

**JAPANESE SPACE INDUSTRY**  
**ANNUAL SURVEY REPORT**  
**- Fiscal Year 2015 Results -**



**March 2017**

**The Society of Japanese Aerospace Companies (SJAC)**

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## 1. Purpose, Methodology, and Scope

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 the response to the questionnaire sent in July 2016 by 85 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 in four groups:

This report deals with the *Space Industry* group in the below figure of Constitution of Japanese Space-related Industry.

### - *Space Industry*

Manufacturing 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

### - *Space Utilization Service Industry*

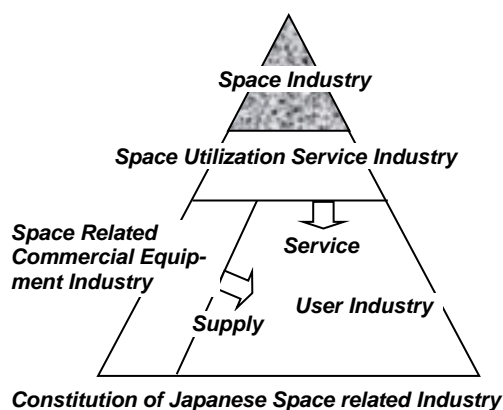
Providing services utilizing space infrastructure such as satellite communications, broadcasting and earth observation.

### -*Space-Related Commercial Equipment Industry*

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

### -*User Industry*

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



## 2. Summary, FY2015

### (1) Sales in FY2015

Japanese space industry sales in FY2015 totaled ¥337.8 billion (US\$3.378 billion at an exchange rate of ¥100/US\$). This amount is ¥17.6 billion less (5% decrease) than the previous fiscal year. But it is secondary big sales amount in the past 10 years, and the growth trend in the long run continues.

The breakdown of each sales amount are as follows:

- (i) Space vehicle segment sales decreased by ¥13.6 billion.
  - Launch vehicle-related sales decreased by ¥9.2 billion.
  - HTV-related sales increased by ¥8.0 billion.
  - Satellite-related sales decreased by ¥8.4 billion.
  - Space station-related sales decreased by ¥3.9 billion.
- (ii) Ground facilities segment sales decreased by ¥3.4 billion.
- (iii) Software segment sales decreased by ¥0.7 billion.

### (2) Sales by segment

#### (i) Space vehicles

In the space vehicle segment, total sales have decreased by ¥13.6 billion (-5%) to ¥279.7 billion from the previous fiscal year.

#### •Launch vehicles

The launch vehicle-related sales in the space vehicle segment decreased by ¥9.2 billion (-10%) to ¥83.4 billion. Three (3) rockets were launched in FY2015. Following table shows the launch records in FY2015.

August 19, 2015	H-IIB F5	H-II Transfer Vehicle "KOUNOTORI5" (HTV5)
November 24, 2015	H-IIA F29	Telstar 12 VANTAGE
February 17, 2016	H-IIA F30	X-ray Astronomy Satellite "Hitomi" (ASTRO-H)

#### •HTV (H-II Transfer Vehicle)

HTV-related sales in the space vehicle segment increased by ¥8.0 billion (89%) to ¥17.1 billion.

#### • Satellite

Satellite related-sales in the space vehicle segment decreased by ¥8.4 billion (-5%) to ¥171.7 billion.

#### • Space station module

Space station-related sales in the space vehicle segment decreased by ¥3.9 billion (-35%) to ¥7.4 billion.

(ii) Ground facilities

In the ground facilities segment, total sales decreased by ¥3.4 billion (-10%) to ¥30.6 billion.

(iii) Software

In the software segment, total sales decreased by ¥0.7 billion (-3%) to ¥27.5 billion from the previous fiscal year.

**(3) Domestic demand**

Total sales for domestic demand decreased by ¥51.7 billion (-16%) to ¥279.8 billion. Final domestic demand decreased by ¥39.9 billion (-19%) to ¥174.9 billion, which was 63% of total domestic sales. Sales for the intermediate domestic demand decreased by ¥11.7 billion (-10%) to ¥104.9 billion, which was 37% of total domestic sales.

**(4) Exports**

Total exports increased by ¥34.0 billion (142%) to ¥58.0 billion.

In terms of region, exports to North America and Middle East accounted for 90% of the total exports.

**(5) Imports**

Total imports increased by ¥11.0 billion (28%) to ¥50.6 billion.

In terms of region, imports from North America and Europe formed almost 100% of the total imports.

**(6) Research and development expenses**

Research and development expenses increased by ¥2.4 billion (29%) to ¥11.0 billion.

**(7) Plant and equipment investment**

The plant and equipment investment increased by ¥16.3 billion (203%) to ¥24.3 billion.

**(8) Number of employees**

The number of employees increased by 423 persons (5%) to 8,655 persons.

### 3. Survey, FY2015

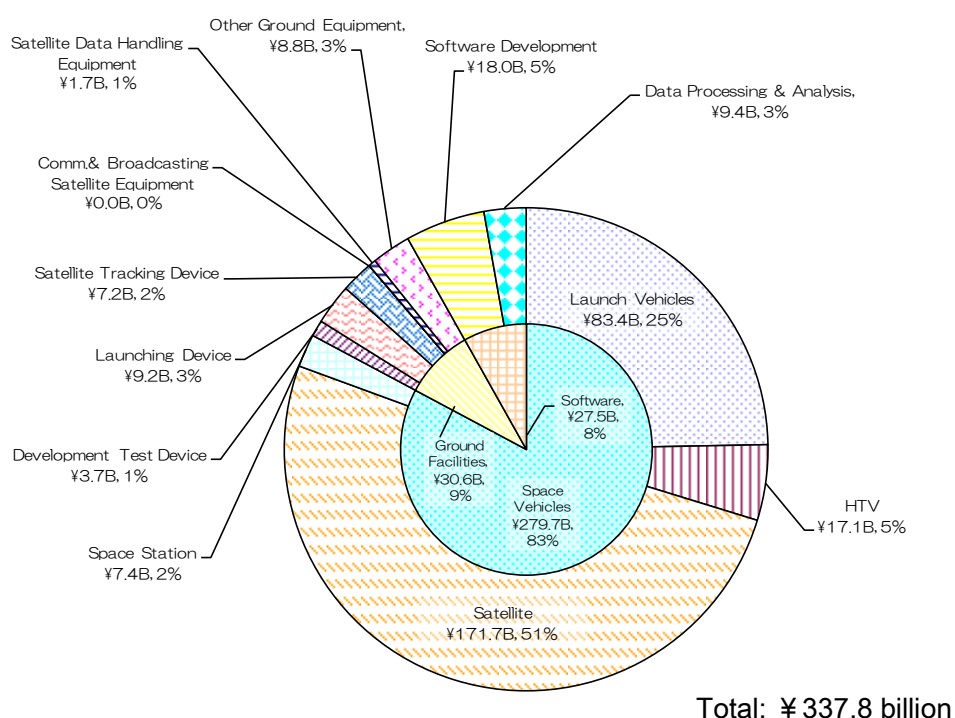
#### (1) Sales by Segment

As shown in Table 1, Japanese space industry sales in FY 2015 were ¥337.8 billion. It is less than ¥17.6 billion (-5%) comparing to the previous fiscal year.

In the space vehicle segment, total sales decreased by ¥13.6 billion (-5%) to ¥279.7 billion. The breakdown of sales amount changes in this segment shows that launch vehicle-related sales decreased by ¥9.2 billion to ¥83.4 billion and HTV-related sales increased by ¥8.0 billion to ¥17.1 billion. Also satellite-related sales decreased by ¥8.4 billion to ¥171.7 billion. Space station-related sales decreased by ¥3.9 billion to ¥7.4 billion.

In the ground facilities segment, total sales decreased by ¥3.4 billion (-10%) to ¥30.6 billion.

In the software segment, total sales amount decreased by ¥0.7 billion (-3%) to ¥27.5 billion.



Note: Because the value (%) of the circular graph are the rounded-off value (%) of the corresponding table, 100% may not have the total value. This applies to all circular graphs.

Figure 1 Sales by Segment

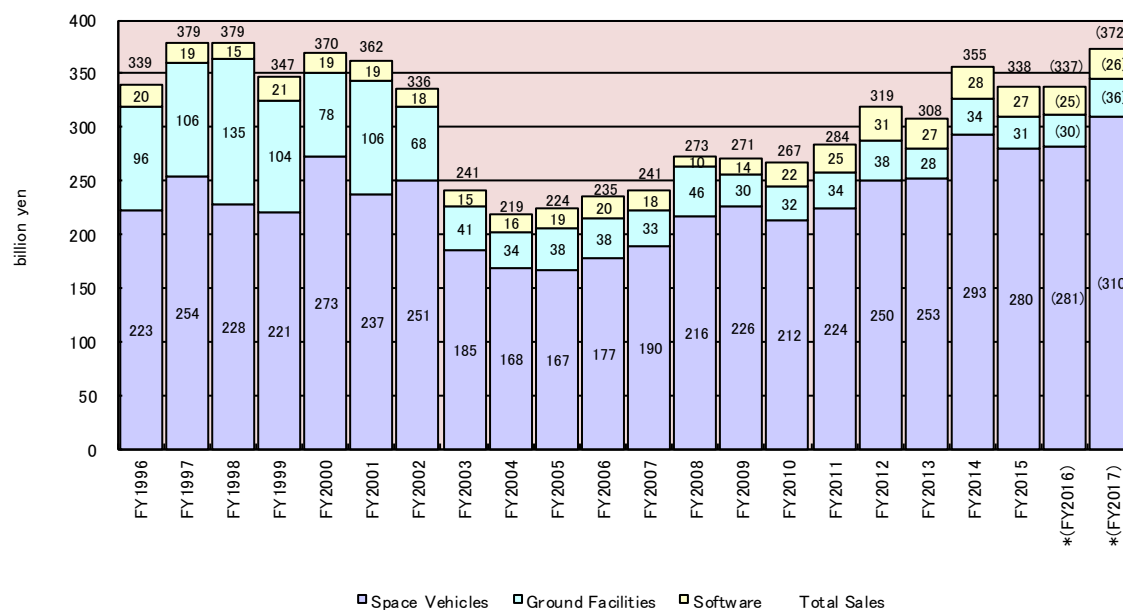
**Table 1 Sales by Segment**

(Unit : Million Yen)

