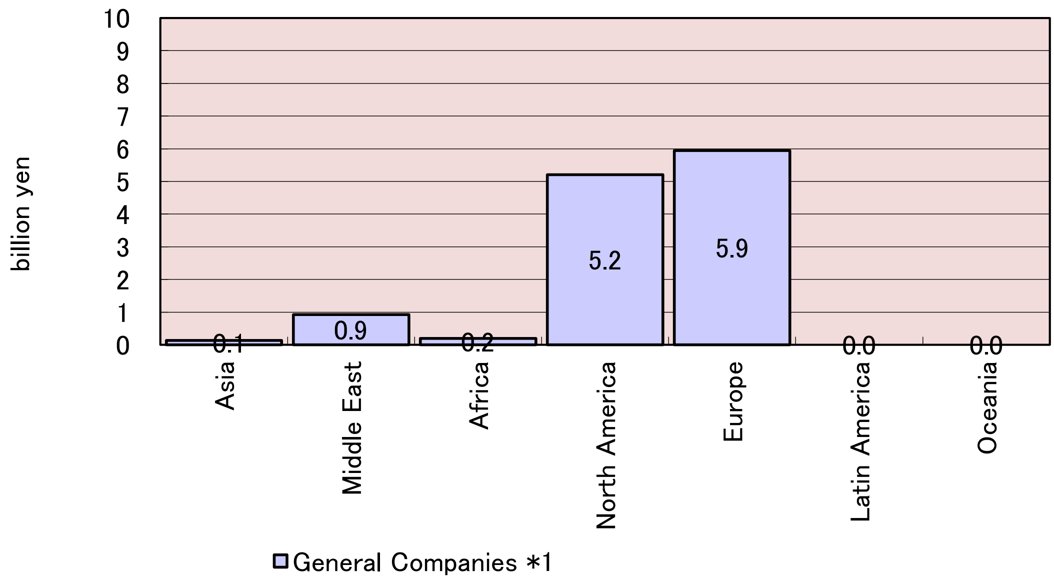


Fig. 4.3 Exports by Region



*1 "General Companies" in this report means the space industry, and does not include trading companies.

Fig. 4.4 Exports Breakdown by Region

Table 4.2 Exports by Region

(Unit: million yen)

Destination	FY2019				FY2018				(A)/(B) (%)	(A)-(B)
	Exports			Percentage (%)	Exports			Percentage (%)		
	General Companies *1	Trading Companies	Total (A)		General Companies *1	Trading Companies	Total (B)			
Asia	135	0	135	1.1	1,069	1,684	2,753	15.5	5	−2,618
Middle East	919	0	919	7.4	4,476	0	4,476	25.2	21	−3,557
Africa	190	0	190	1.5	0	0	0	0.0	0	190
North America	5,208	0	5,208	42.0	6,495	0	6,495	36.5	80	−1,287
Europe	5,942	0	5,942	47.9	4,059	0	4,059	22.8	146	1,883
Latin America	0	0	0	0.0	0	0	0	0.0	0	0
Oceania	0	0	0	0.0	0	0	0	0.0	0	0
Total	12,394	0	12,394	100.0	16,099	1,684	17,783	100.0	70	−5,389

*1 “General Companies” in this report means the space industry, and does not include trading companies.

(5) Imports

As shown in Table 5, total imports decreased by ¥10.3 billion (-25%) to ¥31.2 billion.

Satellite-related imports totaled ¥19.6 billion and accounted for 63% of total imports.

Launch vehicle-related imports totaled ¥10.6 billion and accounted for 34% of total imports.

Space vehicle-related imports including satellites and launch vehicles represent 99% of total imports.

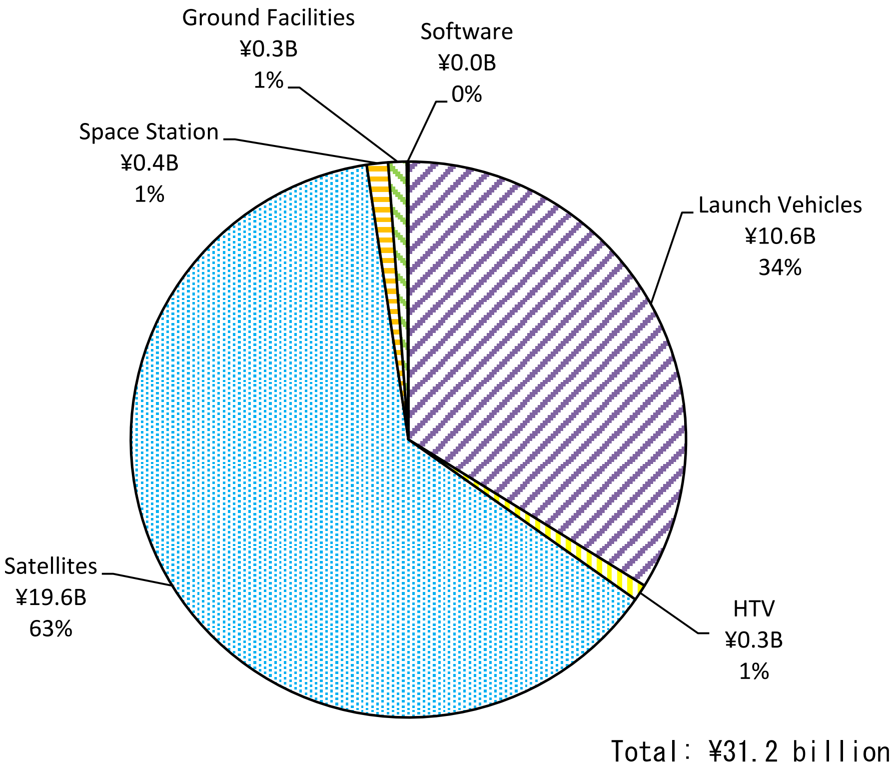


Fig. 5 Imports by Segment

Table 5 Imports by Segment

(Unit: million yen)

