

**Market Forecast Report
Semiconductor and FPD Manufacturing Equipment
Released in January 2021
(Fiscal years 2020-2022)**

January 14, 2021

SEAJ

Semiconductor Equipment Association of Japan

Overview

This report provides trend forecasts for semiconductor and FPD manufacturing equipment. The comprehensive results included in this forecast report are based on demand forecasts by the Semiconductor Research and Statistics subcommittee and the FPD Research and Statistics subcommittee of the Semiconductor Equipment Association of Japan (hereinafter called SEAJ, Chairman: Mr. Kazuo Ushida) as well as market trend research by the 20 companies represented on the Board of Directors and auditors.

Although the production of consumer electronic devices and automotive-related equipment declined due to the effects of the spread of novel coronavirus ("COVID-19"), we assume the semiconductor market will grow steadily, backed by the strong demand of data traffics caused by the rapid increase in data traffic volume and seamless advancement in investments for global penetration of 5G communications, and forecast sales of semiconductor manufacturing equipment made in Japan for fiscal 2020 to be 2.33 trillion yen, an increase of 12.4% from the previous year. For fiscal 2021, we forecast sales of 2.5 trillion yen, an increase of 7.3%, expecting the investment level to be maintained in foundries and memory investments to recover. For fiscal 2022, we forecast sales of 2.63 trillion yen, an increase of 5.2%.

As far as FPD manufacturing equipment is concerned, considering the effects of local launch arrangements that became difficult due to prolonged restrictions on overseas travel, we forecast sales of 420 billion yen, a decrease of 11.7%, for fiscal 2020. For fiscal 2021, we forecast sales of 400 billion yen, a decrease of 4.8%, taking into consideration that G10.5 LCD investments would finish their first round. For fiscal 2022, expecting investments for new technologies to recover, we forecast sales of 430 billion yen, an increase of 7.5%.

- (1) Forecast period Three years from fiscal year 2020 to 2022
- (2) Forecast items Sales of Japanese-made semiconductor manufacturing equipment
 and sales for the Japanese market
 Sales of Japanese-made FPD manufacturing equipment
- (3) Forecast background

(Semiconductor Manufacturing Equipment)

As for applications that consume semiconductors, a significant decrease was originally predicted in consumer products such as smartphones as well as automotive and industrial equipment. Although the largest smartphone manufacturer in China decreased the production volume significantly partially because of the U.S.-China trade war, the second top and subsequent companies turned it into an opportunity and increased their productions, resulting in the whole influence to be lower than the original forecast. For fiscal 2021, all new devices would be launched from each company and the coverage would also expand, we expect that the penetration rate of 5G communications in advanced countries will increase rapidly.

The use of teleworking in business activities gained a foothold permanently—not just a transient phenomenon during the time of COVID-19 infection spread—and is advancing on a daily basis. Data traffic volume including videos has increased tremendously due to the increased demand for staying at home, based on which we expect a continued dramatic increase in demand related to data centers.

Excellence in initiatives for digital transformation (DX) will affect the future competitive strength of each company and requires people to change their behavior patterns and work styles. The global reemergence of carbon neutrality is expected to accelerate the shift to electric vehicles, and together with the practical application of Level 4/5 automated driving in the future, it is expected to bring about major technological innovations.

According to WSTS's announcement in December, the global semiconductor market's growth rate is expected to grow 5.1% in 2020. Memory, which declined due to a decrease in memory prices in 2019, is forecast to return to a growth trajectory with 12.2% growth in 2020 and 13.3% growth in 2021. WSTS predicted an increase to 8.4% in the overall semiconductor market in 2021, breaking the record high set in 2018.

As for capital investments, active investments by logic foundries since 2019 remained high in 2020, and China increased its presence as a market region. For 2021, we expect memory investments in both NAND Flash and DRAMs to recover, looking toward a further increase in demand for data centers. Despite the uncertainty in the short-term forecast such as impositions of various restrictions caused by the U.S.-China trade war and the postponement of miniaturization by major logic manufacturers, we predict mid- and long-term growth prospects will not change.