Segment	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	Total Sales (A)	Percentage (%)	Total Sales (B)	Percentage (%)		
Solid Rocket	18,946	5.6	13,348	3.8	142	5,598
Liquid Propellant Rocket	30,053	8.9	29,498	8.3	102	555
Launching Service and Expenditure	34,422	10.2	49,810	14.0	69	-15,388
<b>Launch Vehicles (Subtotal)</b>	<b>83,421</b>	<b>24.7</b>	<b>92,656</b>	<b>26.1</b>	<b>90</b>	<b>-9,235</b>
HTV	17,091	5.1	9,054	2.5	189	8,037
System·Bus Equipment	114,581	33.9	100,613	28.3	114	13,968
Mission Equipment	40,335	11.9	66,501	18.7	61	-26,166
Tracking & Data Relay	16,832	5.0	13,064	3.7	129	3,768
<b>Satellite (Subtotal)</b>	<b>171,748</b>	<b>50.8</b>	<b>180,178</b>	<b>50.7</b>	<b>95</b>	<b>-8,430</b>
Space Station	7,448	2.2	11,371	3.2	65	-3,923
<b>Space Vehicles (Subtotal)</b>	<b>279,708</b>	<b>82.8</b>	<b>293,259</b>	<b>82.5</b>	<b>95</b>	<b>-13,551</b>
Development Test Device	3,677	1.1	3,918	1.1	94	-241
Launching Device	9,167	2.7	10,053	2.8	91	-886
Satellite Tracking Device	7,230	2.1	6,781	1.9	107	449
Comm.& Broadcasting Satellite Equipment	36	0.0	138	0.0	26	-102
Satellite Data Handling Equipment	1,667	0.5	1,489	0.4	112	178
GPS Equipment	0	0.0	0	0.0	0	0
Ground Experimental Device	0	0.0	0	0.0	0	0
Other Ground Equipment	8,824	2.6	11,593	3.3	76	-2,769
<b>Ground Facilities (Subtotal)</b>	<b>30,601</b>	<b>9.1</b>	<b>33,972</b>	<b>9.6</b>	<b>90</b>	<b>-3,371</b>
Software Development	18,025	5.3	19,022	5.4	95	-997
Data Processing & Analysis	9,459	2.8	9,188	2.6	103	271
<b>Software (Subtotal)</b>	<b>27,484</b>	<b>8.1</b>	<b>28,210</b>	<b>7.9</b>	<b>97</b>	<b>-726</b>
<b>Space Industry Total</b>	<b>337,793</b>	<b>100.0</b>	<b>355,441</b>	<b>100.0</b>	<b>95</b>	<b>-17,648</b>

Figure 1.1 and Table1.1 show the sales trends by segment. FY2015 is secondly big sales amount in the past 10 years, and the long-term growth trend continues.

Japanese Space Industry Annual Survey Report (FY2015 results)



*\*(FY2016) and \*(FY2017) are predictions based on the responses from companies.*

**Figure 1.1 Sales Trends by Segment**

**Table 1.1 Sales Trends by Segment**

(Unit : Million Yen)

Fiscal Year	Total Sales	Index	Sales by Segment		
			Space Vehicles	Ground Facilities	Software
FY1996	338,661	100	223,173	95,891	19,597
FY1997	378,517	112	254,079	105,730	18,708
FY1998	378,896	112	227,991	135,435	15,470
FY1999	346,531	102	221,104	104,246	21,181
FY2000	369,944	109	273,045	78,229	18,670
FY2001	361,777	107	236,938	105,637	19,202
FY2002	336,184	99	251,036	67,565	17,583
FY2003	240,684	71	185,216	40,678	14,790
FY2004	218,849	65	168,454	34,063	16,332
FY2005	223,669	66	167,411	37,547	18,711
FY2006	234,794	69	177,216	37,762	19,816
FY2007	240,542	71	189,689	33,211	17,642
FY2008	272,686	81	216,077	46,375	10,234
FY2009	270,542	80	226,445	29,613	14,484
FY2010	267,063	79	212,495	32,387	22,181
FY2011	283,872	84	224,174	34,419	25,279
FY2012	319,017	94	249,960	37,694	31,363
FY2013	308,126	91	252,762	27,963	27,401
FY2014	355,441	105	293,259	33,972	28,210
FY2015	337,793	100	279,708	30,601	27,484
*(FY2016)	(336,948)	(99)	(281,395)	(30,230)	(25,323)
*(FY2017)	(372,246)	(110)	(309,823)	(36,159)	(26,264)

*\*(FY2016) and \*(FY2017) are prediction based on the responses from companies.*



## (2) Domestic Demand and Exports

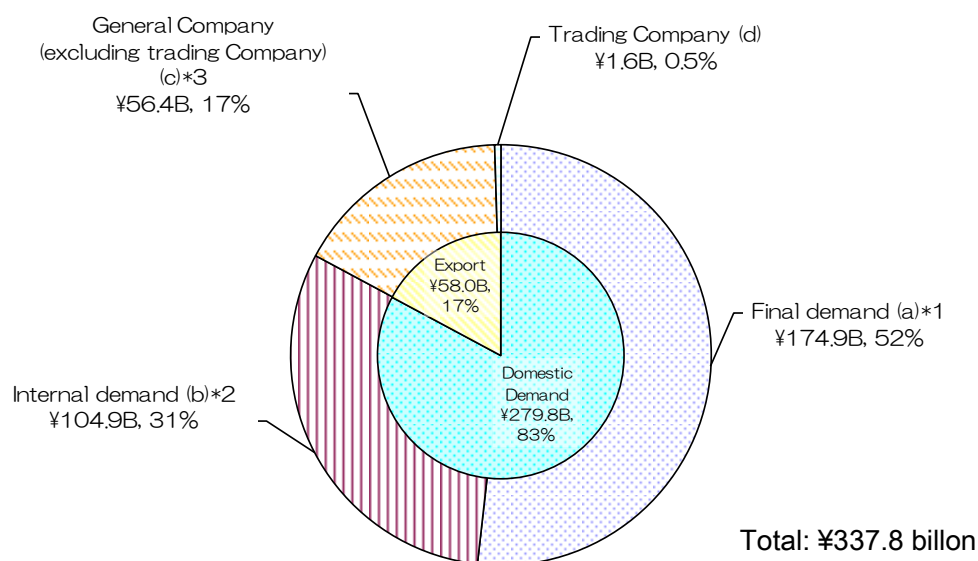
As shown in Table 2, sales for the domestic demand decreased by ¥51.7 billion (-16%) to ¥279.8 billion. Exports increased by ¥34.0 billion (142%) to ¥58.0 billion.

In the domestic demand, sales for the final domestic demand decreased by ¥39.9 billion (-19%) to ¥174.9 billion, which was 63% of total domestic sales. Sales for the intermediate domestic demand decreased by ¥11.7 billion (-10%) to ¥104.9 billion, which was 37% of total domestic sales.

Exports without trading companies increased by ¥35.8 billion (174%) to ¥56.4 billion, which equals 97% of total exports. Exports of trading companies was ¥1.6 billion and equal to 3% of the total exports.

The combined sales (“total sales (a) + (c)” in Table 2) for the domestic final demand and export amount without trading companies are almost equal to the market size of the space industry and decreased by ¥4.2 billion (-2%) to ¥231.3. It is equal to 68.5% of total space industry sales.

Figure 2.1 and Table 2.1 show the sales trends for domestic demand and for exports. Figure 2.2 shows the ratio trends of sales for domestic demand to exports, and Figure 2.3 shows the sales trends for domestic demand and export breakdown.



\*1 Final demand in this report is JAXA, Other Government Agencies, Other Public Organization and Satellite Communications & Broadcasting.

\*2 Intermediate demand in this report is Special Organizations for Space Activities, Major Rocket Manufacturers, Major Satellite Manufacturers and Other Clients.

\*3 “General company” in this report means the space industry, and don’t include trading companies.

**Figure 2 Sales for Domestic Demand and Exports**

**Table 2 Sales for Domestic Demand and Export**

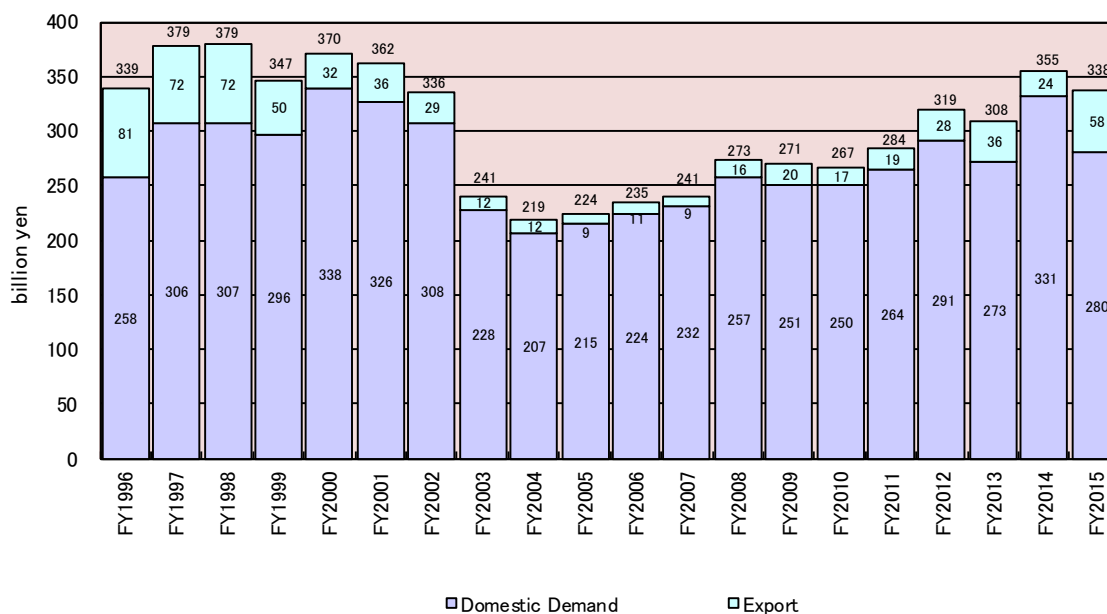
(Unit : Million Yen)

Category	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	Total Sales (A)	Percentage (%)	Total Sales (B)	Percentage (%)		
Final Demand (a)*1	174,936	51.8	214,883	60.5	81	-39,947
Intermediate Demand (b)*2	104,866	31.0	116,593	32.8	90	-11,727
<b>Domestic Demand(Subtotal)</b>	<b>279,802</b>	<b>82.8</b>	<b>331,476</b>	<b>93.3</b>	<b>84</b>	<b>-51,674</b>
General Company (c)*3	56,371	16.7	20,605	5.8	274	35,766
Trading Company (d)	1,620	0.5	3,360	0.9	48	-1,740
<b>Export(Subtotal)</b>	<b>57,991</b>	<b>17.2</b>	<b>23,965</b>	<b>6.7</b>	<b>242</b>	<b>34,026</b>
<b>Total Sales (a)+(c)</b>	<b>231,307</b>	<b>68.5</b>	<b>235,488</b>	<b>66.3</b>	<b>98</b>	<b>-4,181</b>
<b>Total Sales (a)+(b)+(c)+(d)</b>	<b>337,793</b>	<b>100.0</b>	<b>355,441</b>	<b>100.0</b>	<b>95</b>	<b>-17,648</b>

\*1 Final demand in this report is JAXA, Other Government Agencies, Other Public Organization and Satellite Communications & Broadcasting.