Segment			FY2019				FY2018				(A)/(B) (%)	(A)-(B)
			Imports			Percentage (%)	Imports			Percentage (%)		
			General Companies *1	Trading Companies	Total (A)		General Companies *1	Trading Companies	Total (B)			
		Solid Rockets	1,232	1,108	2,340	7.5	1,294	941	2,235	5.4	105	105
		Liquid Propellant Rockets	4,465	737	5,202	16.7	4,576	1,107	5,683	13.7	92	−481
		Launching Services and Expenditure *2	3,010	0	3,010	9.6	2,264	0	2,264	5.5	133	746
	Launch Vehicles (Subtotal)		8,707	1,845	10,552	33.8	8,134	2,048	10,182	24.6	104	370
	HTV		282	15	297	1.0	589	304	893	2.2	33	−596
		System･Bus Equipment	6,382	2,576	8,958	28.7	10,761	2,591	13,352	32.2	67	−4,394
		Mission Equipment	7,673	92	7,765	24.9	8,123	72	8,195	19.8	95	−430
		Tracking & Data Relays	2,882	3	2,885	9.2	7,757	3	7,760	18.7	37	−4,875
	Satellites (Subtotal)		16,937	2,671	19,608	62.8	26,641	2,666	29,307	70.7	67	−9,699
	Space Station		387	0	387	1.2	146	0	146	0.4	265	241
Space Vehicles (Subtotal)			26,313	4,531	30,844	98.8	35,510	5,018	40,528	97.7	76	−9,684
	Development Test Devices		5	6	11	0.0	5	94	99	0.2	11	−88
	Launching Devices		0	0	0	0.0	31	0	31	0.1	0	−31
	Satellite Tracking Devices		16	23	39	0.1	233	62	295	0.7	13	−256
	Comm.& Broadcasting Satellite Equipment		8	4	12	0.0	2	200	202	0.5	6	−190
	Satellite Data Handling Equipment		5	10	15	0.0	16	0	16	0.0	94	−1
	Satellite Navigation Equipment		180	0	180	0.6	183	0	183	0.4	98	−3
	Ground Experimental Devices		0	0	0	0.0	2	0	2	0.0	0	−2
	Other Ground Equipment		0	79	79	0.3	7	84	91	0.2	87	−12
Ground Facilities (Subtotal)			214	122	336	1.1	479	440	919	2.2	37	−583
	Software Development		3	2	5	0.0	3	0	3	0.0	167	2
	Data Processing & Analysis		20	3	23	0.1	3	8	11	0.0	209	12
Software (Subtotal)			23	5	28	0.1	6	8	14	0.0	200	14
Total			26,550	4,658	31,208	100.0	35,995	5,466	41,461	100.0	75	−10,253

*1 “General Companies” in this report means the space industry, and does not include trading companies.
*2 Imports of “Launching Services and Expenditure” in this report means services to launch a domestic satellite by means of a foreign rocket.

Figs. 5.1, 5.2 and Table 5.1 show import trend.

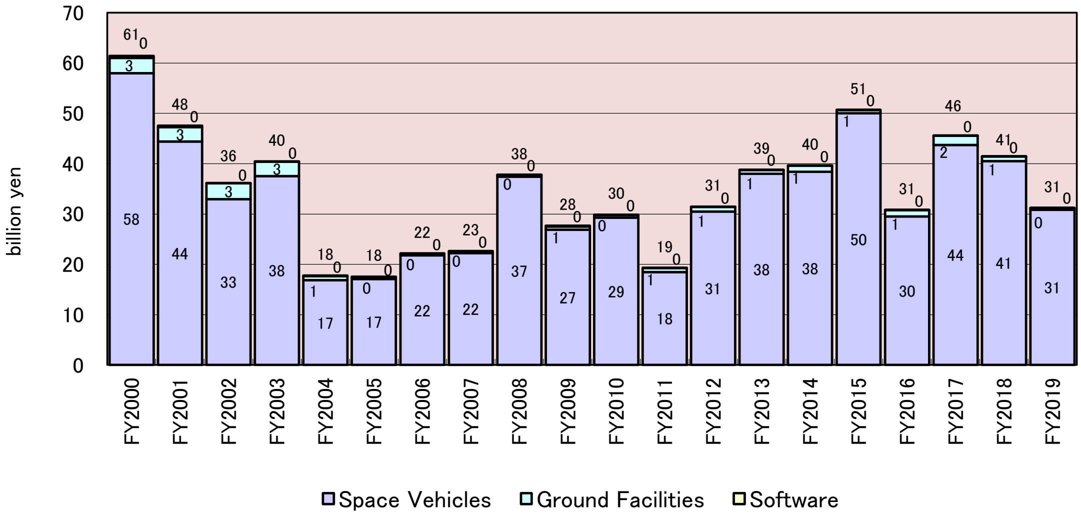
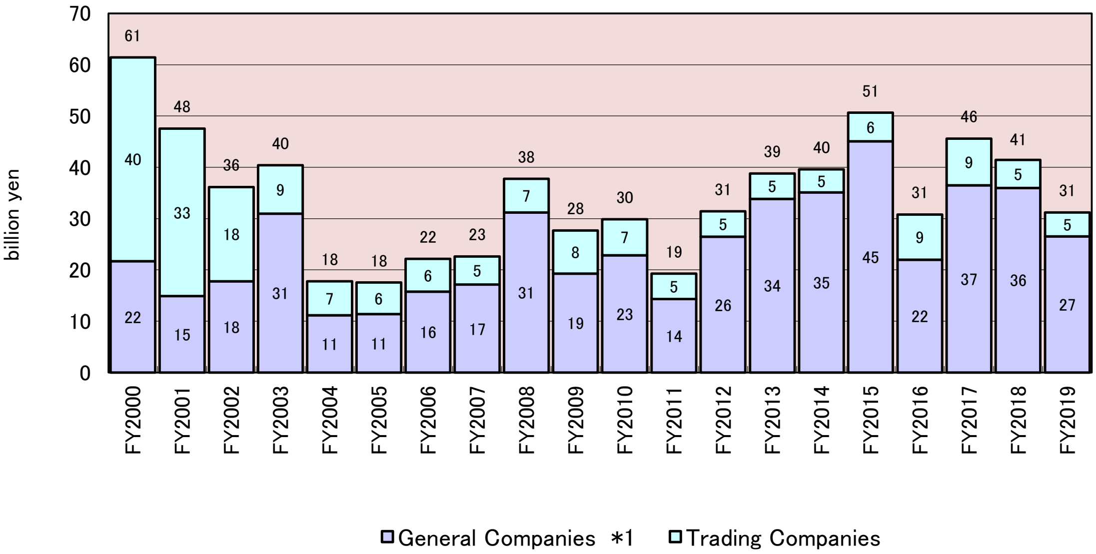