(FPD Manufacturing Equipment)

The spread of COVID-19 infections created a market shortage of IT panels, which are used for computers, tablets, and monitors, and increased their operating rates rapidly. Panel prices also increased, and the operating profit ratio of major panel manufacturers has shifted to a recovery trend since bottoming out in 2020 Q1 (January to March). Although manufacturers mainly in South Korea originally had a plan to suspend operation of existing lines for LCDs for TVs—attempting to divert the lines for panels using new technologies—they have postponed the plans.

As for capital investments in 2020, the impact of restrictions on overseas travel was significant, and sales were extremely sluggish through the first three quarters (January to September) of 2020 due to the continued inability to launch major equipment locally in full swing. Currently, sales are starting to recover due to the gradual lifting of the travel restrictions, but the sliding impact on the next term will be significant.

For fiscal 2021, since the large G10.5 projects have finished their first round, we forecast the overall investment amount to decline drastically. However, there are projects that were

not sales counted or loaded in fiscal 2020, which will reduce the impact. For fiscal 2022, large projects are planned in some areas of China, and we expect new competing product lines to appear due to the emergence of new panel production technologies.

(4) Forecast results

[Sales forecasts for semiconductor/FPD manufacturing equipment and equipment made in Japan]

For fiscal 2020, assuming that sales of semiconductor manufacturing equipment will rise 12.4% and sales of FPD manufacturing equipment will decrease 11.7%, we forecast overall sales of 2.75 trillion yen, an increase of 7.9%. For fiscal 2021, semiconductors are expected to continue to grow by 7.3%, although FPD would fall a little, we forecast overall sales of 2.9 trillion yen, an increase of 5.5%. For fiscal 2022, we forecast overall sales of 3.06 trillion yen, an increase of 5.5%, which would be the first time for sales to hit the 3 trillion yen mark since SEAJ started keeping these statistics.

[Sales forecasts for semiconductor manufacturing equipment and equipment made in Japan]

For fiscal 2020, as firm logic and foundry investments in the first half would be followed by recovery of memory in the latter half, we forecast sales of 2.33 trillion yen, an increase of 12.4% from the previous year. For fiscal 2021, expecting a further increase in investment amounts, we forecast sales of 2.5 trillion yen, an increase of 7.3%, and for fiscal 2022, expecting the growth rate to become stable, we forecast sales of 2.63 trillion yen, an increase of 5.2%.

[Sales forecasts for semiconductor manufacturing equipment and the Japanese market]

For fiscal 2020, because of the recovery of major memory manufacturers, which had reduced investments in fiscal 2019, we forecast sales of 819.1 billion yen, an increase of 17.7%. For fiscal 2021, backed by the increase in demands for image sensors and memory, we forecast sales of 856.2 billion yen, an increase of 4.5%. For fiscal 2022, anticipating solid growth, we forecast sales of 895.2 billion yen, an increase of 4.6%.

[Sales forecasts for FPD manufacturing equipment and equipment made in Japan]