\*2 Intermediate demand in this report is Special Organization for Space Activities, Major Rocket Manufacturers, Major Satellite Manufacturers and Other Clients.

\*3 “General company” in this report means the space industry, and don’t include trading companies.



**Figure 2.1 Sales Trends for Domestic Demand and Exports**

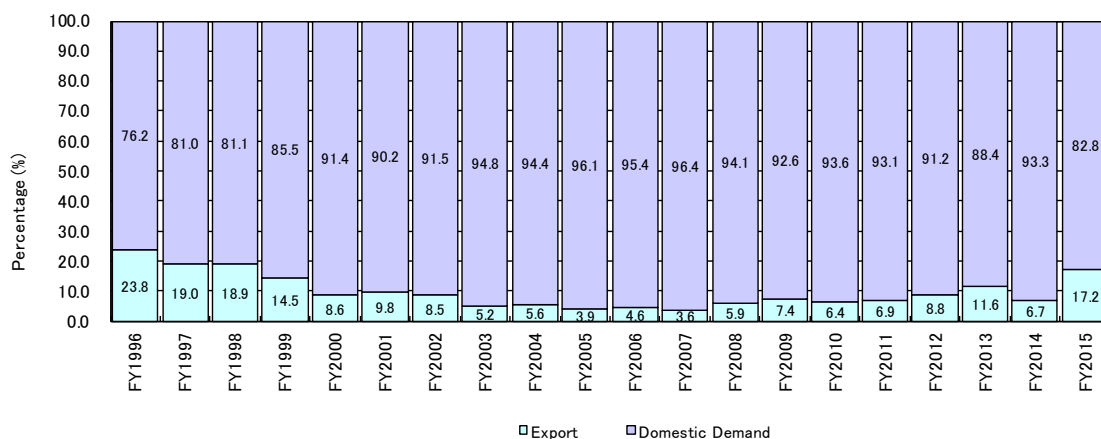


Figure 2.2 Sales Ratio Trends for Domestic Demand to Exports

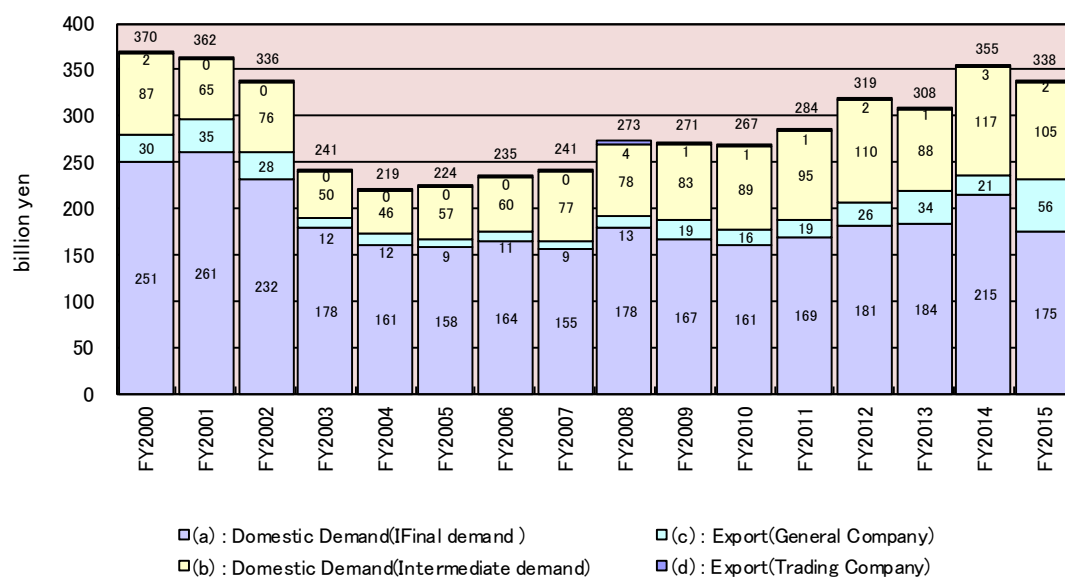


Figure 2.3 Sales Trends for Domestic Demand and Export Breakdown

Table 2.1 Sales Trend for Domestic Demand and Export

(Unit : Million Yen)

Fiscal Year	Total Sales (a)+(b)+(c)+(d)	Total Sales (a)+(c)	Domestic Demand			Export			Percentage(%)					
			Final Demand (a)*1	Intermediate Demand (b)*2	Total	General Company (c)*3	Trading Company (d)	Total	Domestic Demand			Export		
									Final Demand *1	Intermediate Demand *2	Total	General Company *3	Trading Company	Total
FY1996	338,661	-	-	-	257,900	-	-	80,761	-	-	76.2	-	-	23.8
FY1997	378,517	-	-	-	306,483	-	-	72,034	-	-	81.0	-	-	19.0
FY1998	378,896	283,765	224,345	82,925	307,270	59,420	12,206	71,626	59.2	21.9	81.1	15.7	3.2	18.9
FY1999	346,531	283,482	235,061	61,349	296,410	48,421	1,700	50,121	67.8	17.7	85.5	14.0	0.5	14.5
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	218,248	184,103	88,407	272,510	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

\*1 Final demand in this report is JAXA, Other Government Agencies, Other Public Organization and Satellite Communications & Broadcasting.

\*2 Intermediate demand in this report is Special Organization for Space Activities, Major Rocket Manufacturers, Major Satellite Manufacturers and Other Clients.

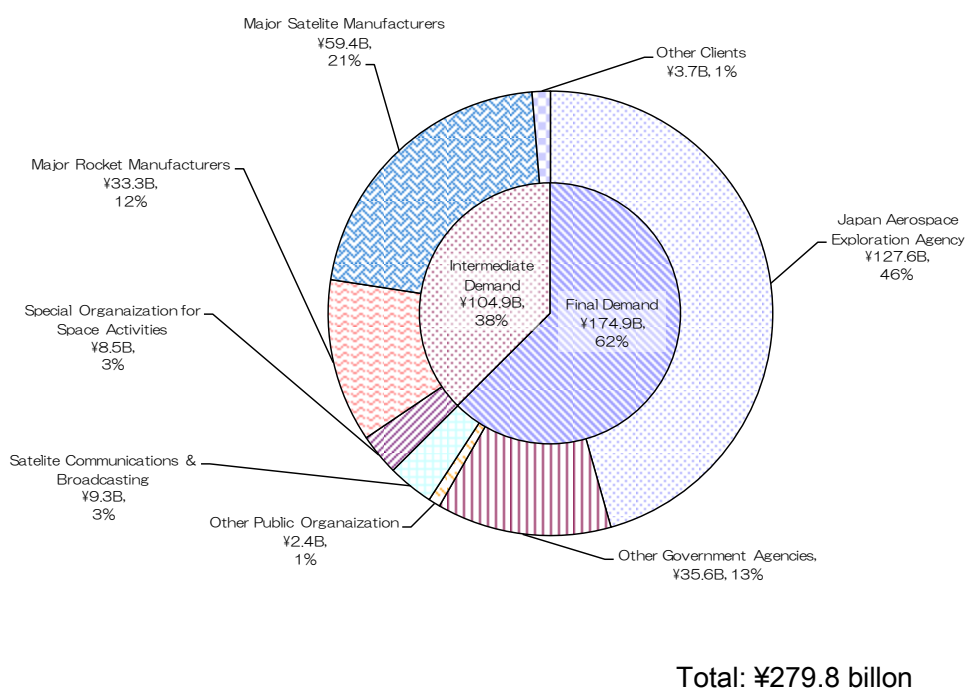
\*3 "General company" in this report means the space industry, and don't include trading companies.

\*4 "--" indicates SJAC has no data.

### (3) Domestic Demand

As shown in Table 3, Sales to Japan Aerospace Exploration Agency(JAXA) in the final domestic demand decreased by ¥7.1 billion (-5%) to ¥127.6 billion, equal to 46% of total domestic demand sales. The combined sales to JAXA, other government agencies, and public organizations decreased by ¥48.6 billion (-23%) to ¥165.6 billion, equal to 59% of total domestic demand sales.

Sales to satellite communication and broadcasting companies in the final domestic demand increased by ¥8.6 billion (1,177%) to ¥9.3 billion, equal to 3.3% of the total domestic demand sales.



**Figure 3 Sales for Domestic Demand**

**Table 3 Sales for Domestic Demand**

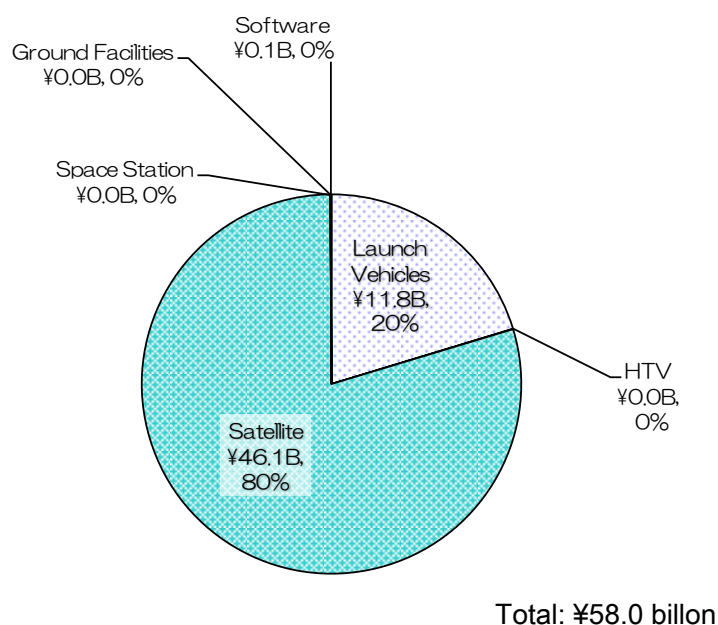
(Unit : Million Yen)

Category	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	Sales (A)	Percentage (%)	Sales (B)	Percentage (%)		
Japan Aerospace Exploration Agency	127,618	45.6	134,730	40.6	95	-7,112
Other Government Agencies	35,560	12.7	69,204	20.9	51	-33,644
Other Public Organization	2,413	0.9	10,217	3.1	24	-7,804
Satellite Communications & Broadcasting	9,345	3.3	732	0.2	1277	8,613
<b>Final Demand (Subtotal)</b>	<b>174,936</b>	<b>62.5</b>	<b>214,883</b>	<b>64.8</b>	<b>81</b>	<b>-39,947</b>
Special Organization for Space Activities	8,458	3.0	7,255	2.2	117	1,203
Major Rocket Manufacturers	33,258	11.9	30,025	9.1	111	3,233
Major Satellite Manufacturers	59,448	21.2	66,429	20.0	89	-6,981
Other Clients	3,702	1.3	12,884	3.9	29	-9,182
<b>Intermediate Demand (Subtotal)</b>	<b>104,866</b>	<b>37.5</b>	<b>116,593</b>	<b>35.2</b>	<b>90</b>	<b>-11,727</b>
<b>Total</b>	<b>279,802</b>	<b>100.0</b>	<b>331,476</b>	<b>100.0</b>	<b>84</b>	<b>-51,674</b>

#### (4) Exports

As shown in Table 4, exports in FY2015 increased by ¥34.0 billion (142%) to ¥58.0 billion. Satellite-related exports totaled ¥46.1 billion and accounted for 80% of total exports. Launch vehicle-related exports totaled ¥11.8 billion and accounted for 20% of total exports. The combined exports to Satellite and Launch vehicle accounted for 99.9% of total exports.