Fig. 5.1 Import Trend by Segment



*1 “General Companies” in this report means the space industry, and does not include trading companies.

Fig. 5.2 Import Trend

Table 5.1 Import Trend by Segment

(Unit: million yen)

Fiscal Year	Imports			Index	Imports by Segment		
	General Companies *1	Trading Companies	Total		Space Vehicles	Ground Facilities	Software
FY2000	21,686	39,734	61,420	100	57,965	3,075	380
FY2001	14,906	32,632	47,538	77	44,396	2,877	265
FY2002	17,764	18,388	36,152	59	32,973	3,121	58
FY2003	30,978	9,438	40,416	66	37,558	2,822	36
FY2004	11,164	6,590	17,754	29	16,846	808	100
FY2005	11,409	6,118	17,527	29	17,098	335	94
FY2006	15,770	6,388	22,158	36	21,772	315	71
FY2007	17,117	5,495	22,612	37	22,249	362	1
FY2008	31,164	6,574	37,738	61	37,427	309	2
FY2009	19,278	8,398	27,676	45	26,879	604	193
FY2010	22,864	7,012	29,876	49	29,312	483	81
FY2011	14,323	4,975	19,298	31	18,436	834	28
FY2012	26,443	5,004	31,447	51	30,505	895	47
FY2013	33,865	4,906	38,771	63	37,992	772	7
FY2014	35,076	4,514	39,590	64	38,370	1,213	7
FY2015	45,085	5,551	50,636	82	49,994	640	2
FY2016	21,988	8,820	30,808	50	29,505	1,288	15
FY2017	36,514	9,064	45,578	74	43,746	1,778	54
FY2018	35,995	5,466	41,461	68	40,528	919	14
FY2019	26,550	4,658	31,208	51	30,844	336	28

*1 "General Companies" in this report means the space industry, and does not include trading companies.

In terms of regions, as shown in Figs. 5.3, 5.4 and Table 5.2, imports from North America and Europe accounted for 99.9% of total imports.

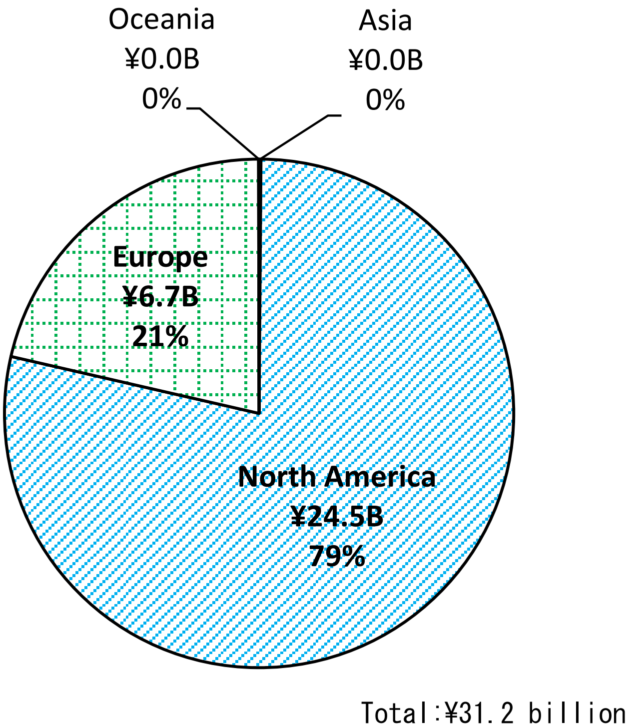
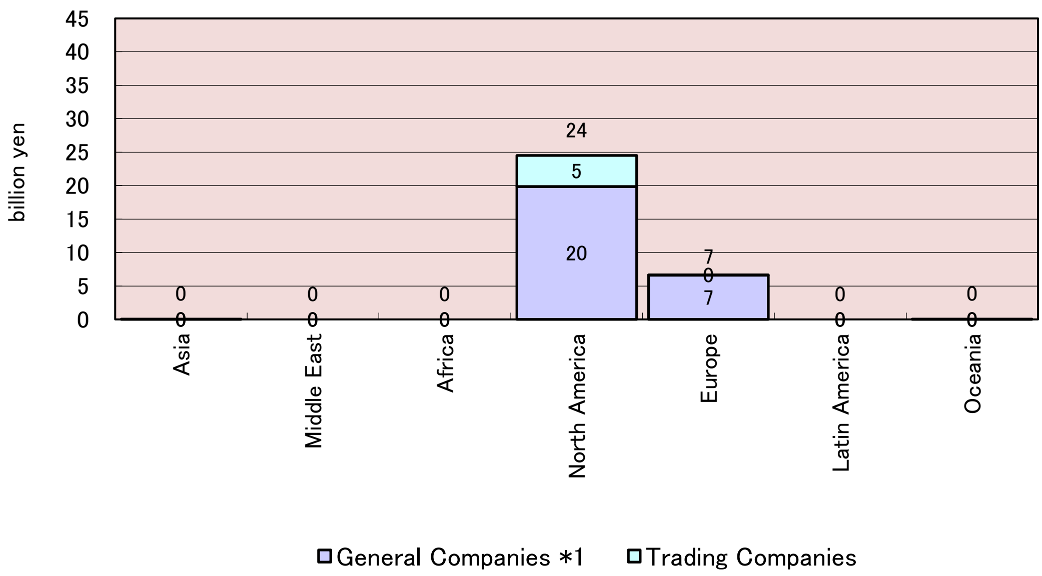