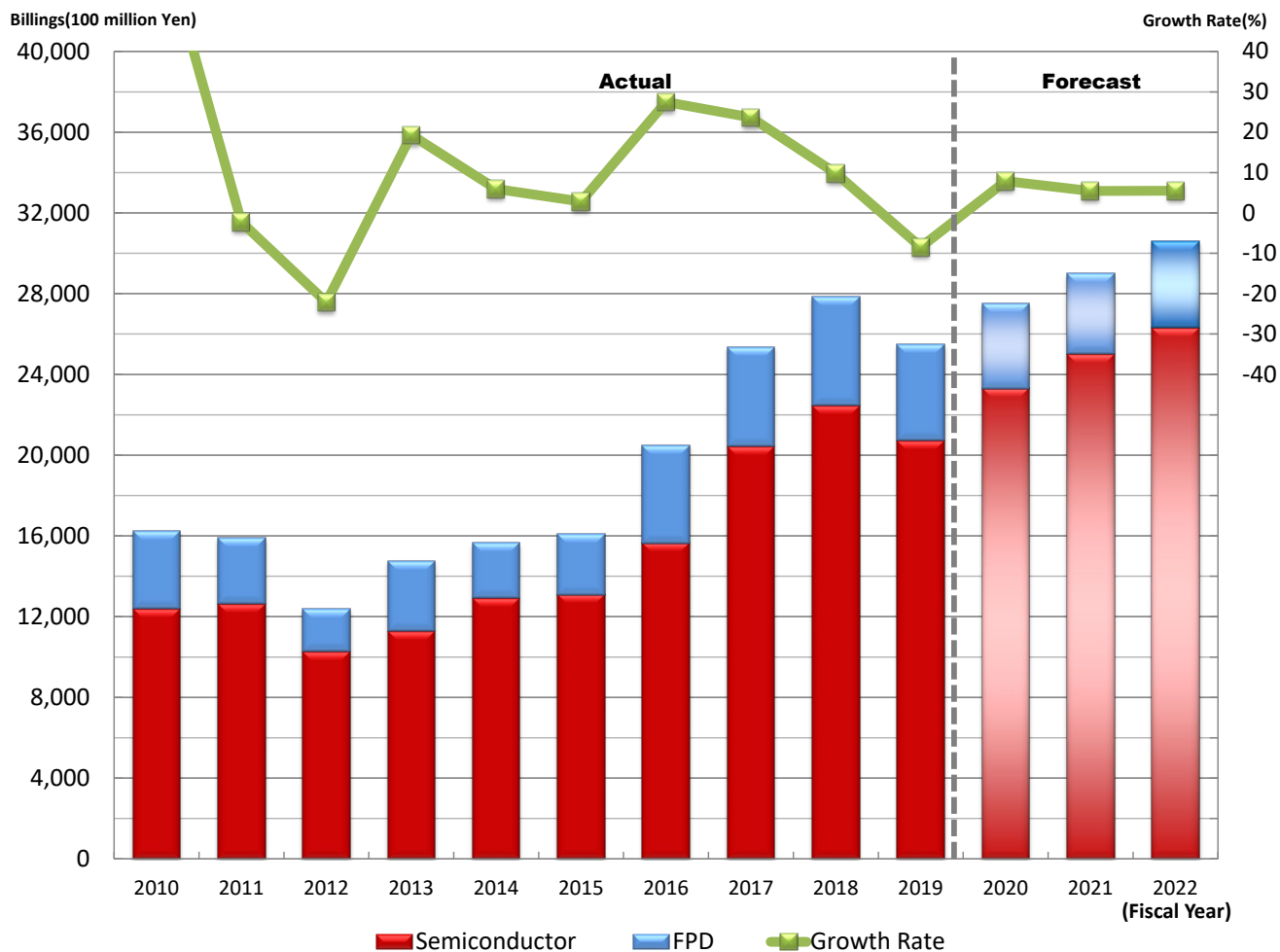
For fiscal 2020, we forecast sales of 420 billion yen, a decrease of 11.7%, due to the impact of the overseas travel restrictions. For fiscal 2021, we forecast sales of 400 billion yen, a decrease of 4.8% because G10.5 LCD investments would finish their first round and fall into a trough in demand. For fiscal 2022, expecting additional investments in the use of new technologies, we forecast sales of 430 billion yen, an increase of 7.5%.

January 2021 Forecast for Semiconductor and FPD Manufacturing Equipment

■ 1. Semiconductor and FPD Manufacturing Equipment

【Forecast for Japanese Equipment Billing】

* "Japanese Equipment Billing " = Japanese manufacturers Domestic and Oversea Billing.



(CAGR : 2019-2022)

Fiscal Year	Actual										Forecast			CAGR
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Semiconductor	12,415	12,637	10,284	11,278	12,921	13,089	15,642	20,436	22,479	20,730	23,300	25,000	26,300	6.3%
FPD	3,840	3,250	2,089	3,485	2,717	2,993	4,857	4,916	5,364	4,758	4,200	4,000	4,300	
Total (100 million yen)	16,255	15,887	12,373	14,763	15,638	16,082	20,499	25,352	27,843	25,488	27,500	29,000	30,600	
Growth Rate (%)	72.7	-2.3	-22.1	19.3	5.9	2.8	27.5	23.7	9.8	-8.5	7.9	5.5	5.5	

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* FPD statistics participating companies have changed since FY2019.

