

How Geopolitics Might Reshape Global Display Supply Chains

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Abstract

The display industry is one of the most concentrated in the world. Concerns about supply stability, national security, and trade balances will lead to government and corporate actions that might reshape global display supply chains. This will be cross-influenced by the emergence of new display technologies and the potential use of existing semiconductor infrastructure for display manufacturing. Display industry stakeholders need to adapt their strategies accordingly.

Author Keywords

Electronic displays; geopolitics; supply chains; national security; globalization; trade war; de-risking; de-coupling; supply chain security; display technology; display manufacturing; micro displays; micro-LED; micro LED; micro-LED displays; micro-OLED; semiconductors; GaN-on-Silicon; GaN-on-Si; peace; downstream industries; automotive; AI; HMI.

1. Note: This is a preliminary version

[Note: This is a preliminary version for SID committee review. The final version will be submitted before the end of January as aligned with Wenfang Sung and Seth Coe-Sullivan.]

2. Changes in Geopolitics

Since the early 1990s, economic development has been characterized by rapid globalization and the resulting high growth rates in several regions. While the wealth gains from globalization through economies of scale and mutual specialization have long been welcomed, in recent years concerns about reliable supply chains, national security, and balanced trade accounts have dominated the debate in many of the world's leading economies. So far governments and the public have focused their attention on technologies (AI, quantum computing, semiconductors, etc.) and materials (fossil fuels, rare earths, metals, etc.) that are considered strategic, but also increasingly on labor-intensive industries such as automotive, aerospace, and machinery.

3. Situation in the Electronic Display Industry

Meanwhile, electronic displays have not received much attention. Yet centralization in the display industry is much more pronounced than in the semiconductor industry, for example. The display industry is dominated by just six companies, and virtually

all displays are manufactured in just four countries and territories in East Asia. On the demand side, the dependence goes well beyond the obvious consumer electronics and computer applications; virtually no cars, airplanes, machine tools, medical equipment, or complex weapons systems in the world can be built without a supply of display panels.

At the same time, the importance of displays as a human-machine interface is constantly increasing, most obviously in the case of micro displays for AR/VR applications.

4. Scope of Research in this Presentation

In this presentation, we analyze three likely developments that could have a disruptive impact on the global display industry and its suppliers and customers:

1. Government and corporate efforts to unbundle, de-risk, or decouple display supply chains.
2. Adverse impact on imports due to high tariffs and other trade barriers and the resulting potential for trade wars
3. The potentially disruptive impact of new display technologies, such as micro-LED and micro-OLED displays, and the use of existing semiconductor infrastructure for display manufacturing.

[Main content to be added]

5. Conclusion

[To be added]

6. Impact of Your Research

[To be added]

7. Acknowledgements

[To be added]

8. References

This work is based on previous, since then updated and extended research presented at electronic display conference, Nuremberg 2024, SID Eurodisplay, Grenoble 2024 and other conferences.