Fig. 5.3 Imports by Region



*1 "General Companies" in this report means the space industry, and does not include trading companies.

Fig. 5.4 Imports Breakdown by Region

Table 5.2 Imports by Region

(Unit: million yen)

Destination	FY2019				FY2018				(A)/(B) (%)	(A)-(B)
	Imports			Percentage (%)	Imports			Percentage (%)		
	General Companies *1	Trading Companies	Total (A)		General Companies *1	Trading Companies	Total (B)			
Asia	37	0	37	0.1	33	0	33	0.1	112	4
Middle East	0	0	0	0.0	0	0	0	0.0	0	0
Africa	0	0	0	0.0	0	0	0	0.0	0	0
North America	19,882	4,609	24,491	78.5	28,792	5,399	34,191	82.5	72	−9700
Europe	6,621	49	6,670	21.4	7,153	67	7,220	17.4	92	−550
Latin America	0	0	0	0.0	0	0	0	0.0	0	0
Oceania	10	0	10	0.0	17	0	17	0.0	59	−7
Total	26,550	4,658	31,208	100.0	35,995	5,466	41,461	100.0	75	−10,253

*1 "General Companies" in this report means the space industry, and does not include trading companies.

(6) R&D Expenses

As shown in Table 6, research and development expenses decreased by ¥1.7 billion (-25%) to ¥4.9 billion. The space vehicle segment comprised 81% of total R&D expenses. Within that segment, satellite R&D accounted for 48% of total R&D expenses.

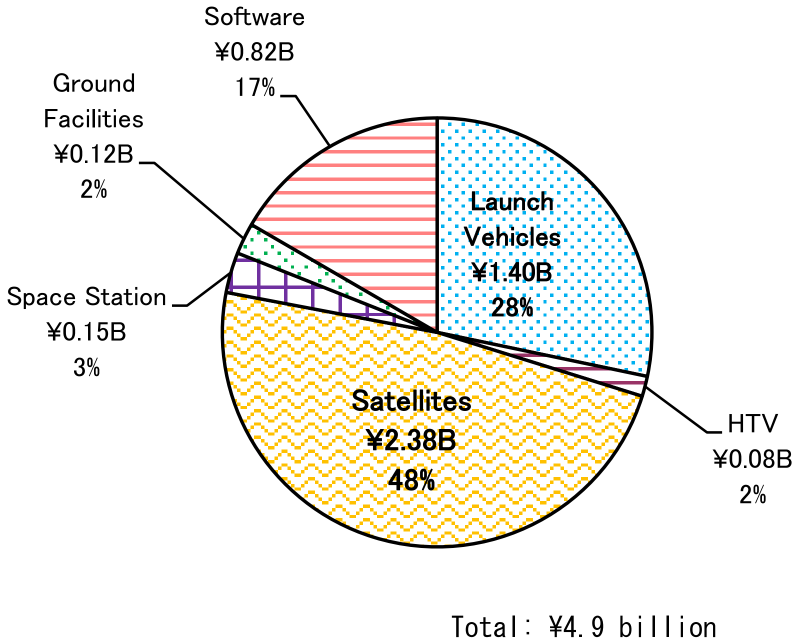


Fig. 6 R&D Expenses by Segment

Table 6 R&D Expenses by Segment

(Unit: million yen)

Segment		FY2019		FY2018		(A)/(B) (%)	(A)-(B)
		R&D Budget (A)	Percentage (%)	R&D Budget (B)	Percentage (%)		
	Launch Vehicles	1,396	28.3	1,832	27.8	76	−436
	HTV	75	1.5	17	0.3	441	58
	Satellites	2,377	48.2	3,124	47.4	76	−747
	Space Station	150	3.0	62	0.9	242	88
Space Vehicles (Subtotal)		3,998	81.0	5,035	76.4	79	−1,037
Ground Facilities		116	2.4	100	1.5	116	16
Software		820	16.6	1,459	22.1	56	−639
Total		4,934	100.0	6,594	100.0	75	−1,660

Fig. 6.1 and Table 6.1 show R&D expense trend.

