

**Market Forecast Report**  
**Semiconductor and FPD Manufacturing Equipment**  
**Released in January 2020**  
**(Fiscal years 2019–2021)**

**January 9, 2020**

**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: Kazuo Ushida) as well as market trend research by the 20 companies represented on the Board of Directors and auditors.

Considering that the performance of logic and foundry investments was better than forecast, although the slowdown trend in memory investments continues, we forecast sales of made-in-Japan semiconductor manufacturing equipment for fiscal 2019 to be 2.0658 trillion yen, a decrease of 8.1% from the previous year, upward by 2.9 percentage points from the previous forecast. For fiscal 2020, because memory investments are expected to recover, we forecast sales of 2.2311 trillion yen, an increase of 8.0%. For fiscal 2021, assuming double-digit growth in the sector, we forecast sales of 2.4988 trillion yen, an increase of 12.0%.

As far as FPD manufacturing equipment is concerned, China accounts for almost 80% of investments in both G6 substrate OLED (organic EL) and G10.5 substrate LCDs. For fiscal 2019, we forecast sales of 500.0 billion yen, a decrease of 6.8%, partly because delivery is postponed in some G10.5 investments. For fiscal 2020, we forecast sales of 520.0 billion yen, an increase of 4.0%. For fiscal 2021, we forecast sales of 510.1 billion yen, a decrease of 1.9%.

- (1) Forecast period                      Three years from fiscal year 2019 to 2021
- (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**

In its October announcement, the IMF revised the global economic growth rate in 2019, which it had published in July, downward by 0.2 percentage points, to an increase of 3.0%, which is a decrease of 0.6 percentage points from the results in 2018. The world economy is forecast to recover in 2020, registering 3.4% growth, and continue to grow and recover at a rate of 3.6%, which is the same level as in 2018, in 2021.

In 2019, as for driving semiconductor consumption, demand related to data centers and PCs is forecast to be sluggish partially because of insufficient or delayed supply of CPUs, and shipment of smartphones is also forecast to decrease for the second straight year. Since 2020 is the year when 5G mobile communications start to penetrate at full scale, data center demand is also expected to recover. We forecast that semiconductor demand will no longer depend heavily on the volume of shipments of electrical equipment as before but will expand along with the expansion of applications including 5G, AI, IoT, and automatic driving.

According to its December announcement, WSTS predicted that in 2019, the global semiconductor market would fall 12.8%. In particular, the memory market is expected to fall drastically by 33% because memory price has continued to fall for a long time. In 2020, memory sales are expected to turn into an increase, boosting the global semiconductor market to sound growth by registering an overall increase of 5.9%.

In 2019, although capital investments for both DRAM and 3D-NAND were sluggish, because logic manufacturers and foundries increased investment amounts in plants and equipment, overall capital investments turned into a slight increase from the July forecast. In 2020, logic manufacturers and foundries will continue to invest steadily in plants and equipment, and memory investments are expected to recover in the second half of the year and onwards.

## **FPD Manufacturing Equipment**

Investments in both G6 substrate small- to mid-size OLED panels and G10.5 substrate and other large-size LCD panels are concentrated in China. Results for fiscal 2018 show that China accounted for 78% of total investments in both markets, and 76% in 2019 Q3 (July to September).

The operating profit ratio of major panel manufacturers in South Korea, Taiwan, and Japan has continued to fall since it peaked in 2017 Q2; in 2019 Q3 (July to September), all manufacturers except a single South Korean manufacturer posted an operating loss. If G10.5 LCD investments are made in China as planned, the overall production capacity will become enormous, prompting manufacturers in other countries to avoid a head-on fight, suspend operation of existing lines, and divert them to new technology such as QD-OLED. Though investment plans for 2021 onward have not been announced yet and are unclear, the important point is to distinguish G10.5 LCDs from existing displays from a technological aspect. Technological selections will increase depending on manufacturers' business policies in China and other countries, and demand fluctuation factors will become more severe as investment amounts. However, those can positively be considered as new business opportunities for advanced equipment manufacturers.

