

# Memory Market Trends

## An Overview

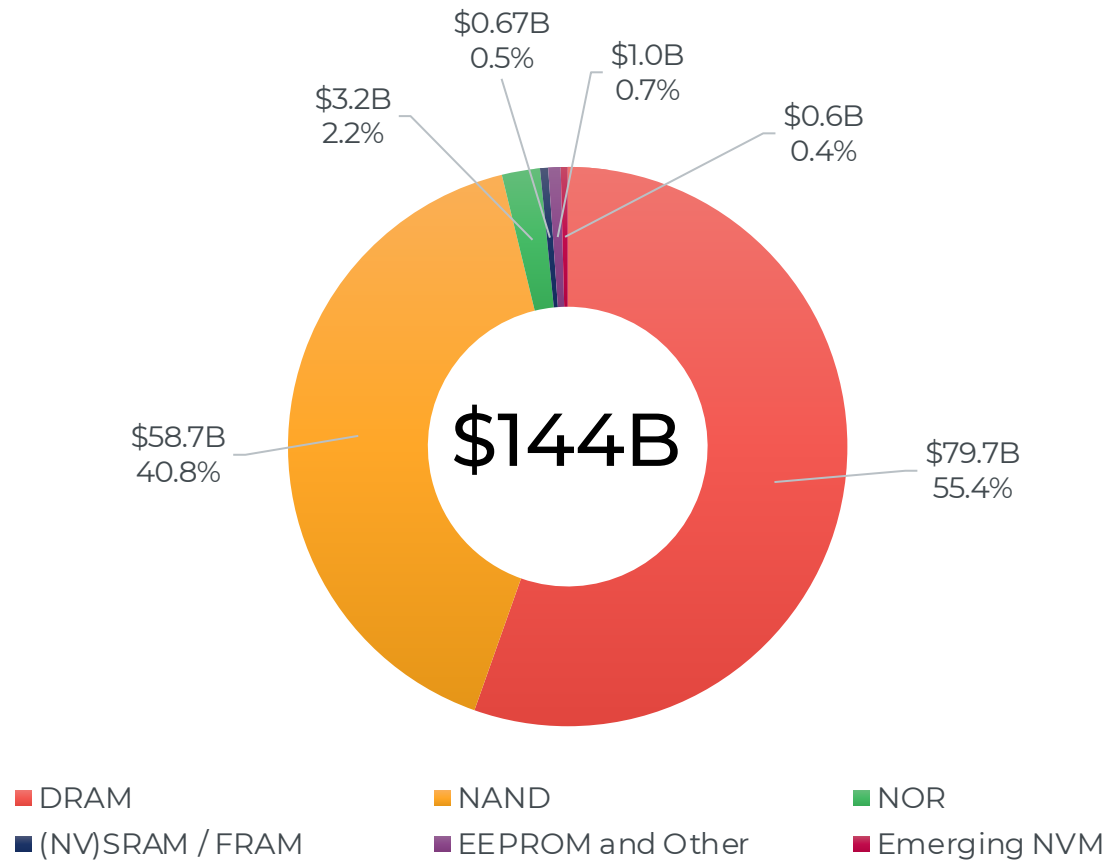
**Presenter:**

**Simone Bertolazzi, Ph.D.**

Principal Technology and Market Analyst at Yole Intelligence

# Memory Market – Overview

## 2022 memory market - breakdown by technology



**\*Note:** Stand-alone memory revenues include chips and wafers, as well as memory modules and solid-state drives sold by IDM memory companies.