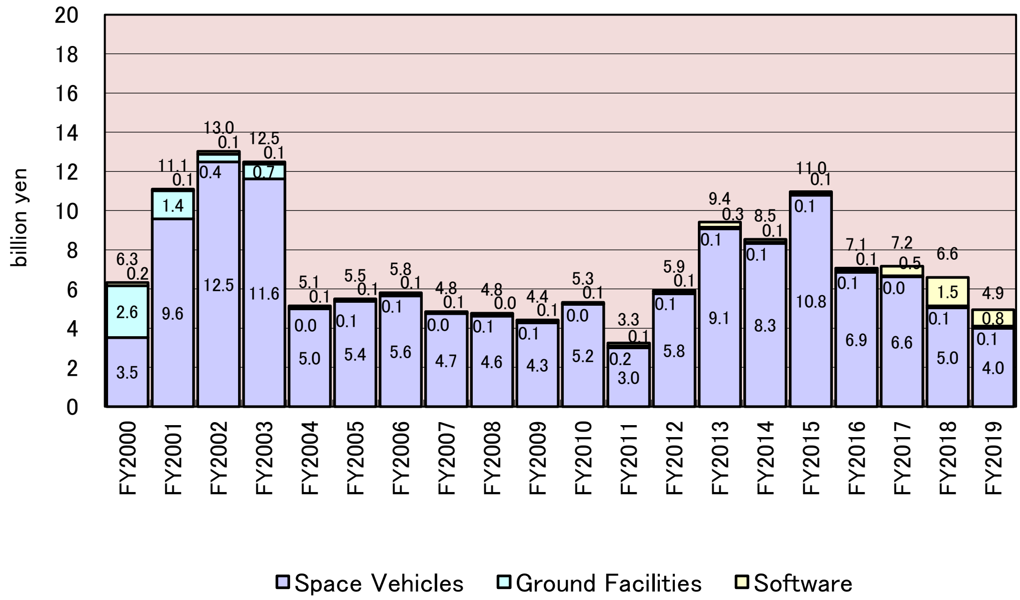


Fig. 6.1 R&D Expense Trend by Segment

Table 6.1 R&D Expense Trend by Segment

(Unit: million yen)

Fiscal Year	R&D Expenses Total	Index	R&D Expenses by Segment		
			Space Vehicles	Ground Facilities	Software
FY2000	6,333	100	3,526	2,646	161
FY2001	11,098	175	9,580	1,427	91
FY2002	13,023	206	12,487	395	141
FY2003	12,481	197	11,626	735	120
FY2004	5,143	81	4,990	44	109
FY2005	5,495	87	5,370	58	67
FY2006	5,814	92	5,644	120	50
FY2007	4,843	76	4,743	47	53
FY2008	4,759	75	4,623	99	37
FY2009	4,423	70	4,266	102	55
FY2010	5,325	84	5,212	38	75
FY2011	3,250	51	3,007	86	157
FY2012	5,939	94	5,765	114	60
FY2013	9,411	149	9,076	80	255
FY2014	8,531	135	8,321	63	147
FY2015	10,966	173	10,787	89	90
FY2016	7,063	112	6,850	87	126
FY2017	7,156	113	6,630	40	486
FY2018	6,594	104	5,035	100	1,459
FY2019	4,934	78	3,998	116	820

(7) Investment in Plant and Equipment

Table 7 shows that the value of plant and equipment investment decreased by ¥8.2 billion (-41%) to ¥11.5 billion. The space vehicle segment accounted for 72% of total investment. Within that segment, satellite investment accounted for 57% of total investment.

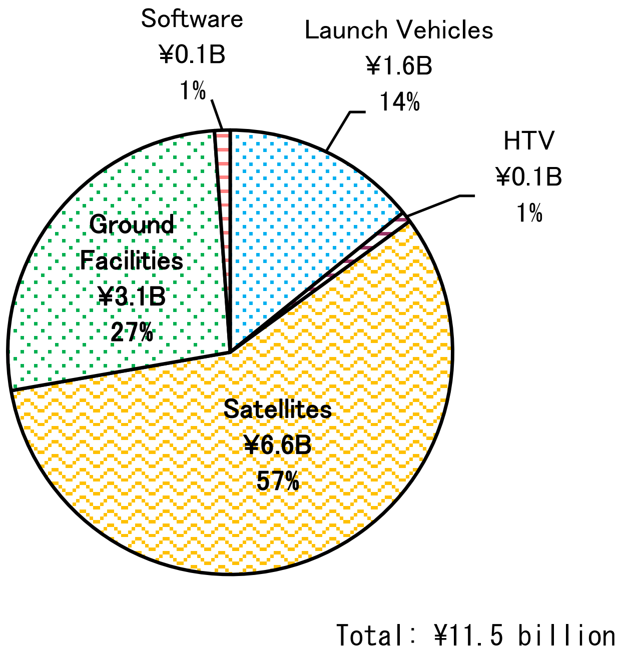


Fig. 7 Plant and Equipment Investment by Segment

Table 7 Plant and Equipment Investment by Segment

(Unit: million yen)

Segment	FY2019 Capital Budget (A)	FY2019 Percentage (%)	FY2018 Capital Budget (B)	FY2018 Percentage (%)	(A)/(B) (%)	(A)-(B)
Launch Vehicles	1,632	14.2	2,298	11.7	71	−666
HTV	90	0.8	57	0.3	158	33
Satellites	6,594	57.3	9,595	48.8	69	−3,001
Space Station	0	0.0	3	0.0	0	−3
Space Vehicles (Subtotal)	8,316	72.2	11,953	60.8	70	−3,637
Ground Facilities	3,066	26.6	5,891	30.0	52	−2,825
Software	130	1.1	1,824	9.3	7	−1,694
Total	11,512	100.0	19,668	100.0	59	−8,156

Fig. 7.1 and Table 7.1 show plant and equipment investment trend.