### (4) Forecast results

#### *Sales forecasts for semiconductor/FPD manufacturing equipment and equipment made in Japan*

For fiscal 2019, assuming that the sales of semiconductor manufacturing equipment will fall 8.1% and sales of FPD manufacturing equipment will drop 6.8%, we forecast overall sales of 2.5658 trillion yen, a decrease of 7.8%. For fiscal 2020, as both semiconductor and FPD investments are expected to recover gradually, we forecast overall sales of 2.7511 trillion yen, an increase of 7.2%. For fiscal 2021, though the FPD industry is still unclear, with the expectation that the semiconductor industry will return to its original growth track, we forecast overall sales of 3.0089 trillion yen, an increase of 9.4%. This amount is an all-time high, greater than that in fiscal 2018, 2.7843 trillion yen.

#### *Sales forecasts for semiconductor manufacturing equipment and equipment made in Japan*

For fiscal 2019, though investments by memory manufacturers remain sluggish, considering the good performance of logic manufacturers and foundries, we forecast sales of 2.0658 trillion yen, a decrease of 8.1% from the previous year. For fiscal 2020, expecting memory manufacturers' investments to recover, we forecast sales of 2.2311 trillion yen, an increase of 8.0%, and for fiscal 2021, we forecast sales of 2.4988 trillion yen, an increase of 12.0%.

#### *Sales forecasts for semiconductor manufacturing equipment and the Japanese market*

For fiscal 2019, though image sensor investments went strong, since investments by memory manufacturers became worse than expected, we forecast sales of 686.5 billion yen, a decrease of 30.5%. For fiscal 2020, expecting memory investments to recover and image sensor investments to continue, we forecast sales of 902.1 billion yen, an increase of 31.4%. For fiscal 2021, anticipating the same level as in 2020, we forecast sales of 904.8 billion yen, an increase of 0.3%.

#### *Sales forecasts for FPD manufacturing equipment and equipment made in Japan*

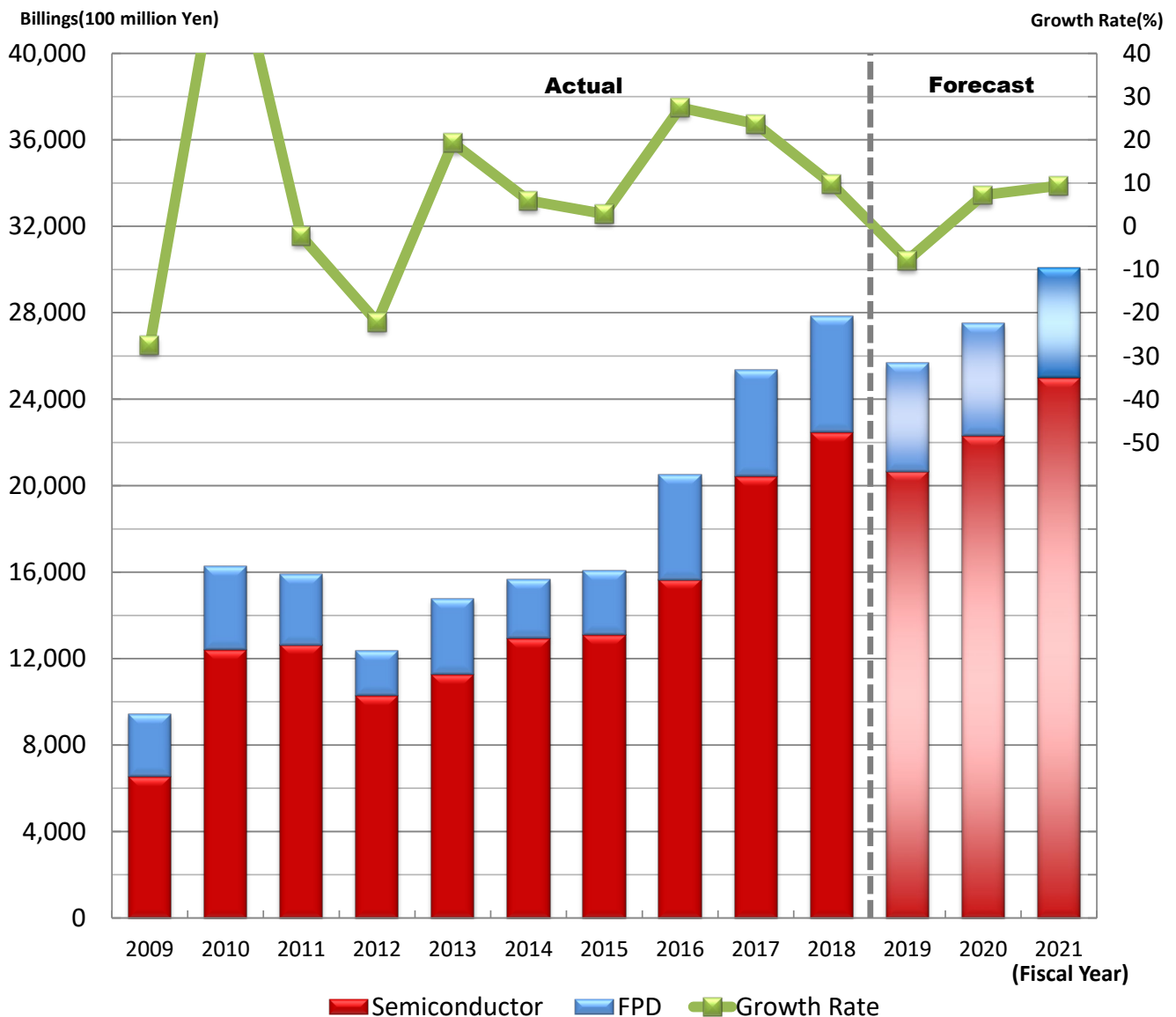
For fiscal 2019, we forecast sales of 500 billion yen, a decrease of 6.8% because there has been a slump in demand affecting G6 substrate OLED investments and postponed delivery is forecast for some G10.5 substrate LCD investments. For fiscal 2020, we forecast sales of 520.0 billion yen, an increase of 4.0%, anticipating the resumption of G6 investments and hitherto postponed G10.5 investments. For fiscal 2021, taking into account unclear investment plans, we forecast sales of 510.1 billion yen, a decrease of 1.9%.