The export amount of the space industry (without trading companies) increased by ¥35.8 billion (174%) to ¥56.4 billion, equal to 97% of the total exports. The export of the trading companies was ¥1.6 billion, equal to 3% of total exports.



**Figure 4 Export by Segment**

Table 4 Export by Segment

(Unit : Million Yen)

Segment	FY2015				FY2014				(A)/(B) (%)	(A)-(B)
	Export			Percentage (%)	Export			Percentage (%)		
	General Company *1	Trading Company	Total (A)		General Company *1	Trading Company	Total (B)			
Solid Rocket	0	0	0	0.0	0	0	0	0.0	0	0
Liquid Propellant Rocket	2,166	0	2,166	3.7	1,803	0	1,803	7.5	120	363
Launching Expenditure *2	9,605	0	9,605	16.6	0	0	0	0.0	0	9605
<b>Launch Vehicles (Subtotal)</b>	<b>11,771</b>	<b>0</b>	<b>11,771</b>	<b>20.3</b>	<b>1,803</b>	<b>0</b>	<b>1,803</b>	<b>7.5</b>	<b>653</b>	<b>9968</b>
HTV	20	0	20	0.0	0	0	0	0.0	0	20
System·Bus Equipment	39,247	100	39,347	67.9	11,924	60	11,984	50.0	328	27363
Mission Equipment	5,274	1,520	6,794	11.7	6,654	3,300	9,954	41.5	68	-3160
Tracking & Data Relay	0	0	0	0.0	0	0	0	0.0	0	0
<b>Satellite (Subtotal)</b>	<b>44,521</b>	<b>1,620</b>	<b>46,141</b>	<b>79.6</b>	<b>18,578</b>	<b>3,360</b>	<b>21,938</b>	<b>91.5</b>	<b>210</b>	<b>24203</b>
Space Station	5	0	5	0.0	12	0	12	0.1	42	-7
<b>Space Vehicles (Subtotal)</b>	<b>56,317</b>	<b>1,620</b>	<b>57,937</b>	<b>99.9</b>	<b>20,393</b>	<b>3,360</b>	<b>23,753</b>	<b>99.1</b>	<b>244</b>	<b>34,184</b>
Development Test Device	0	0	0	0.0	0	0	0	0.0	0	0
Launching Device	0	0	0	0.0	0	0	0	0.0	0	0
Satellite Tracking Device	0	0	0	0.0	0	0	0	0.0	0	0
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
GPS Equipment	0	0	0	0.0	0	0	0	0.0	0	0
Ground Experimental Device	0	0	0	0.0	0	0	0	0.0	0	0
Other Ground Equipment	0	0	0	0.0	160	0	160	0.7	0	-160
<b>Ground Facilities (Subtotal)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>160</b>	<b>0</b>	<b>160</b>	<b>0.7</b>	<b>0</b>	<b>-160</b>
Software Development	0	0	0	0.0	0	0	0	0.0	0	0
Data Processing & Analysis	54	0	54	0.1	52	0	52	0.2	104	2
<b>Software (Subtotal)</b>	<b>54</b>	<b>0</b>	<b>54</b>	<b>0.1</b>	<b>52</b>	<b>0</b>	<b>52</b>	<b>0.2</b>	<b>104</b>	<b>2</b>
<b>Total</b>	<b>56,371</b>	<b>1,620</b>	<b>57,991</b>	<b>100.0</b>	<b>20,605</b>	<b>3,360</b>	<b>23,965</b>	<b>100.0</b>	<b>242</b>	<b>34,026</b>

\*1 "General company" in this report means the space industry, and don't include trading companies.

\*2 Export of "Launching Expenditure" in this report means the service to launch a foreign satellite by a domestic rocket.



As shown in Figure. 4.1 and Table 4.1, recovering trend continued in the export of space vehicles after hitting bottom in FY2005. But, the exports of ground facilities and software remain stagnant at low level.

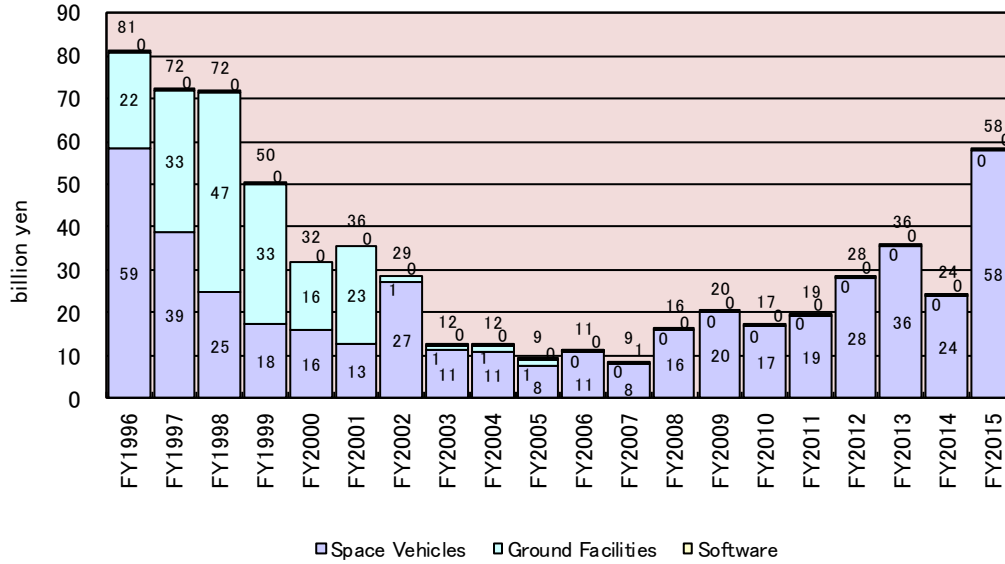
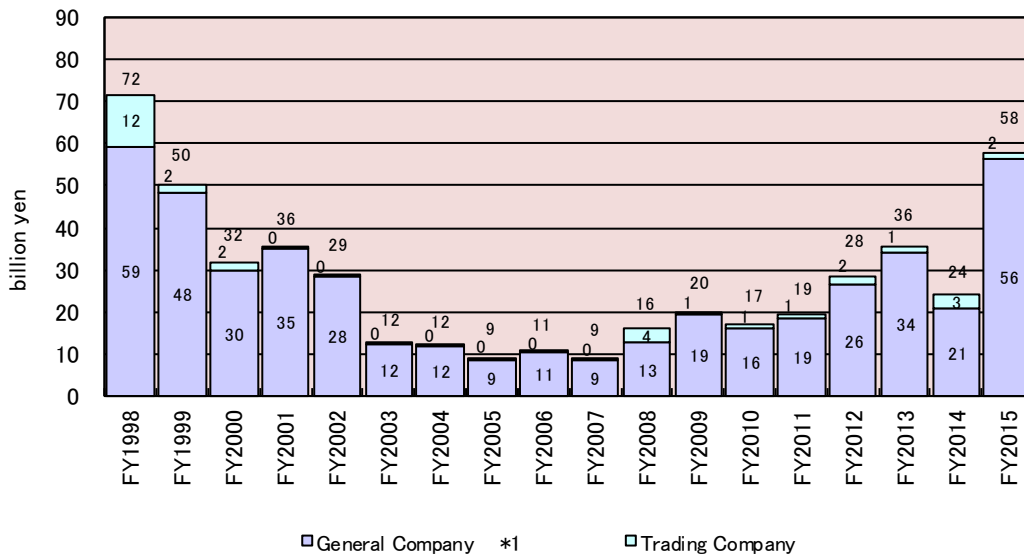


Figure. 4.1. Export Trends by Segment



\*1 "General company" in this report means the space industry, and don't include trading companies.

Figure. 4.2 Export Trends

**Table 4.1 Export Trends by Segment**

(Unit : Million Yen)

Fiscal Year	Export			Index	Export by Segment		
	General Company *1	Trading Company	Total		Space Vehicles	Ground Facilities	Software
FY1996	—	—	80,761	100	58,508	22,239	14
FY1997	—	—	72,034	89	38,673	33,299	62
FY1998	59,420	12,206	71,626	89	24,632	46,667	327
FY1999	48,421	1,700	50,121	62	17,514	32,570	37
FY2000	29,627	2,055	31,682	39	15,872	15,810	0
FY2001	35,035	473	35,508	44	12,684	22,824	0
FY2002	28,325	176	28,501	35	27,249	1,252	0
FY2003	12,343	67	12,410	15	11,470	935	5
FY2004	12,016	198	12,214	15	11,026	1,169	19
FY2005	8,596	234	8,830	11	7,618	1,130	82
FY2006	10,534	281	10,815	13	10,672	51	92
FY2007	8,524	177	8,701	11	8,164	0	537
FY2008	12,507	3,522	16,029	20	15,947	0	82
FY2009	19,420	620	20,040	25	20,039	0	1
FY2010	15,988	1,000	16,988	21	16,970	0	18
FY2011	18,656	790	19,446	24	19,438	0	8
FY2012	26,273	1,917	28,190	35	28,154	6	30
FY2013	34,145	1,471	35,616	44	35,580	0	36
FY2014	20,605	3,360	23,965	30	23,753	160	52
FY2015	56,371	1,620	57,991	72	57,937	0	54

\*1 “General company” in this report means the space industry, and don’t include trading companies.

\*2 “—” indicates SJAC has no data.

In terms of region, as shown in Figures. 4.3, 4.4 and Table 4.2, exports to North America and Middle East accounted for 90% of the total exports.

Exports to Middle East largely increased by ¥28.1 billion (642%) to ¥32.4 billion, equal to 56% of the total exports.

On the other hand, the exports to Asian decreased by ¥3.2 billion (-53%) to ¥2.9 billion, equal to 5% of the total exports.

Exports to North America increased by ¥9.8 billion (96%) to ¥19.9 billion, equal to 34% of the total exports.

Exports to Europe slightly decreased by ¥0.6 billion (-17%) to ¥2.7 billion.