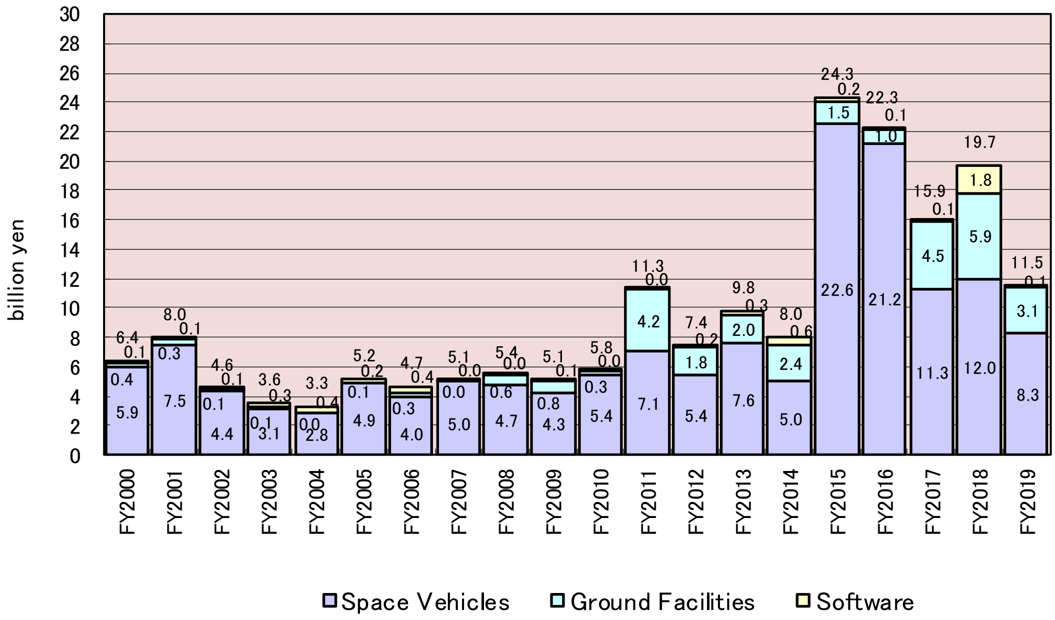


Fig. 7.1 Plant and Equipment Investment Trend by Segment

Table 7.1 Plant and Equipment Investment Trend by Segment

(Unit: million yen)

Fiscal Year	Total Investment	Index	Investment by Segment		
			Space Vehicles	Ground Facilities	Software
FY2000	6,406	100	5,924	351	131
FY2001	7,985	125	7,518	341	126
FY2002	4,565	71	4,401	85	79
FY2003	3,568	56	3,092	143	333
FY2004	3,328	52	2,840	44	444
FY2005	5,189	81	4,862	83	244
FY2006	4,681	73	3,980	295	406
FY2007	5,091	79	5,036	47	8
FY2008	5,381	84	4,749	627	5
FY2009	5,137	80	4,263	799	75
FY2010	5,750	90	5,446	273	31
FY2011	11,253	176	7,063	4,175	15
FY2012	7,440	116	5,445	1,839	156
FY2013	9,820	153	7,552	1,999	269
FY2014	8,016	125	5,008	2,444	564
FY2015	24,290	379	22,572	1,528	190
FY2016	22,282	348	21,244	959	79
FY2017	15,927	249	11,302	4,548	77
FY2018	19,668	307	11,953	5,891	1,824
FY2019	11,512	180	8,316	3,066	130

(8) Number of Employees

Table 8 shows that the number of employees at the end of March 2020 decreased by 148 (-2%) from the previous fiscal year to a total of 8,725.

Fig. 8.1 and Table 8.1 show the number of employees by job classification.

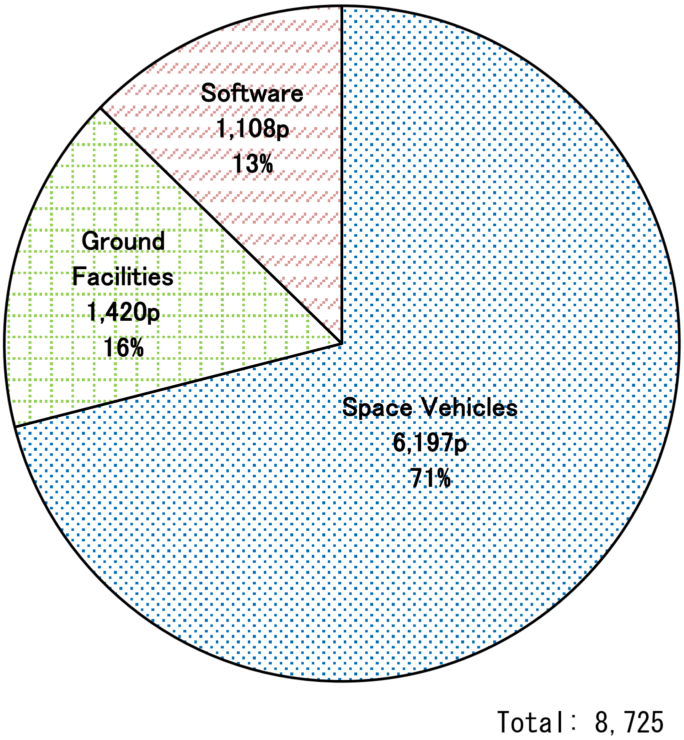


Fig. 8 Number of Employees by Segment

Table 8 Number of Employees by Segment

(Unit: persons)