# January 2020 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 : 2018-2021)

| Fiscal Year             | Actual |        |        |        |        |        |        |        |        |        | Forecast |        |        | CAGR |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|
|                         | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019     | 2020   | 2021   |      |
| Semiconductor           | 6,528  | 12,415 | 12,637 | 10,284 | 11,278 | 12,921 | 13,089 | 15,642 | 20,436 | 22,479 | 20,658   | 22,311 | 24,988 | 2.6% |
| FPD                     | 2,887  | 3,840  | 3,250  | 2,089  | 3,485  | 2,717  | 2,993  | 4,857  | 4,916  | 5,364  | 5,000    | 5,200  | 5,101  |      |
| Total (100 million yen) | 9,415  | 16,255 | 15,887 | 12,373 | 14,763 | 15,638 | 16,082 | 20,499 | 25,352 | 27,843 | 25,658   | 27,511 | 30,089 |      |
| Growth Rate (%)         | -27.5  | 72.7   | -2.3   | -22.1  | 19.3   | 5.9    | 2.8    | 27.5   | 23.7   | 9.8    | -7.8     | 7.2    | 9.4    |      |

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\* FPD statistics participating companies have changed since FY2019.

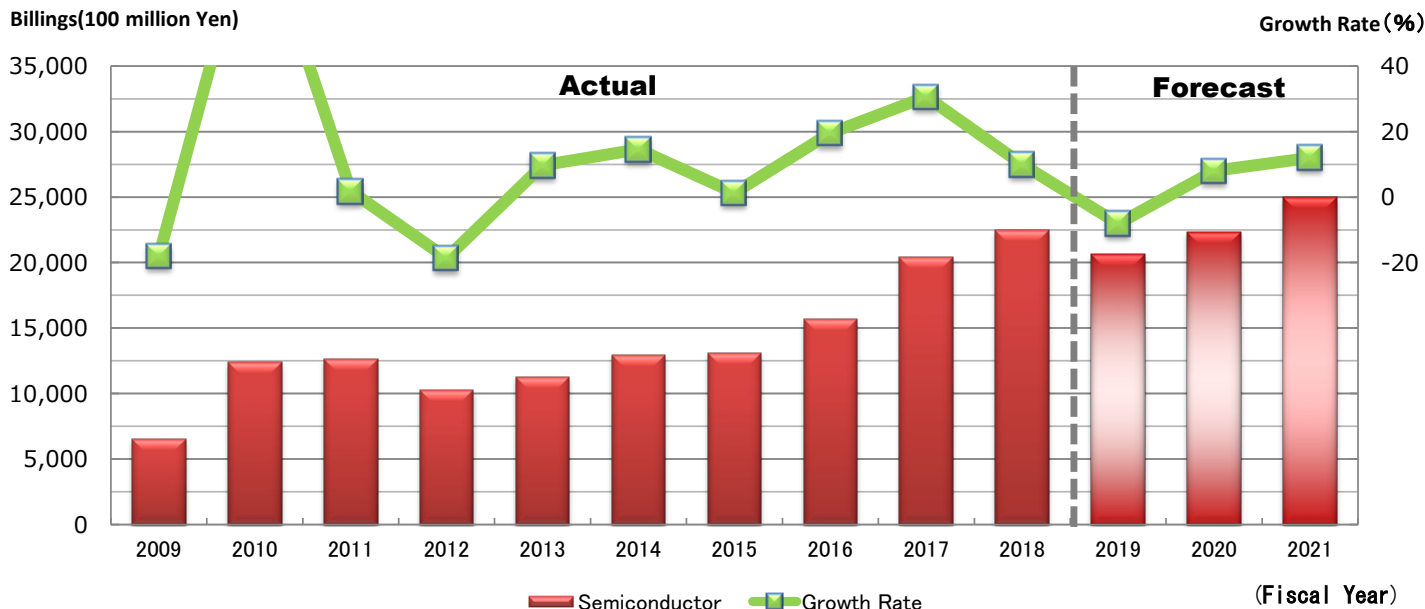
\* The names and amounts of the companies participating in the statistics are not disclosed.