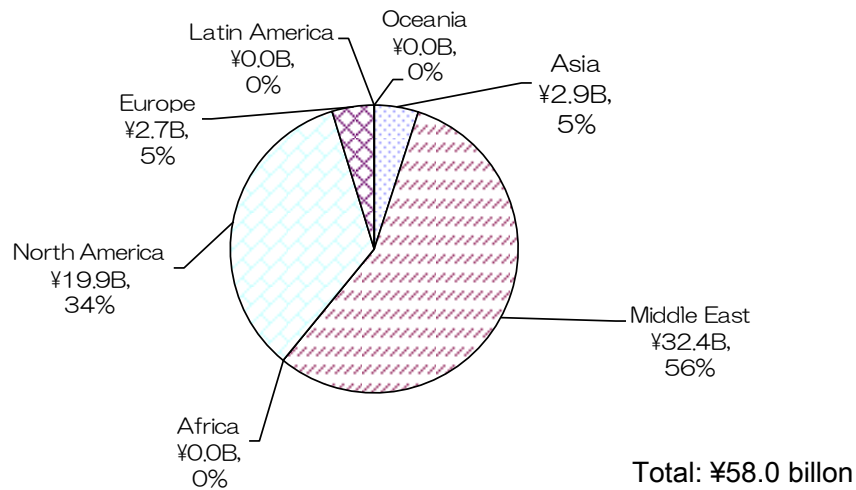
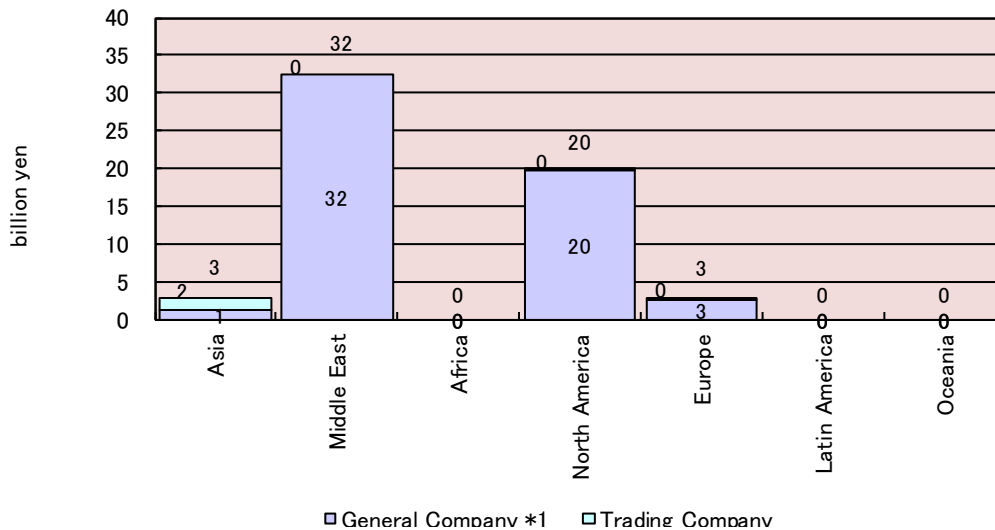


Figure. 4.3 Exports by Region



\*1 “General company” in this report means the space industry, and don’t include trading companies.

Figure. 4.4 Export Breakdown by Region

**Table 4.2 Export by Region**

(Unit : Million Yen)

Destination	FY2015				FY2014				(A)/(B) (%)	(A)-(B)
	Export			Percentage (%)	Export			Percentage (%)		
	General Company *1	Trading Company	Total (A)		General Company *1	Trading Company	Total (B)			
Asia	1,377	1,500	2,877	5.0	2,817	3,300	6,117	25.5	47	-3,240
Middle East	32,446	0	32,446	56.0	4,375	0	4,375	18.3	742	28,071
Africa	0	0	0	0.0	0	0	0	0.0	0	0
North America	19,904	20	19,924	34.4	10,095	60	10,155	42.4	196	9,769
Europe	2,644	100	2,744	4.7	3,318	0	3,318	13.8	83	-574
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
<b>Total</b>	56,371	1,620	57,991	100.0	20,605	3,360	23,965	100.0	242	34,026

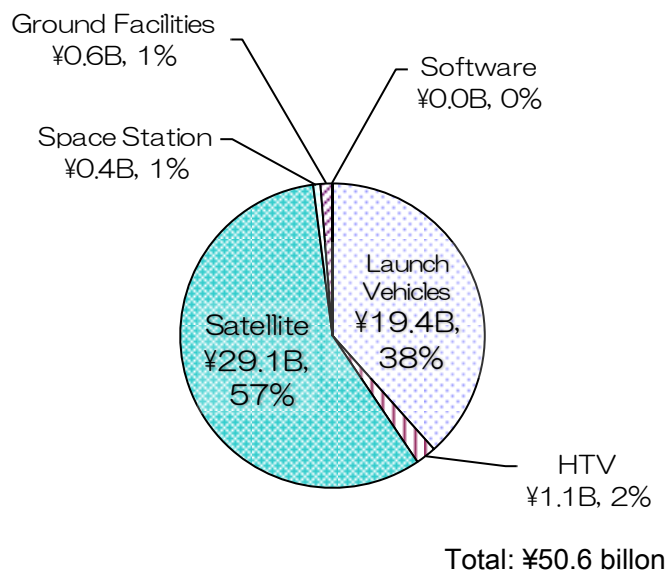
\*1 “General company” in this report means the space industry, and don’t include trading companies.

**(5) Imports**

As shown in Table 5, total imports increased by ¥11.0 billion (28%) to ¥50.6 billion.

Space vehicles imports increased by ¥11.6 billion (30%) to ¥50.0 billion, which represents 99% of total imports. Within this segment, imports related to launch vehicles accounted for 38% of the total imports, it increased by ¥12.9 billion (198%) to ¥19.4 billion. Imports related to satellites accounted for 57% of the total imports, it decreased by ¥1.7 billion (-5%) to ¥29.1 billion.

The import amount of the space industry (without trading companies) increased by ¥10.0 billion (29%) to ¥45.1 billion, or 89% of total imports. Imports of the trading company increased by ¥1.0 billion (23%) to ¥5.6 billion, or 11% of total imports.



**Figure 5 Imports by Segment**

Table 5 Import by Segment

(Unit : Million Yen)

Segment	FY2015				FY2014				(A)/(B) (%)	(A)-(B)
	Import			Percentage (%)	Import			Percentage (%)		
	General Company *1	Trading Company	Total (A)		General Company *1	Trading Company	Total (B)			
Solid Rocket	1,823	161	1,984	3.9	1,193	27	1,220	3.1	163	764
Liquid Propellant Rocket	2,196	2,336	4,532	9.0	3,496	1,723	5,219	13.2	87	-687
Launching Expenditure *2	12,926	0	12,926	25.5	78	0	78	0.2	16,572	12,848
<b>Launch Vehicles (Subtotal)</b>	<b>16,945</b>	<b>2,497</b>	<b>19,442</b>	<b>38.4</b>	<b>4,767</b>	<b>1,750</b>	<b>6,517</b>	<b>16.5</b>	<b>298</b>	<b>12,925</b>
HTV	769	338	1,107	2.2	614	12	626	1.6	177	481
System·Bus Equipment	10,904	1,032	11,936	23.6	12,179	1,391	13,570	34.3	88	-1,634
Mission Equipment	9,718	1,082	10,800	21.3	15,413	406	15,819	40.0	68	-5,019
Tracking & Data Relay	6,321	0	6,321	12.5	1,344	0	1,344	3.4	470	4,977
<b>Satellite (Subtotal)</b>	<b>26,943</b>	<b>2,114</b>	<b>29,057</b>	<b>57.4</b>	<b>28,936</b>	<b>1,797</b>	<b>30,733</b>	<b>77.6</b>	<b>95</b>	<b>-1,676</b>
Space Station	352	36	388	0.8	439	55	494	1.2	79	-106
<b>Space Vehicles (Subtotal)</b>	<b>45,009</b>	<b>4,985</b>	<b>49,994</b>	<b>98.7</b>	<b>34,756</b>	<b>3,614</b>	<b>38,370</b>	<b>96.9</b>	<b>130</b>	<b>11,624</b>
Development Test Device	10	26	36	0.1	10	7	17	0.0	212	19
Launching Device	15	107	122	0.2	15	600	615	1.6	20	-493
Satellite Tracking Device	28	30	58	0.1	81	22	103	0.3	56	-45
Comm.& Broadcasting Satellite Equipment	2	0	2	0.0	5	0	5	0.0	40	-3
Satellite Data Handling Equipment	0	0	0	0.0	0	0	0	0.0	0	0
GPS Equipment	21	0	21	0.0	0	0	0	0.0	0	21
Ground Experimental Device	0	0	0	0.0	0	0	0	0.0	0	0
Other Ground Equipment	0	401	401	0.8	206	267	473	1.2	85	-72
<b>Ground Facilities (Subtotal)</b>	<b>76</b>	<b>564</b>	<b>640</b>	<b>1.3</b>	<b>317</b>	<b>896</b>	<b>1,213</b>	<b>3.1</b>	<b>53</b>	<b>-573</b>
Software Development	0	0	0	0.0	3	0	3	0.0	0	-3
Data Processing & Analysis	0	2	2	0.0	0	4	4	0.0	50	-2
<b>Software (Subtotal)</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0.0</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>0.0</b>	<b>29</b>	<b>-5</b>
<b>Total</b>	<b>45,085</b>	<b>5,551</b>	<b>50,636</b>	<b>100.0</b>	<b>35,076</b>	<b>4,514</b>	<b>39,590</b>	<b>100.0</b>	<b>128</b>	<b>11,046</b>

\*1 "General company" in this report means the space industry, and don't include trading companies.

\*2 Import of "Launching Expenditure" in this report means the service to launch a domestic satellite by a foreign rocket.