Segment		FY2019 Number of Employees (A)	FY2019 Percentage (%)	FY2018 Number of Employees (B)	FY2018 Percentage (%)	(A)/(B) (%)	(A)-(B)
	Launch Vehicles	1,786	20.5	1,942	21.9	92	−156
	HTV	398	4.6	287	3.2	139	111
	Satellites	3,704	42.5	3,863	43.5	96	−159
	Space Station	309	3.5	229	2.6	135	80
Space Vehicles (Subtotal)		6,197	71.0	6,321	71.2	98	−124
Ground Facilities		1,420	16.3	1,454	16.4	98	−34
Software		1,108	12.7	1,098	12.4	101	10
Total		8,725	100.0	8,873	100.0	98	−148

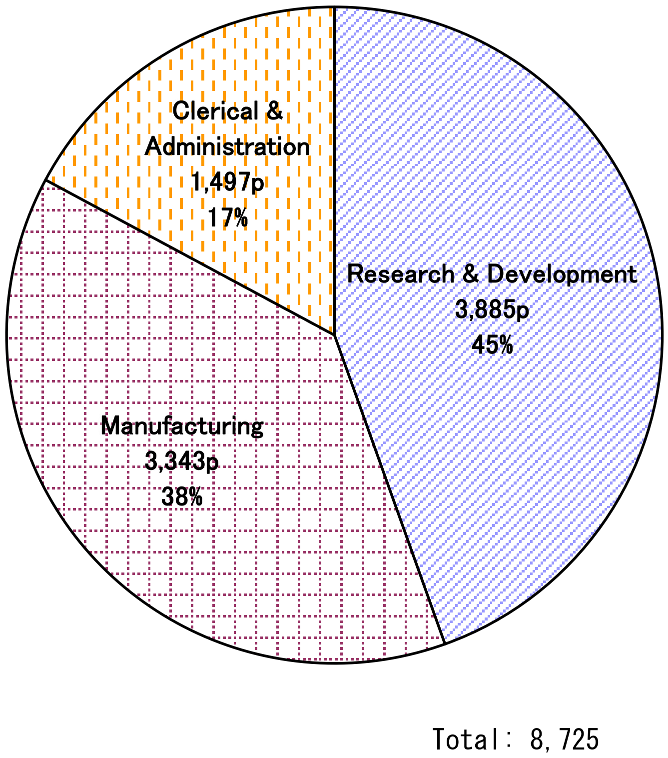


Fig. 8.1 Number of Employees by Job Classification

Table 8.1 Number of Employees by Job Classification

(Unit: persons)

Job Classification	FY2019		FY2018		(A)/(B) (%)	(A)-(B)
	Number of Employees (A)	Percentage (%)	Number of Employees (B)	Percentage (%)		
Research & Development	3,885	44.5	4,004	45.1	97	−119
Manufacturing	3,343	38.3	3,184	35.9	105	159
Clerical & Administration	1,497	17.2	1,685	19.0	89	−188
Total	8,725	100.0	8,873	100.0	98	−148

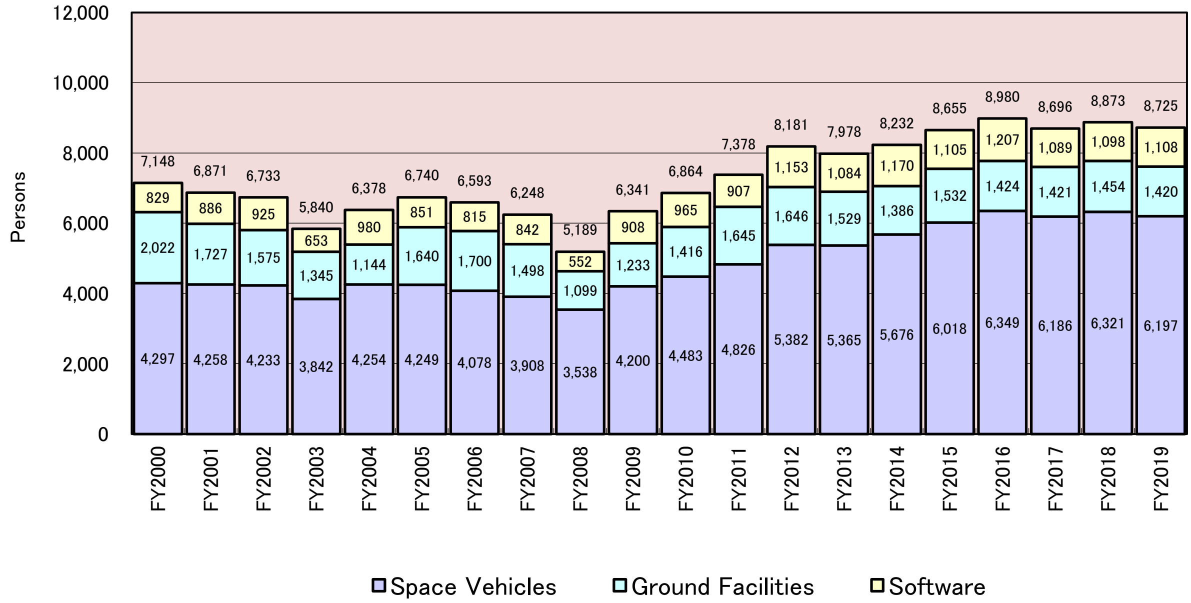


Fig. 8.2 Trend in Number of Employees by Segment

Table 8.2 Trend in Number of Employees by Segment

(Unit: persons)