# January 2020 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)



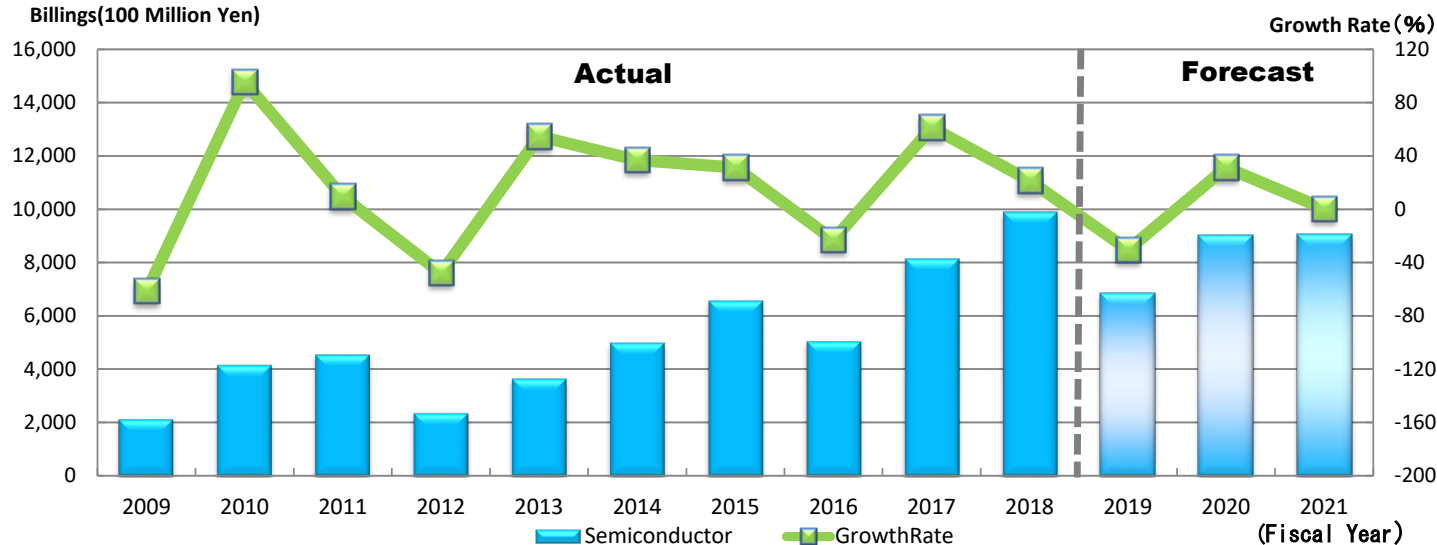
(CAGR : 2018-2021)

| Fiscal Year             | Actual |        |        |        |        |        |        |        |        |        | Forecast |        |        | CAGR |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|
|                         | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019     | 2020   | 2021   |      |
| Total (100 million yen) | 6,528  | 12,415 | 12,637 | 10,284 | 11,278 | 12,921 | 13,089 | 15,642 | 20,436 | 22,479 | 20,658   | 22,311 | 24,988 |      |
| Growth Rate (%)         | -17.9  | 90.2   | 1.8    | -18.6  | 9.7    | 14.6   | 1.3    | 19.5   | 30.6   | 10.0   | -8.1     | 8.0    | 12.0   | 3.6% |