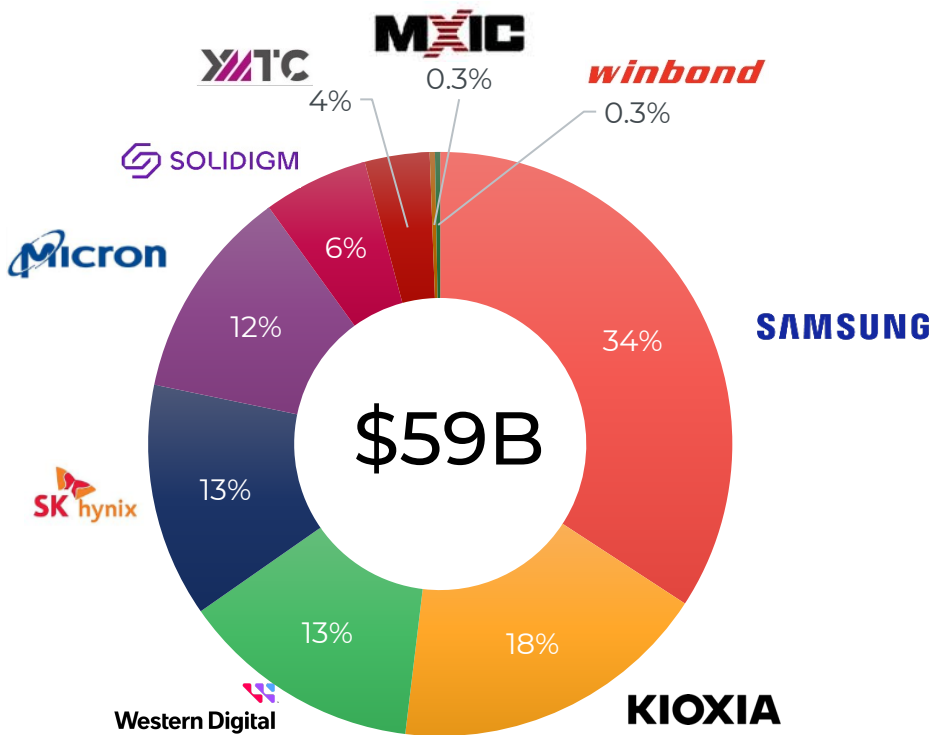
## NAND and DRAM market evolution



Source: "Status of the Memory Industry 2023" report by Yole Intelligence

# NAND Memory Market – Overview

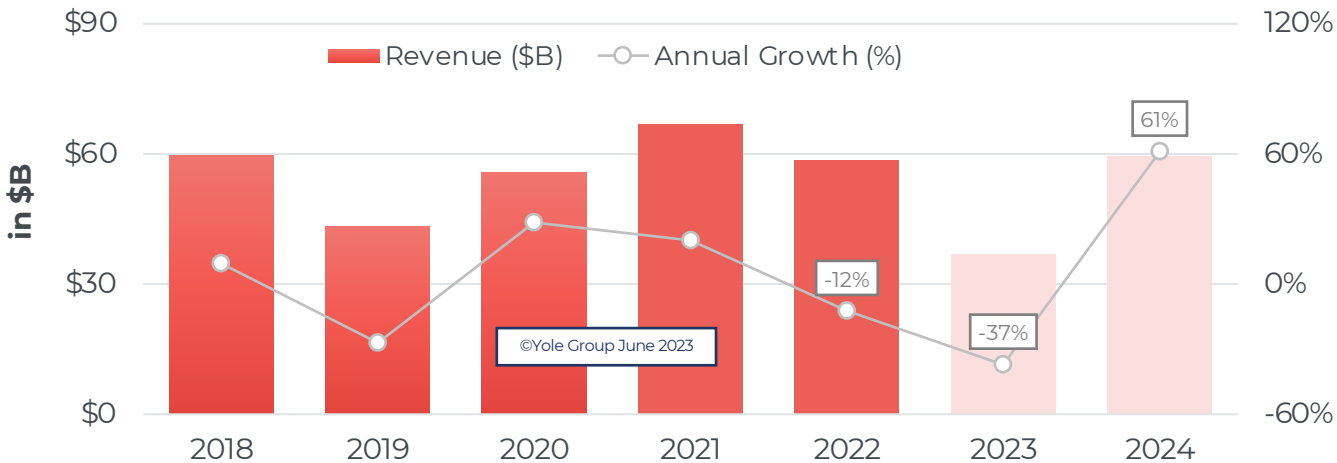
## 2022 NAND market shares by revenue



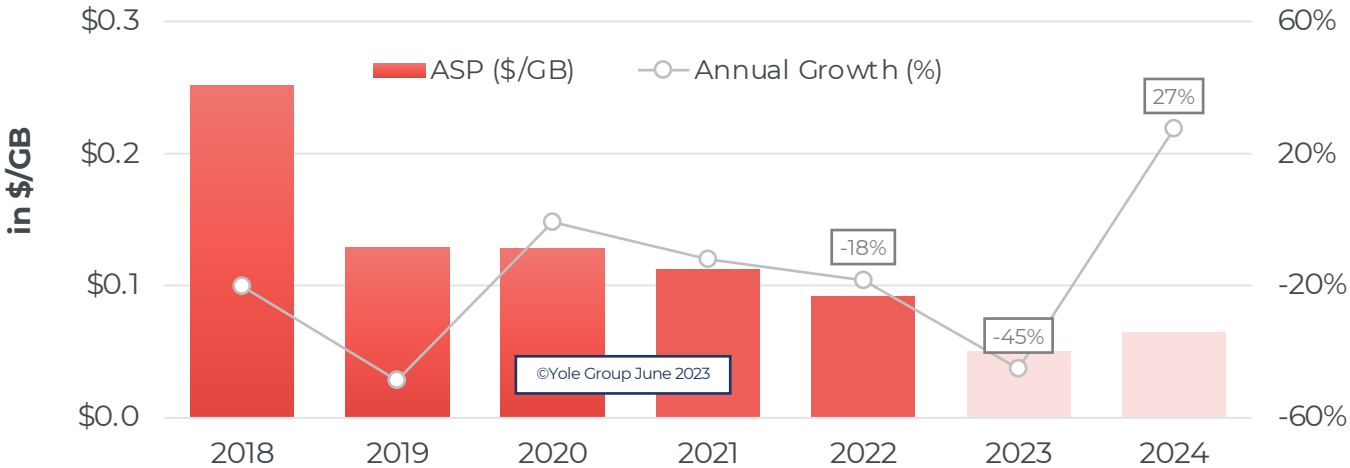
Total NAND market in 2022 ~\$58.7B (-12% Y/Y)

**Note:** stand-alone memory revenues include chips and wafers, as well as memory modules and solid-state drives sold by IDM memory companies.

