

# LG, Samsung and others: the battle for the next generation of TV displays<sup>1</sup>

## OUTLINES:

- Industry status:  
The TV<sup>2</sup> market is at a crossroad with stagnating unit volume sales, commoditization and looming extended excess capacity.  
2020 is a transition year for the TV panel industry due to strategic technical choices and competitive battlefield.
- LCD<sup>3</sup> will hold 98.2% of the TV market in 2020 and remain unchallenged on entry and mid-range segments.
- Competitive landscape:  
LG, Samsung and others readying complex and expensive technology investments to fight the battle for the next generation of TVs.  
Samsung Display and LG Display's LCD TV panel business turned unprofitable. There will be no coming back: China will soon own the LCD market, control prices, rapidly close the technology gap and leave no opportunities for differentiation.
- COVID-19 outbreak:  
COVID-19 pandemic impacted the supply chain and demand in the first half of the year. TV sales will decrease by 8.3% in 2020 to 205 million units but growth will resume from 2021 (+7.3%), although still below 2019 levels.

*“The TV panel market was disrupted by the rise of large players in China that increased capacity regardless of demand.” asserts **Eric Virey, Ph.D., Principal Display Technology and Market Analyst, Photonics & Sensing at Yole Développement (Yole)**. “In 2019, oversupply sent prices to their lowest levels ever, below cash cost for most players. Thanks to subsidies, lower depreciation, more recent and efficient fabs, BOE and CSOT can control price to eliminate competition. Korean and Taiwanese LCD panel makers turned unprofitable and it became clear that China would soon close the technology gap, leaving no opportunity for differentiation, controlling prices and owning the market. In Q1-2020, Samsung and LG therefore decided to retreat from the LCD TV panel business”.*

**In the meantime, the COVID-19 pandemic impacted the supply chain and demand in the first half of the year.**

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<sup>1</sup> Extracted from: [Next Generation TV panel Technology and Market Trends, Yole Développement, 2020](#)

<sup>2</sup> TV: Television

<sup>3</sup> LCD: Liquid-crystal-display

Until late 2019, the industry had severe and lasting excess capacity. The tables have now turned. Samsung and LG will remove the capacity to produce more than 52 million m<sup>2</sup> of panels by 2021, accounting for 18% of 2019 global capacity. Meanwhile, Chinese players are adding 42 million m<sup>2</sup> worth of capacity. There are now risks of shortages from 2021 and beyond. *“This could be exacerbated if Taiwanese makers shut down their least efficient fabs and if China converts some of their LCD lines to OLED rather than proceed with greenfield investments”*, comments **Eric Virey from Yole**. *“Conversion typically cuts fab capacity by 50 to 66%.”*

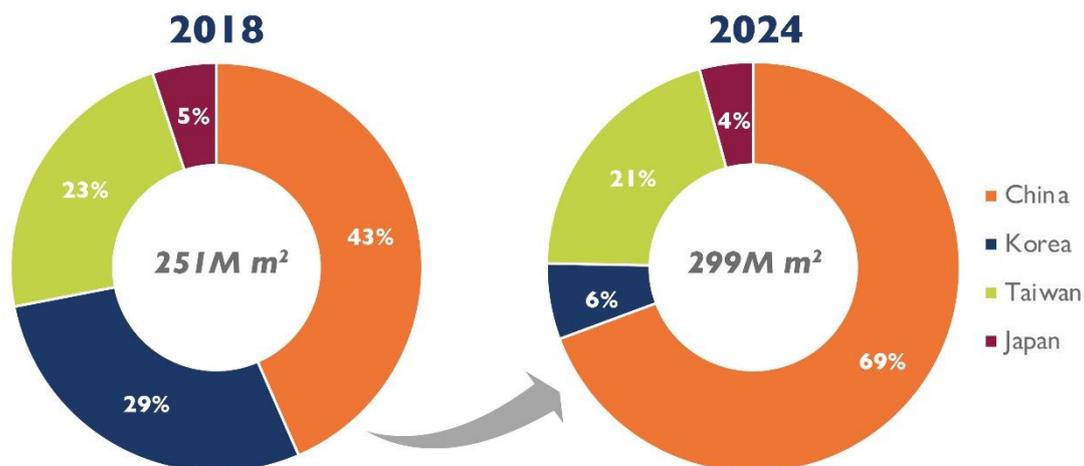
In this context, the market research and strategy consulting company Yole investigates disruptive technologies and related markets in depth, to point out the latest technical innovations and underline the business opportunities.