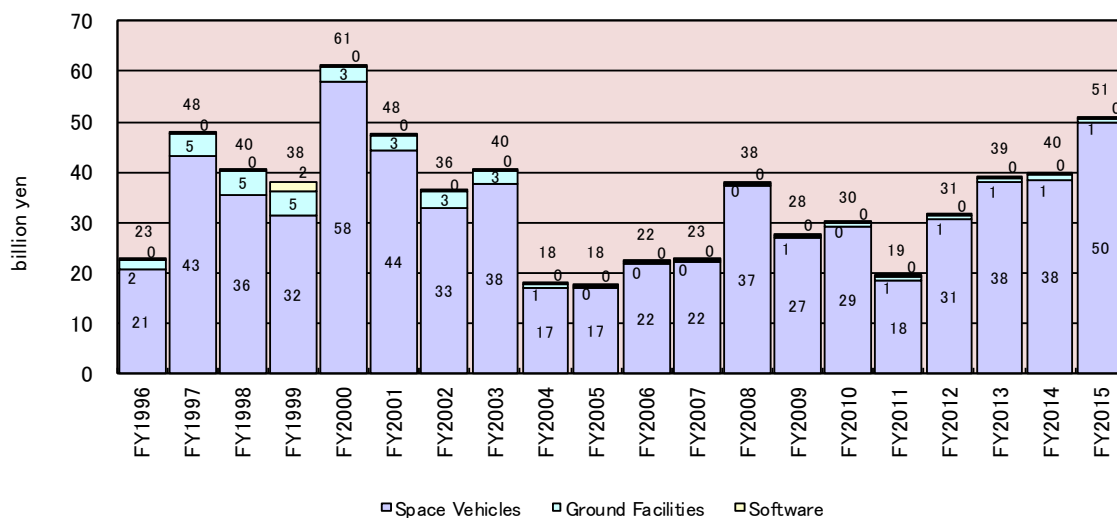
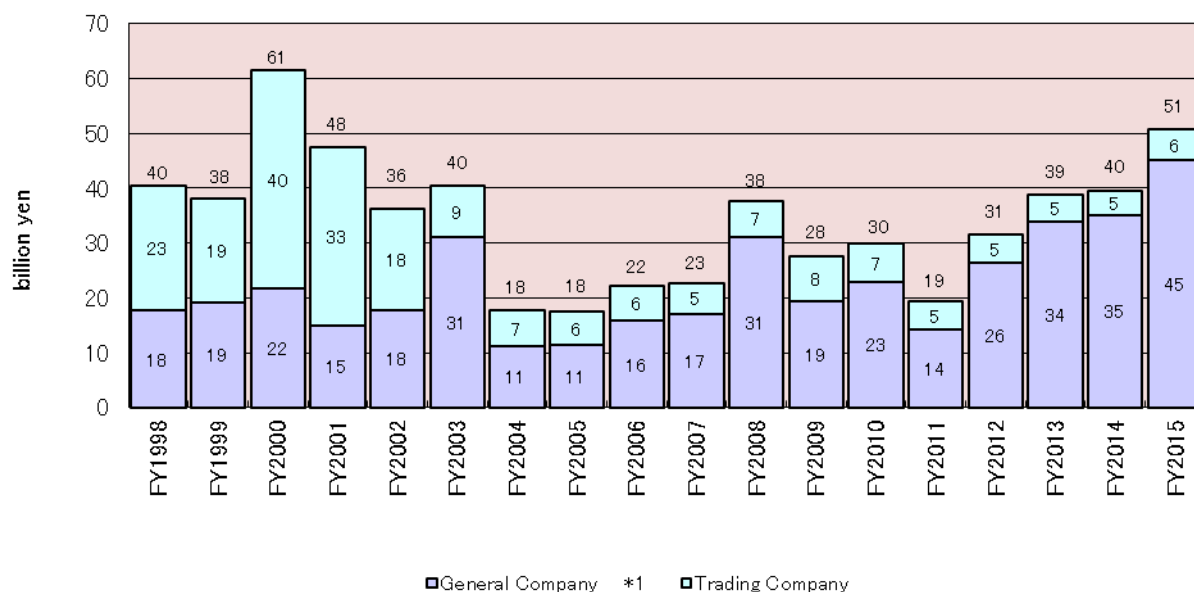


Figure 5.1 Import Trends by Segment



\*1 "General company" in this report means the space industry, and don't include trading companies.

Figure 5.2 Import Trends

**Table 5.1 Import Trends by Segment**

(Unit : Million Yen)

Fiscal Year	Import			Index	Import by Segment		
	General Company *1	Trading Company	Total		Space Vehicles	Ground Facilities	Software
FY1996	—	—	22,597	100	20,553	1,811	233
FY1997	—	—	48,010	212	43,241	4,518	251
FY1998	17,696	22,777	40,473	179	35,508	4,812	153
FY1999	19,114	19,042	38,156	169	31,538	4,528	2,090
FY2000	21,686	39,734	61,420	272	57,965	3,075	380
FY2001	14,906	32,632	47,538	210	44,396	2,877	265
FY2002	17,764	18,388	36,152	160	32,973	3,121	58
FY2003	30,978	9,438	40,416	179	37,558	2,822	36
FY2004	11,164	6,590	17,754	79	16,846	808	100
FY2005	11,409	6,118	17,527	78	17,098	335	94
FY2006	15,770	6,388	22,158	98	21,772	315	71
FY2007	17,117	5,495	22,612	100	22,249	362	1
FY2008	31,164	6,574	37,738	167	37,427	309	2
FY2009	19,278	8,398	27,676	122	26,879	604	193
FY2010	22,864	7,012	29,876	132	29,312	483	81
FY2011	14,323	4,975	19,298	85	18,436	834	28
FY2012	26,443	5,004	31,447	139	30,505	895	47
FY2013	33,865	4,906	38,771	172	37,992	772	7
FY2014	35,076	4,514	39,590	175	38,370	1,213	7
FY2015	45,085	5,551	50,636	224	49,994	640	2

\*1 “General company” in this report means the space industry, and don’t include trading companies.

\*2 “—” indicates SJAC has no data.



In terms of region, as shown in Figures. 5.3, 5.4 and Table 5.2, imports from North America and Europe formed almost 100% of the total imports.

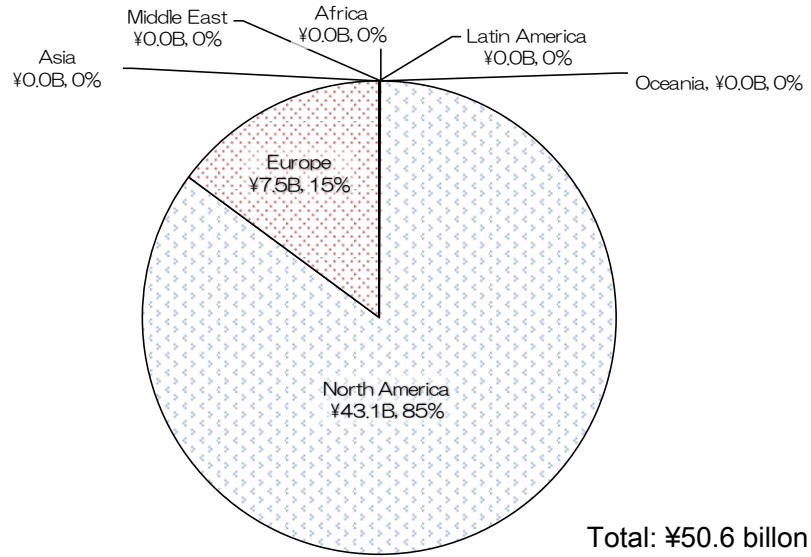
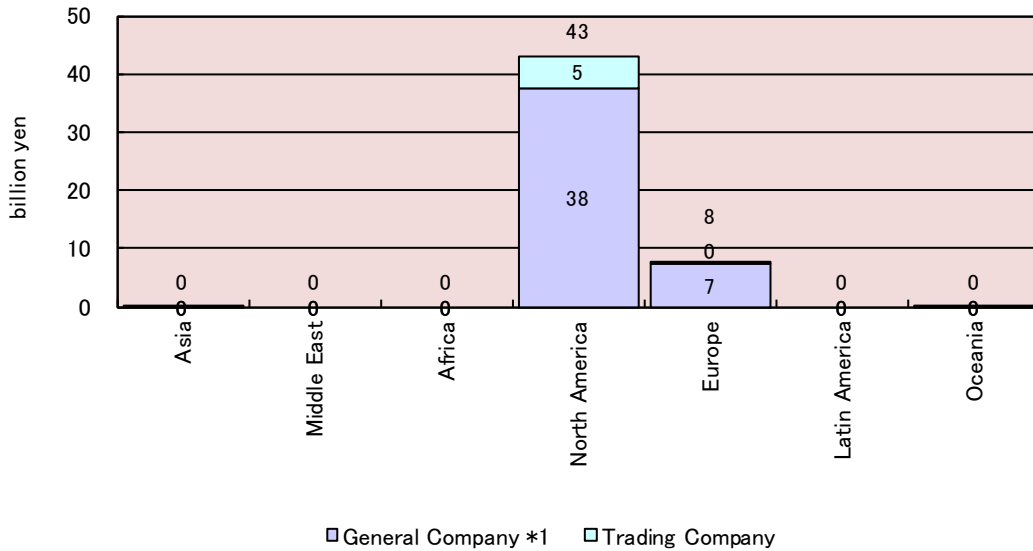


Figure. 5.3 Imports by Region



\*1 “General company” in this report means the space industry, and don’t include trading companies.

Figure 5.4 Import Breakdown by Region

**Table 5.2 Import by Region**

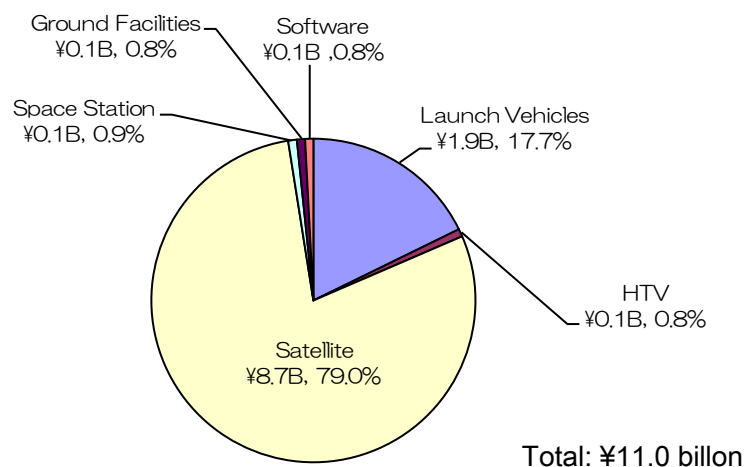
(Unit : Million Yen)

Destination	FY2015				FY2014				(A)/(B) (%)	(A)-(B)
	Import			Percentage (%)	Import			Percentage (%)		
	General Company *1	Trading Company	Total (A)		General Company *1	Trading Company	Total (B)			
Asia	40	0	40	0.1	37	0	37	0.1	108	3
Middle East	0	0	0	0.0	0	0	0	0.0	0	0
Africa	0	0	0	0.0	5	0	5	0.0	0	-5
North America	37,632	5,426	43,058	85.0	28,971	4,506	33,477	84.6	129	9581
Europe	7,400	125	7,525	14.9	6,054	8	6,062	15.3	124	1463
Latin America	0	0	0	0.0	0	0	0	0.0	0	0
Oceania	13	0	13	0.0	9	0	9	0.0	144	4
<b>Total</b>	<b>45,085</b>	<b>5,551</b>	<b>50,636</b>	<b>100.0</b>	<b>35,076</b>	<b>4,514</b>	<b>39,590</b>	<b>100.0</b>	<b>128</b>	<b>11,046</b>

\*1 “General company” in this report means the space industry, and don’t include trading companies.

**(6) R&D Expenses**

As shown in Table 6, research and development expenses increased by ¥2.4 billion (29%) to ¥11.0 billion. The space vehicle segment comprised 98% of total R&D expenses. Within that segment, satellite R&D accounted for 79% of total R&D expenses.