## 【Forecast for Japanese Market Billing】

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

Billings(100 Million Yen)



(CAGR : 2018-2021)

| Fiscal Year             | Actual |       |       |       |       |       |       |       |       |       | Forecast |       |       | CAGR  |
|-------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|
|                         | 2009   | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019     | 2020  | 2021  |       |
| Total (100 million yen) | 2,130  | 4,162 | 4,552 | 2,363 | 3,653 | 5,000 | 6,562 | 5,047 | 8,138 | 9,878 | 6,865    | 9,021 | 9,048 |       |
| Growth Rate (%)         | -61.7  | 95.4  | 9.4   | -48.1 | 54.6  | 36.9  | 31.2  | -23.1 | 61.3  | 21.4  | -30.5    | 31.4  | 0.3   | -2.9% |

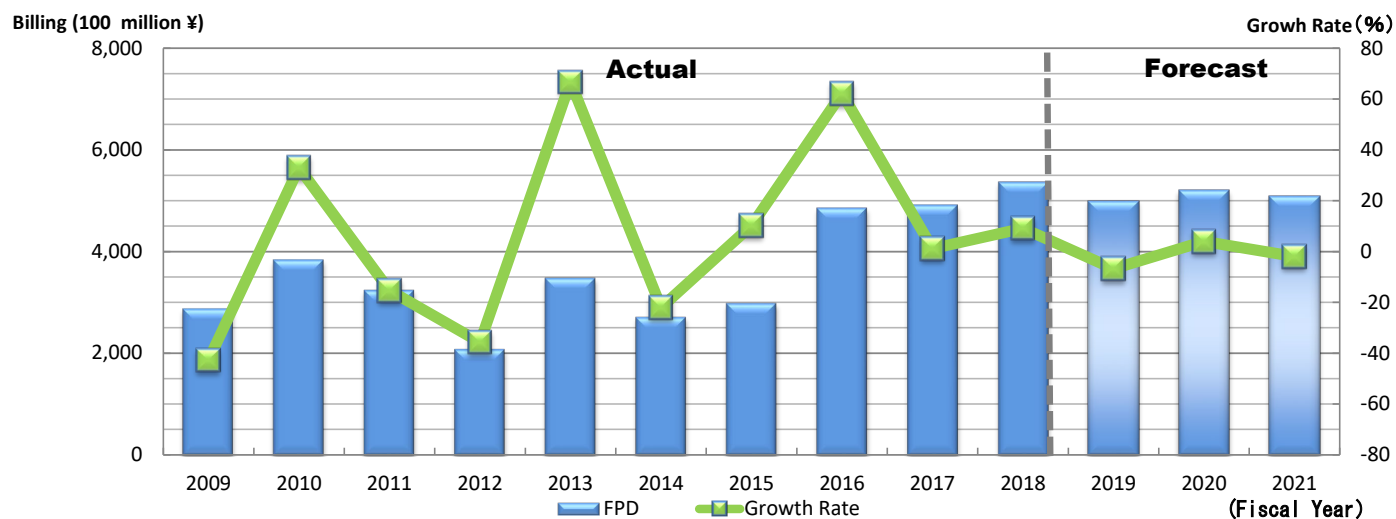
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# January 2020 Forecast for Semiconductor and FPD Manufacturing Equipment

## ■ 3. FPD Manufacturing Equipment

### 【Forecast for Japanese Equipment Billing】

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



(CAGR : 2018-2021)

| Fiscal Year             | Actual |       |       |       |       |       |       |       |       |       | Forecast |       |       | CAGR  |
|-------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|
|                         | 2009   | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019     | 2020  | 2021  |       |
| Total (100 million yen) | 2,887  | 3,840 | 3,250 | 2,089 | 3,485 | 2,717 | 2,993 | 4,857 | 4,916 | 5,364 | 5,000    | 5,200 | 5,101 |       |
| Growth Rate (%)         | -42.6  | 33.0  | -15.4 | -35.7 | 66.8  | -22.0 | 10.2  | 62.3  | 1.2   | 9.1   | -6.8     | 4.0   | -1.9  | -1.7% |

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