Released today, the Next Generation TV panel Technology and Market Trends report gives detailed analysis of the status of the TV Panel industry, including capacity, volume forecasts, supply versus demand analysis, technological trends, strategy of key players, COVID-19 impact and more. This study analyzes present and future TV panel technologies: LCD + QDCF, miniLED, Dual Cell, WOLED, RGB OLED (inkjet), microLED, QNED, EL-QD, etc.

Including TV panel forecasts, TV panel capacity forecasts, panel maker profiles and strategies, this new study is a fully updated TV panel forecast, technology and supply/demand analysis. What are the economic and technological challenges? What are the key market drivers? Who are the suppliers to watch, and what innovative technologies are they working on? Yole presents today its vision of the TV panel industry.

## Large panel 2018 and 2024 capacity breakdown per region

(Source: Next Generation TV Panel Technology and Market Trends 2020 report, Yole Développement, 2020)



As analyzed by Yole's team in the new [Next Generation TV panel Technology and Market Trends report](#), options for the next generation of TV panel technologies keep proliferating. To win the next battle, risky, multi-billion-dollar bets need to be made now. Those choices will decide the fate of Korean panel makers. LG Display got a head start with WOLED. Its new Guangzhou G8.5 fab scheduled for late 2019 was delayed by COVID-19 and yield issues. With WOLED sales below expectation in 2019 and 2020, LG further delayed ramp up until the end of July for fear that depreciation would further harm its financials if it cannot quickly fill its capacity. A G10.5 WOLED fab investment was also pushed back further. In the short term, LG must improve manufacturing efficiency through yields and multi-model glass in order to lower costs and stimulate demand.

According to **Zine Bouhamri, Ph.D., Technology & Market Analyst, Displays at Yole:**

*“Samsung is pursuing a dual track strategy: its panel division Samsung Display (SDC) is investing US\$11 billion in new TV panel technologies, including US\$8.4 billion of capex to build a QD-OLED Gen 8.5 fab. Its Visual Display TV set division is showing little interest in QD-OLED and prefers milking its profitable “QLED” LCD technology while developing microLED and miniLED which transfer the added value toward the modules and away from the panels. After retreating from LCD, Samsung needs its QD-OLED fab as soon as possible to remain in the TV business. Its QNED technology could fast track microLED if development succeeds.”*

WOLED and QD-OLED are stop-gap technologies. BOE and CSOT are both eager to skip WOLED and level the playing field by jumping directly to the next generation: inkjet-printed RGB OLED or EL-QD. CSOT's US\$187 million investment in JOLED gives more credence to its plans to build G6 and G8.5 RGB OLED fabs by 2023. If successful, this could quickly render QD-OLED and WOLED fabs mostly obsolete. Samsung and LG must therefore proceed with extreme caution on their QD-OLED and WOLED investments while accelerating their own RGB OLED and EL-QD developments.

AUO, Innolux and Sakai Display will strongly benefit in the short-term from Samsung and LG's exit from LCD. The need by some TV brands to maintain reliable panel sources outside of China to mitigate supply chain risk (tariffs, etc.) could reduce long term risk. However, they have not significantly invested in OLED. In the longer term, microLED could be AUO's and possibly Innolux's best shot at offering high end, large TV panels without the massive capex of an OLED fab.

MicroLED's unique ability for bezel-less tiling could enable the manufacturing of displays of arbitrarily large size with much lower capex than OLED. All leading panel makers are dramatically accelerating their development. Luxury MicroLED TV priced above US\$50,000 will enter the market in 2022 but MicroLED cost, yield and manufacturability roadblocks are hard to lift. For the consumer market, microLED remains an outsider for the time being.