**Figure 6 R&D Expenses by Segment****Table 6 R&D Expenses by Segment**

(Unit : Million Yen)

Segment	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	R&D Budget (A)	Percentage (%)	R&D Budget (B)	Percentage (%)		
Launch Vehicles	1,946	17.7	1,004	11.8	194	942
HTV	84	0.8	93	1.1	90	-9
Satellite	8,662	79.0	7,117	83.4	122	1,545
Space Station	95	0.9	107	1.3	89	-12
Space Vehicles (Subtotal)	10,787	98.4	8,321	97.5	130	2,466
Ground Facilities	89	0.8	63	0.7	141	26
Software	90	0.8	147	1.7	61	-57
<b>Total</b>	<b>10,966</b>	<b>100.0</b>	<b>8,531</b>	<b>100.0</b>	<b>129</b>	<b>2,435</b>

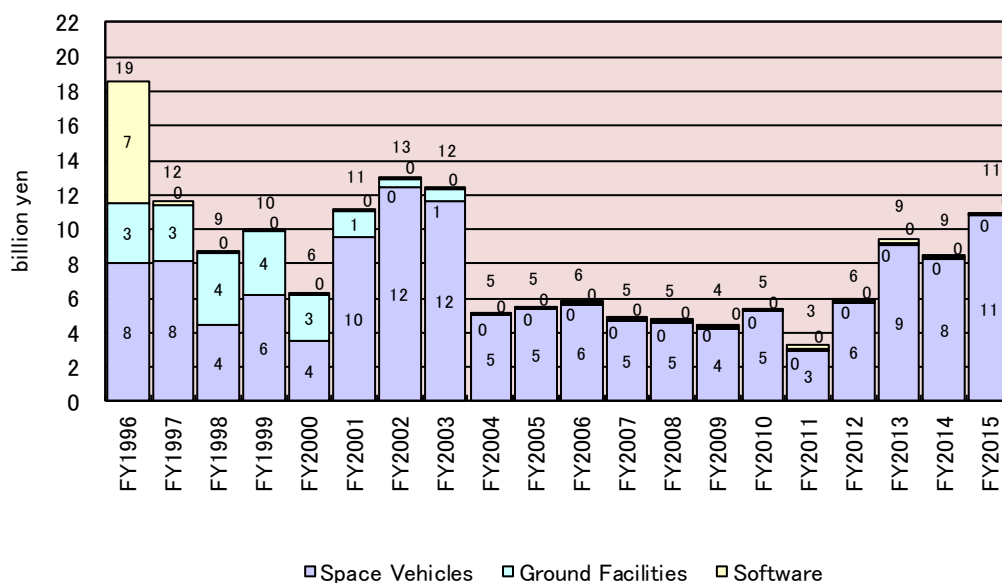


Figure. 6.1 R&D Expense Trends by Segment

Table 6.1 R&D Expenses Trends by Segment

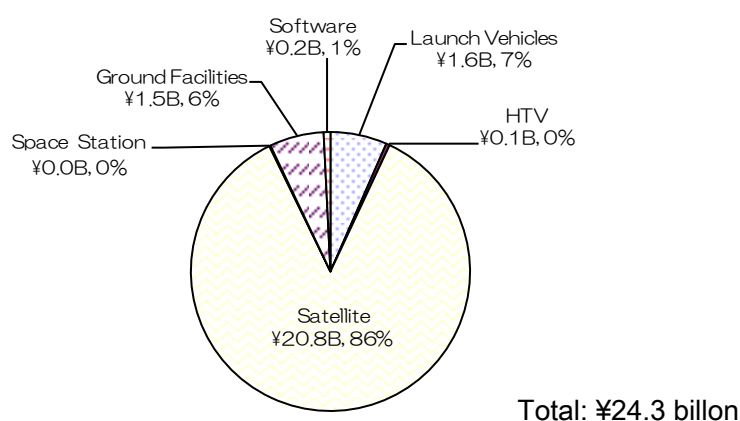
(Unit : Million Yen)

Fiscal Year	R&D Expenses Total	Index	R&D Expenses by Segment		
			Space Vehicles	Ground Facilities	Software
FY1996	18,595	100	8,046	3,492	7,057
FY1997	11,639	63	8,188	3,271	180
FY1998	8,703	47	4,445	4,163	95
FY1999	10,015	54	6,185	3,700	130
FY2000	6,333	34	3,526	2,646	161
FY2001	11,098	60	9,580	1,427	91
FY2002	13,023	70	12,487	395	141
FY2003	12,481	67	11,626	735	120
FY2004	5,143	28	4,990	44	109
FY2005	5,495	30	5,370	58	67
FY2006	5,814	31	5,644	120	50
FY2007	4,843	26	4,743	47	53
FY2008	4,759	26	4,623	99	37
FY2009	4,423	24	4,266	102	55
FY2010	5,325	29	5,212	38	75
FY2011	3,250	17	3,007	86	157
FY2012	5,939	32	5,765	114	60
FY2013	9,411	51	9,076	80	255
FY2014	8,531	46	8,321	63	147
FY2015	10,966	59	10,787	89	90

**(7) Plant and Equipment Investment**

Table 7 shows the value of plant and equipment investment increased by ¥16.3 billion (203%) to ¥24.3 billion. The space vehicle segment accounted for 93% of total investment. Within that segment, satellite investment accounted for 86% of total investment.

The investment of space utilization and operation company was included in the satellite investment, and the increase of this company pushed up the whole.

**Figure 7 Plant and Equipment Investment by Segment****Table 7 Plant and Equipment Investment by Segment**

(Unit : Million Yen)

Segment	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	Capital Budget (A)	Percentage (%)	Capital Budget (B)	Percentage (%)		
Launch Vehicles	1,592	6.6	936	11.7	170	656
HTV	99	0.4	20	0.2	495	79
Satellite	20,846	85.8	4,037	50.4	516	16,809
Space Station	35	0.1	15	0.2	233	20
Space Vehicles (Subtotal)	22,572	92.9	5,008	62.5	451	17,564
Ground Facilities	1,528	6.3	2,444	30.5	63	-916
Software	190	0.8	564	7.0	34	-374
<b>Total</b>	<b>24,290</b>	<b>100.0</b>	<b>8,016</b>	<b>100.0</b>	<b>303</b>	<b>16,274</b>

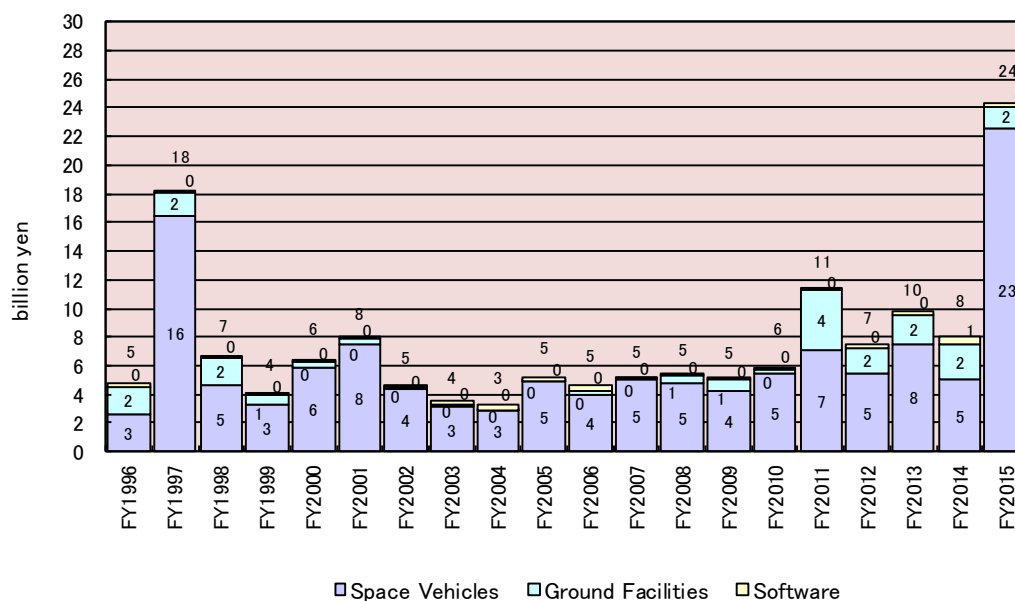


Figure 7.1 Plant and Equipment Investment Trends by Segment

Table 7.1 Plant and Equipment Investment Trends by Segment

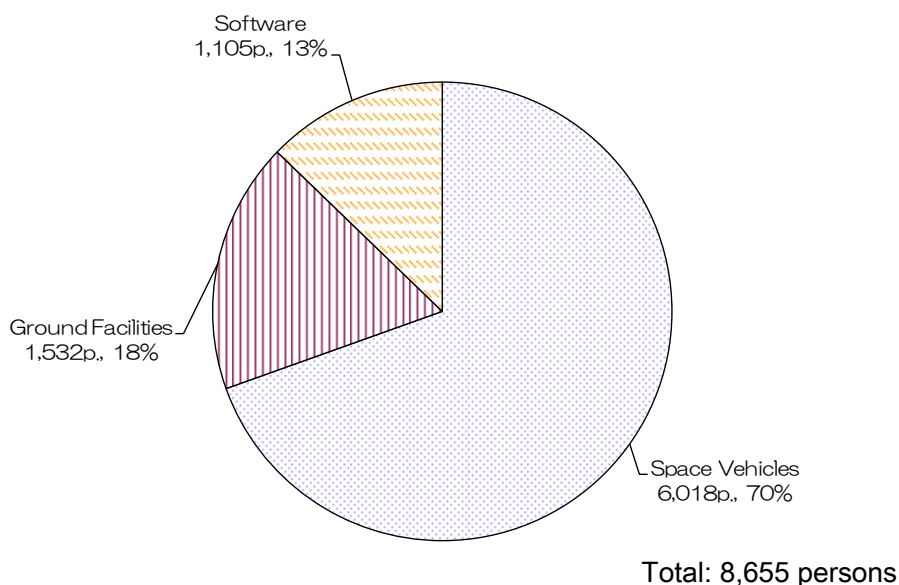
(Unit : Million Yen)

Fiscal Year	Total Investment	Index	Investment by Segment		
			Space Vehicles	Ground Facilities	Software
FY1996	4,828	100	2,614	1,934	280
FY1997	18,268	378	16,465	1,653	150
FY1998	6,717	139	4,620	1,984	113
FY1999	4,087	85	3,257	726	104
FY2000	6,406	133	5,924	351	131
FY2001	7,985	165	7,518	341	126
FY2002	4,565	95	4,401	85	79
FY2003	3,568	74	3,092	143	333
FY2004	3,328	69	2,840	44	444
FY2005	5,189	107	4,862	83	244
FY2006	4,681	97	3,980	295	406
FY2007	5,091	105	5,036	47	8
FY2008	5,381	111	4,749	627	5
FY2009	5,137	106	4,263	799	75
FY2010	5,750	119	5,446	273	31
FY2011	11,253	233	7,063	4,175	15
FY2012	7,440	154	5,445	1,839	156
FY2013	9,820	203	7,552	1,999	269
FY2014	8,016	166	5,008	2,444	564
FY2015	24,290	503	22,572	1,528	190

**(8) Number of Employees**

Table 8 shows that the number of employees at the end of March 2016 increased by 423 persons (5%) from the previous fiscal year to a total of 8,655 persons.