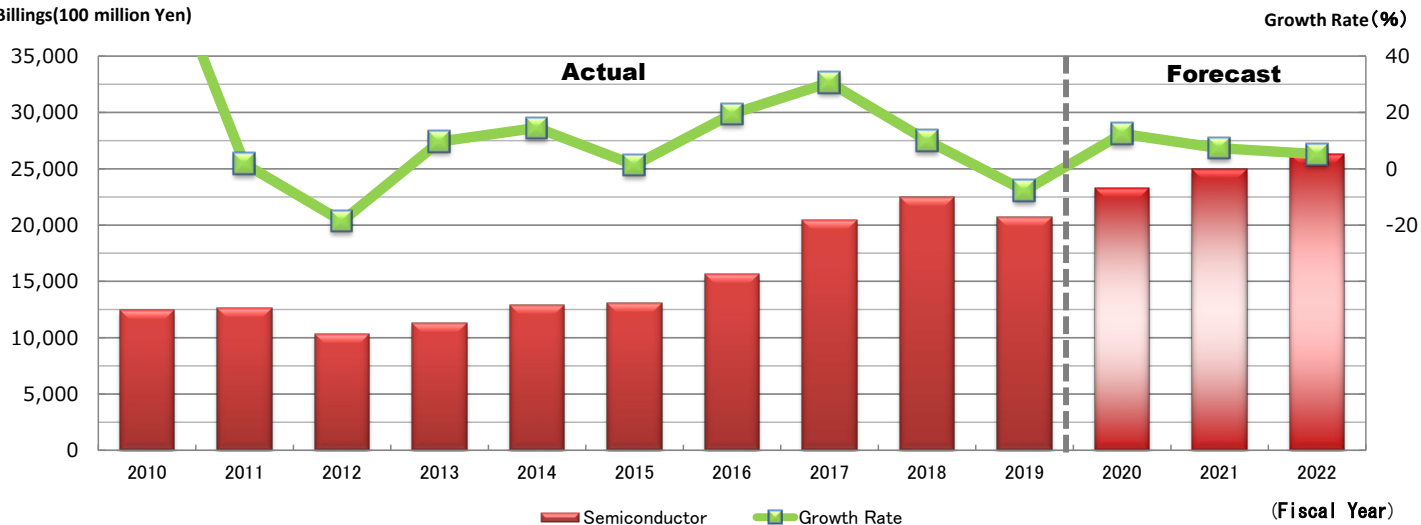
* The names and amounts of the companies participating in the statistics are not disclosed.

January 2021 Forecast for Semiconductor and FPD Manufacturing Equipment

■ 2. Semiconductor Manufacturing Equipment 【Forecast for Japanese Equipment Billing】

* "Japanese Equipment Billing" = Japanese manufacturers Domestic and Oversea Billing.

Billings(100 million Yen)



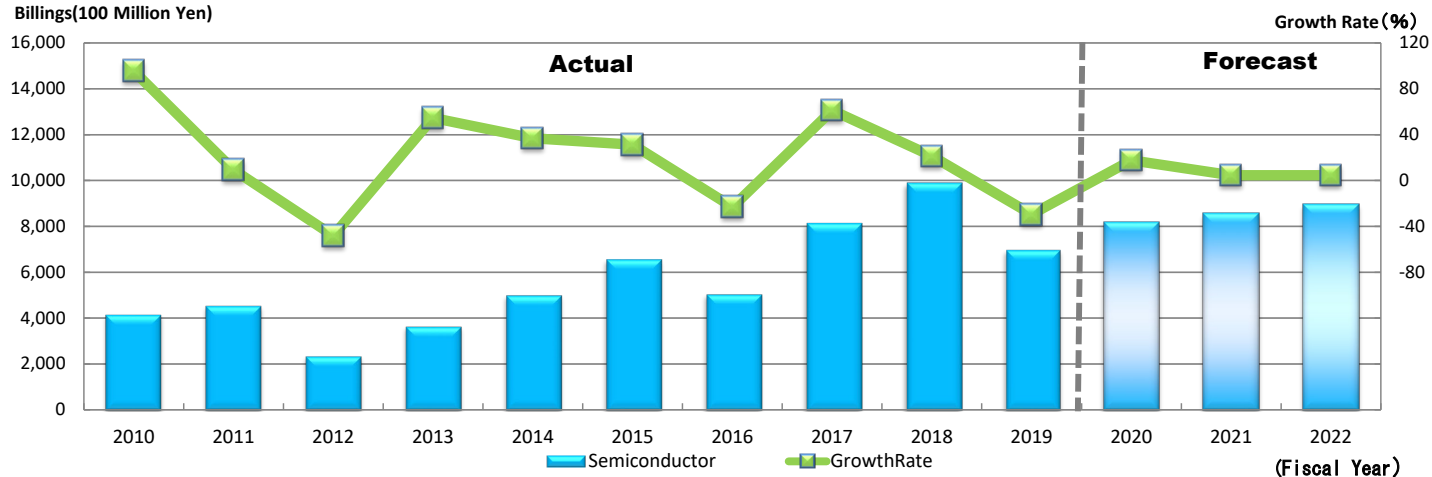
(CAGR : 2019-2022)