Fiscal Year	Total Employees	Index	Employees by Segment		
			Space Vehicles	Ground Facilities	Software
FY2000	7,148	100	4,297	2,022	829
FY2001	6,871	96	4,258	1,727	886
FY2002	6,733	94	4,233	1,575	925
FY2003	5,840	82	3,842	1,345	653
FY2004	6,378	89	4,254	1,144	980
FY2005	6,740	94	4,249	1,640	851
FY2006	6,593	92	4,078	1,700	815
FY2007	6,248	87	3,908	1,498	842
FY2008	5,189	73	3,538	1,099	552
FY2009	6,341	89	4,200	1,233	908
FY2010	6,864	96	4,483	1,416	965
FY2011	7,378	103	4,826	1,645	907
FY2012	8,181	114	5,382	1,646	1,153
FY2013	7,978	112	5,365	1,529	1,084
FY2014	8,232	115	5,676	1,386	1,170
FY2015	8,655	121	6,018	1,532	1,105
FY2016	8,980	126	6,349	1,424	1,207
FY2017	8,696	122	6,186	1,421	1,089
FY2018	8,873	124	6,321	1,454	1,098
FY2019	8,725	122	6,197	1,420	1,108

４． List of Companies Surveyed for FY2019

The following tables show the 93 companies surveyed for FY2019

(1/2)

Category	Companies
Space Systems and Equipments (54 companies)	A&D Company, Limited
	ALE Co., Ltd.
	Astroscale Holdings Inc.
	CHIYODA CORPORATION
	Chubu Nihon Maruko Co., LTD.
	Churyo Engineering Co., Ltd.
	EAGLE INDUSTRY CO., LTD.
	Fujitsu Limited
	FURUNO ELECTRIC CO., LTD.
	GS Yuasa Corporation Ltd.
	HARADASEIKI Co.,LTD.
	High-Reliability Engineering & Components Corporation
	Hitachi, Ltd.
	HODEN SEIMITSU KAKO KENKYUSHO CO., LTD.
	IHI AEROSPACE CO., Ltd.
	IHI Corporation
	JAMCO Corporation
	Japan Aviation Electronics Industry, Limited
	JUPITOR CORPORATION
	Kawasaki Heavy Industries, Ltd.
	Kobe Steel, Ltd.
	KOITO MANUFACTURING CO., LTD
	MEIRA Corporation
	MEISEI ELECTRIC CO., LTD.
	Mitsubishi Electric Corporation
	Mitsubishi Electric TOKKI Systems Corporation
	Mitsubishi Heavy Industries, Ltd.
	Mitsubishi Precision Co., LTD.
	NEC Corporation
	NEC Magnus Communications, Ltd.
	NEC Platforms, Ltd.
	NEC Space Technologies, Ltd.
	NIKKISO CO., LTD.
	Nikon Corporation
	NIPPI Corporation
	Nippon Avionics Co., LTD.
	NTN corporation
	OKI Circuit Technology Co., Ltd.
	Oki Electric Industry Co., Ltd.
	RYODEN SHONAN ELECTRONICS CORPORATION
	RYOEI TECHNICA
	SHOWA AIRCRAFT INDUSTRY CO., LTD.
	Sinfonia Technology Co., Ltd.
	SUBARU CORPORATION
	SUMITOMO ELECTRIC DEVICE INNOVATIONS, INC
	Sumitomo Heavy Industries, Ltd.
	Sumitomo Precision Products Co., Ltd.
	TAMAGAWA SEIKI CO., Ltd.
	TATEYAMAKAGAKU INDUSTRY Co.,Ltd.
	TERAUCHI MANUFACTURING Co.,Ltd.
	The Furukawa Battery CO., LTD.
	WEL Research Co., Ltd.
	Yokogawa Electric Corporation
	YUKI PRECISION CO.,LTD.

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Category	Companies
Materials, Chemicals (11 companies)	Air Liquide Japan
	IWATANI CORPORATION
	MITSUBISHI CABLE INDUSTRIES, LTD.
	NGK SPARK PLUG CO., LTD.
	NOF CORPORATION
	NSK Ltd.
	SAKURA RUBBER CO., LTD.
	SOGO SPRING MFG CO., LTD.
	THE YOKOHAMA RUBBER CO.,LTD
	Toray Industries, Inc.
	UACJ Corporation
Trading Firms (11 companies)	COMCRAFT Corporation
	ITOCHU Corporation
	Kanematsu Aerospace Corporation
	MACNICA, Inc.
	Marubeni Aerospace Corporation
	MARUBUN CORPORATION
	MIKUNI CORPORATION
	MITSUI & CO., LTD.
	Nippon Aircraft Supply Co., Ltd.
	Sojitz Aerospace Corporation
	Sumitomo Corporation
Information Services, Software, Research (6 companies)	CSP Japan, Inc.
	DAIKO DENSHI TSUSHIN, LTD.
	MHI AEROSPACE SYSTEMS CORP.
	Mitsubishi Space Software Co., Ltd.
	NEC Aerospace Systems, Ltd
	TIS Solution Link Inc.
Construction (3 companies)	COSMOTEC Co., Ltd.
	Kyudenko Corporation
	SHIMIZU CORPORATION
Space Utilization and Operation (8 companies)	Broadcasting Satellite System Corporation
	Japan Manned Space Systems Corporation
	Japan Space Imaging Corporation
	PASCO Corporation
	REMOTE SENSING TECHNOLOGY CENTER OF JAPAN
	SAKURA internet Inc.
	Satellite Image Marketing Corporation
	Space Engineering Development Co., Ltd.