Figure 8.1 and Table 8.1 show the number of employees by work classification.

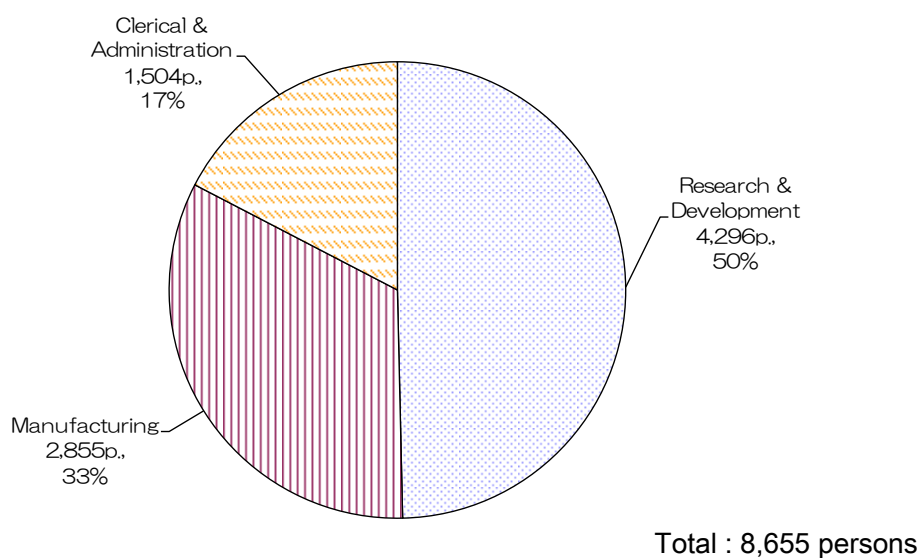


**Figure. 8 Number of Employees by Segment**

**Table 8 Number of Employees by Segment**

(Unit : Persons)

Segment	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	Number of Employee (A)	Percentage (%)	Number of Employee (B)	Percentage (%)		
Launch Vehicles	1,775	20.5	1,468	17.8	121	307
HTV	233	2.7	261	3.2	89	-28
Satellite	3,681	42.5	3,560	43.2	103	121
Space Station	329	3.8	387	4.7	85	-58
Space Vehicles (Subtotal)	6,018	69.5	5,676	69.0	106	342
Ground Facilities	1,532	17.7	1,386	16.8	111	146
Software	1,105	12.8	1,170	14.2	94	-65
<b>Total</b>	<b>8,655</b>	<b>100.0</b>	<b>8,232</b>	<b>100.0</b>	<b>105</b>	<b>423</b>



**Figure 8.1 Number of Employees by Work Classification**

**Table 8.1 Number of Employee by Work Classification**

(Unit : Persons)

Work Classification	FY2015		FY2014		(A)/(B) (%)	(A)-(B)
	Number of Employee (A)	Percentage (%)	Number of Employee (B)	Percentage (%)		
Research & Development	4,296	49.6	4,002	48.6	107	294
Manufacturing	2,855	33.0	2,826	34.3	101	30
Clerical & Administration	1,504	17.4	1,404	17.1	107	100
<b>Total</b>	<b>8,655</b>	<b>100.0</b>	<b>8,232</b>	<b>100.0</b>	<b>105</b>	<b>423</b>



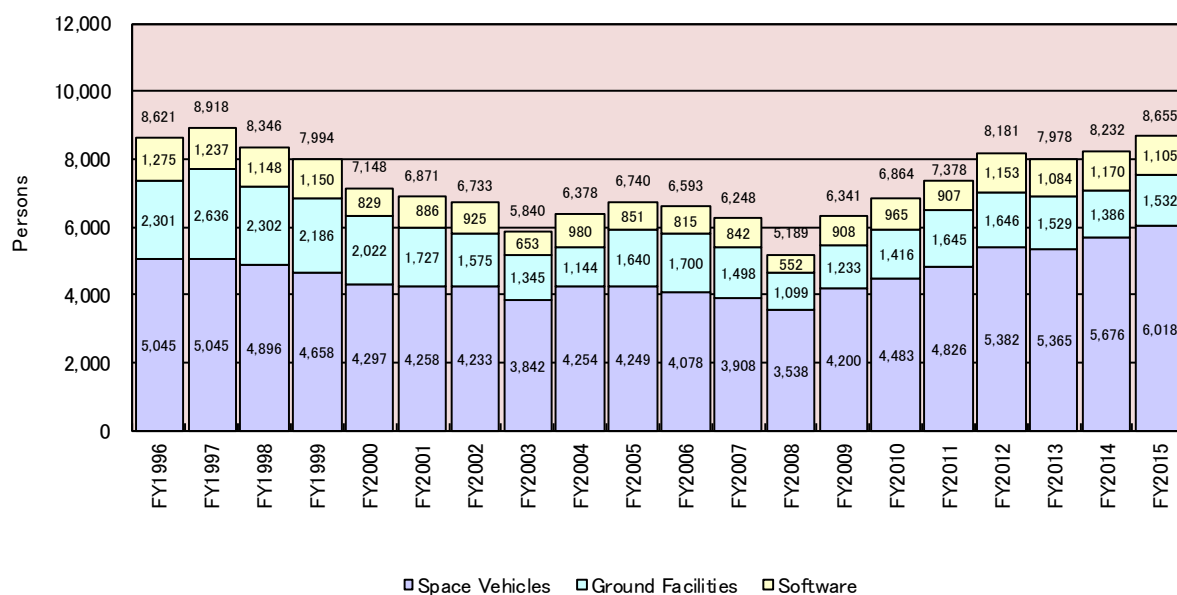


Figure 8.2 Trend in Employee Numbers by Segment

Table 8.2 Trend in Number of Employees by Segment

(Unit : Persons)

Fiscal Year	Total Employee	Index	Employee by Segment		
			Space Vehicles	Ground Facilities	Software
FY1996	8,621	100	5,045	2,301	1,275
FY1997	8,918	103	5,045	2,636	1,237
FY1998	8,346	97	4,896	2,302	1,148
FY1999	7,994	93	4,658	2,186	1,150
FY2000	7,148	83	4,297	2,022	829
FY2001	6,871	80	4,258	1,727	886
FY2002	6,733	78	4,233	1,575	925
FY2003	5,840	68	3,842	1,345	653
FY2004	6,378	74	4,254	1,144	980
FY2005	6,740	78	4,249	1,640	851
FY2006	6,593	76	4,078	1,700	815
FY2007	6,248	72	3,908	1,498	842
FY2008	5,189	60	3,538	1,099	552
FY2009	6,341	74	4,200	1,233	908
FY2010	6,864	80	4,483	1,416	965
FY2011	7,378	86	4,826	1,645	907
FY2012	8,181	95	5,382	1,646	1,153
FY2013	7,978	93	5,365	1,529	1,084
FY2014	8,232	95	5,676	1,386	1,170
FY2015	8,655	100	6,018	1,532	1,105

#### 4. List of Companies Reporting for FY2015

Following tables show 85 companies surveyed for FY2015.

(1/2)

Category	Companies
Space Systems and Equipments (48 companies)	IHI Corporation
	IHI AEROSPACE CO., Ltd.
	Axelspace Corporation
	EAGLE INDUSTRY CO., LTD.
	WEL Research Co.,Ltd
	NEC Space Technologies, Ltd.
	NEC Network Products, Ltd.
	NEC Magnus Communications, Ltd.
	NTN corporation
	Oki Electric Industry Co.,Ltd.
	Kawasaki Heavy Industries,Ltd.
	KOITO MANUFACTURING CO.,LTD
	Kobe Steel,Ltd.
	GS Yuasa Corporation Ltd.
	SHIMADZU CORPORATION
	SHARP CORPORATION
	JAMCO Corporation
	JUPITOR CORPORATION
	SHOWA AIRCRAFT INDUSTRY CO.,LTD
	Sinfonia Technology Co., Ltd.
	Sumitomo Heavy Industries, Ltd.
	Sumitomo Precision Products Co., Ltd.
	SUMITOMO ELECTRIC DEVICE INNOVATIONS, INC
	TAMAGAWA SEIKI CO.,Ltd
	CHIYODA CORPORATION
	Chubu Nihon Maruko Co., LTD.
	Churyo Engineering Co.,Ltd.
	Nagano Japan Radio Co.,Ltd.
	Nikon Corporation
	Nippon Avionics Co.,LTD
	Japan Aviation Electronics Industry, Limited
	NEC Corporation
	High-Reliability Engineering & Components Corporation
	HARADASEIKI Co.,LTD.
	Hitachi, Ltd.
	FUJI HEAVY INDUSTRIES,LTD.
	Fujitsu Limited
	FURUNO ELECTRIC CO.,LTD
	HODEN SEIMITSU KAKO KENKYUSHO CO.,LTD.
	Mitsubishi Heavy Industries,Ltd.
	Mitsubishi Electric Corporation
	Mitsubishi Electric TOKKI Systems Corporation
	Mitsubishi Precision Co., LTD.
	MEISEI ELECTRIC CO., LTD.
	MEIRA Corporation
	Yokogawa Electric Corporation
	Yokogawa Denshikiki Co.,Ltd.
	RYODEN SHONAN ELECTRONICS CORPORATION

(2/2)

Category	Companies
Materials, Chemicals (12 companies)	IWATANI CORPORATION
	SAKURA RUBBER CO., LTD.
	SOGO SPRING MFG CO.,LTD.
	Toray Industries, Inc.
	NOF CORPORATION
	Air Liquide Japan
	NSK Ltd.
	NGK SPARK PLUG CO., LTD.
	FUJIWARA CO.LTD
	MITSUBISHI CABLE INDUSTRIES,LTD.
	UACJ Corporation
	THE YOKOHAMA RUBBER CO.,LTD
Trading Firm (8 companies)	ITOCHU Corporation
	Sumitomo Corporation
	Sojitz Aerospace Corporation
	Nippon Aircraft Supply Co.,Ltd.
	MARUBUN CORPORATION
	Marubeni Aerospace Corporation
	MIKUNI CORPORATION
	Mitsubishi Corporation
Information Services, Software, Research (6 companies)	Keyware Solutions Inc.
	CSP Japan, Inc.
	DAIKO DENSHI TSUSHIN, LTD.
	TIS Solution Link Inc.
	NEC Aerospace Systems,Ltd
	Mitsubishi Space Software Co., Ltd.
Construction (4 companies)	Kajima Corporation
	Kyudenko Corporation
	COSMOTEC Co.,Ltd
	SHIMIZU CORPORATION
Space Utilization and Operation (7 companies)	Space Engineering Development Co.,Ltd
	SKY Perfect JSAT Corporation
	Japan Space Imaging Corporation
	PASCO Corporation
	Broadcasting Satellite System Corporation
	Japan Manned Space Systems Corporation
	REMOTE SENSING TECHNOLOGY CENTER OF JAPAN