*All year long, [Yole Développement](#) publishes display technologies-related reports. Yole's Experts realize various key presentations and organize key conferences.*

*In this regard, discover Eric Virey's MicroLED IP's LinkedInLive on [Yole's page](#).*

*In addition: do not miss the upcoming Displays events: [Display Week 2020](#) on August 03 and [ISELED Conference 2020](#) on September 03.*

*Make sure to be aware of the latest news coming from the display industry and get an overview of its activities, including interviews with leading companies and more on [i-Micronews](#). Stay tuned!*

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### About our analysts

**Eric Virey, PhD.** serves as a Principal Display Market and Technologies Analyst within the Photonics, Sensing & Display division at Yole Développement (Yole). Eric is a daily contributor to the development of the Display activity at Yole, with a large collection of market and technology reports on display technologies, Quantum Dots, MicroLEDs, TFT backplanes as well as multiple custom consulting projects: business strategy, identification of investments or acquisition targets, due diligences (buy/sell side), market and technology analysis, cost modelling, technology scouting, etc. Eric has spoken in more than 50 industry conferences worldwide over the last 10 years. He has been interviewed and quoted by leading media over the world including: The Wall Street Journal, CNN, Fox News, CNBC, Bloomberg, Financial Review, Forbes, Technology Review, etc. He is also a regular contributor to various display industry media and organizations. Previously Eric has held various R&D, engineering, manufacturing and business development positions with Fortune 500 Company Saint-Gobain in France and the United States. Eric Virey holds a PhD in Optoelectronics from the National Polytechnic Institute of Grenoble. He is currently based in Portland, OR.

As a Technology & Market Analyst, Displays, **Zine Bouhamri, PhD** is a member of the Photonics, Sensing & Display division at Yole Développement (Yole). Zine manages the day to day production of technology & market reports, as well as custom consulting projects. He is also deeply involved in the business development of the Displays unit activities at Yole. Previously, Zine was in charge of numerous R&D programs at Aledia. During more than three years, he developed strong technical expertise as well as a detailed understanding of the display industry. Zine is author and co-author of several papers and patents. Zine Bouhamri holds an Electronics Engineering Degree from the National Polytechnic Institute of Grenoble (France), one from the Politecnico di Torino (Italy), and a Ph.D. in RF & Optoelectronics from Grenoble University (France).

### About the reports

#### **Next Generation TV panel Technology and Market Trends**

*China has won the LCD war. LG, Samsung and others readying complex and expensive technology investments to fight the battle for the next generation of TVs. – Performed by Yole Développement*

#### **Companies cited:**

Apple, Asus, AU Optronics, Avantama, BOE, CEC Panda, Changelight, Changhong, CHOT, CNC, CSOT, Cynora, Dolby, Dupont, eFun, Efonlong, Eizo, Electech, eLux, Epileds, Epistar, Excellence Opto, Exciton, Flanders Scientific, Foxconn, Funai, GE/Current, Haier, Hansol, Harvatek, HC Semitek, Hisense, Hitachi Chemical (AKA Showa Denko Materials), HKC, HongLi, Huawei, Innolux, Intematix, JOLED, Kateeva, KDX, Kinglight, Konka, Kulicke & Soffa, Kyulux, Lextar, LG Display, Loewe, Lumenari, MnTech, Nanjing Tech, Nanoco, Nanophotonica, Nanosys, Nationstar, Nexdot, NHK, Nichia, Nitto Kolon, Panasonic, Philips, PixelDisplay, Playnitride, Quantum Materials, Refond, Rohinni, Sakai Display (SDP/SIO), Samsung Display, Samsung Visual Display, Sanan, Semes, Sharp, ShineOn, Skyworth, Sony, Sumitomo Chemical, Taiwan Nanomaterials, TCL, Tianma, Toshiba, TPV, Universal Display, Vestel, Vizio, Wahong, X-Celeprint/XDisplay (XDC), Xiaomi, and many more...

#### **Related display reports:**

- [Displays and Optics for AR & VR 2020](#)
- [MicroLED Displays – Intellectual Property Status & Landscape 2020](#)
- [MicroLED Displays 2019](#)
- [MiniLED Displays 2019](#)

#### **About Yole Développement**

Founded in 1998, Yole Développement (Yole) has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide... [More](#)



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