Fiscal Year	Actual										Forecast			CAGR
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Total (100 million yen)	12,415	12,637	10,284	11,278	12,921	13,089	15,642	20,436	22,479	20,730	23,300	25,000	26,300	8.3%
Growth Rate (%)	90.2	1.8	-18.6	9.7	14.6	1.3	19.5	30.6	10.0	-7.8	12.4	7.3	5.2	

【Forecast for Japanese Market Billing】

* "Japanese Market Billing" = Domestic Billing of Japanese and Foreign manufacturers.

Billings(100 Million Yen)



(CAGR : 2019-2022)

Fiscal Year	Actual										Forecast			CAGR
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Total (100 million yen)	4,162	4,552	2,363	3,653	5,000	6,562	5,047	8,138	9,878	6,961	8,191	8,562	8,952	8.7%
Growth Rate (%)	95.4	9.4	-48.1	54.6	36.9	31.2	-23.1	61.3	21.4	-29.5	17.7	4.5	4.6	

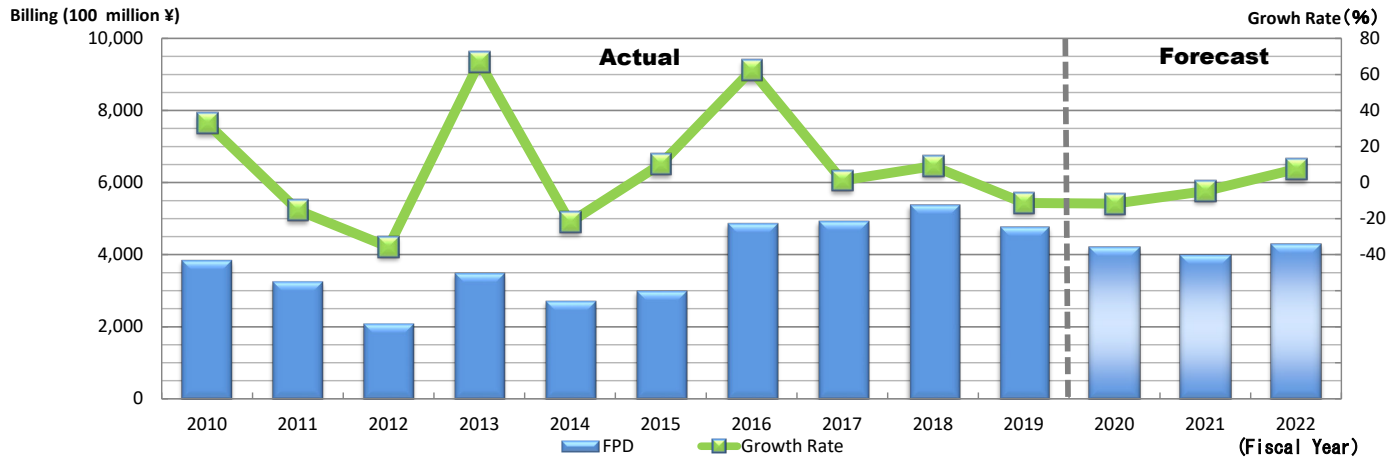
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January 2021 Forecast for Semiconductor and FPD Manufacturing Equipment

■ 3. FPD Manufacturing Equipment

【Forecast for Japanese Equipment Billing】

* "Japanese Equipment Billing " = Japanese manufacturers Domestic and Oversea Billing.



Fiscal Year	Actual										Forecast			CAGR
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Total (100 million yen)	3,840	3,250	2,089	3,485	2,717	2,993	4,857	4,916	5,364	4,758	4,200	4,000	4,300	
Growth Rate (%)	33.0	-15.4	-35.7	66.8	-22.0	10.2	62.3	1.2	9.1	-11.3	-11.7	-4.8	7.5	-3.3%

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