## NAND market revenue

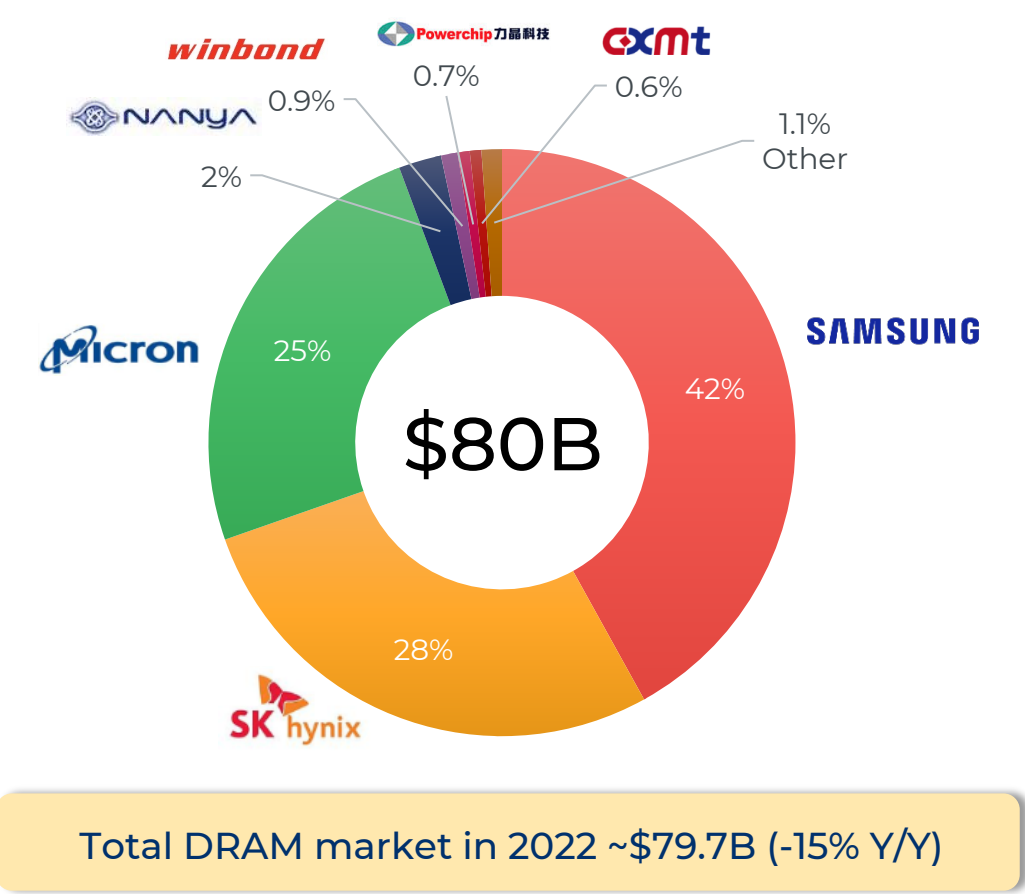


## NAND average selling price



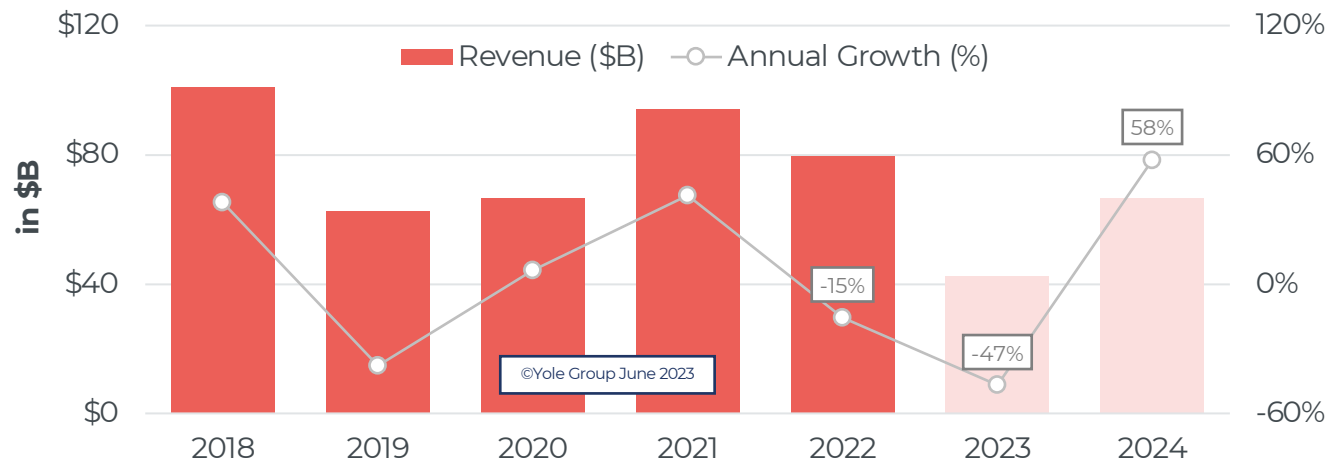
# DRAM Memory Market – Overview

## 2022 DRAM market shares by revenue

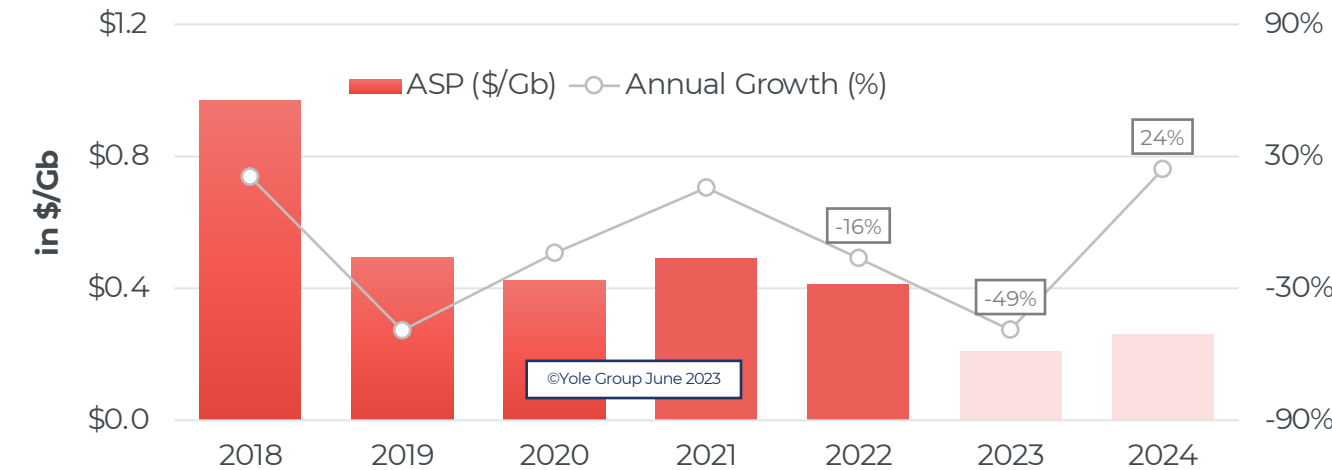


**Note:** stand-alone memory revenues include chips and wafers, as well as memory modules and solid-state drives sold by IDM memory companies.

## DRAM market revenue



## DRAM average selling price

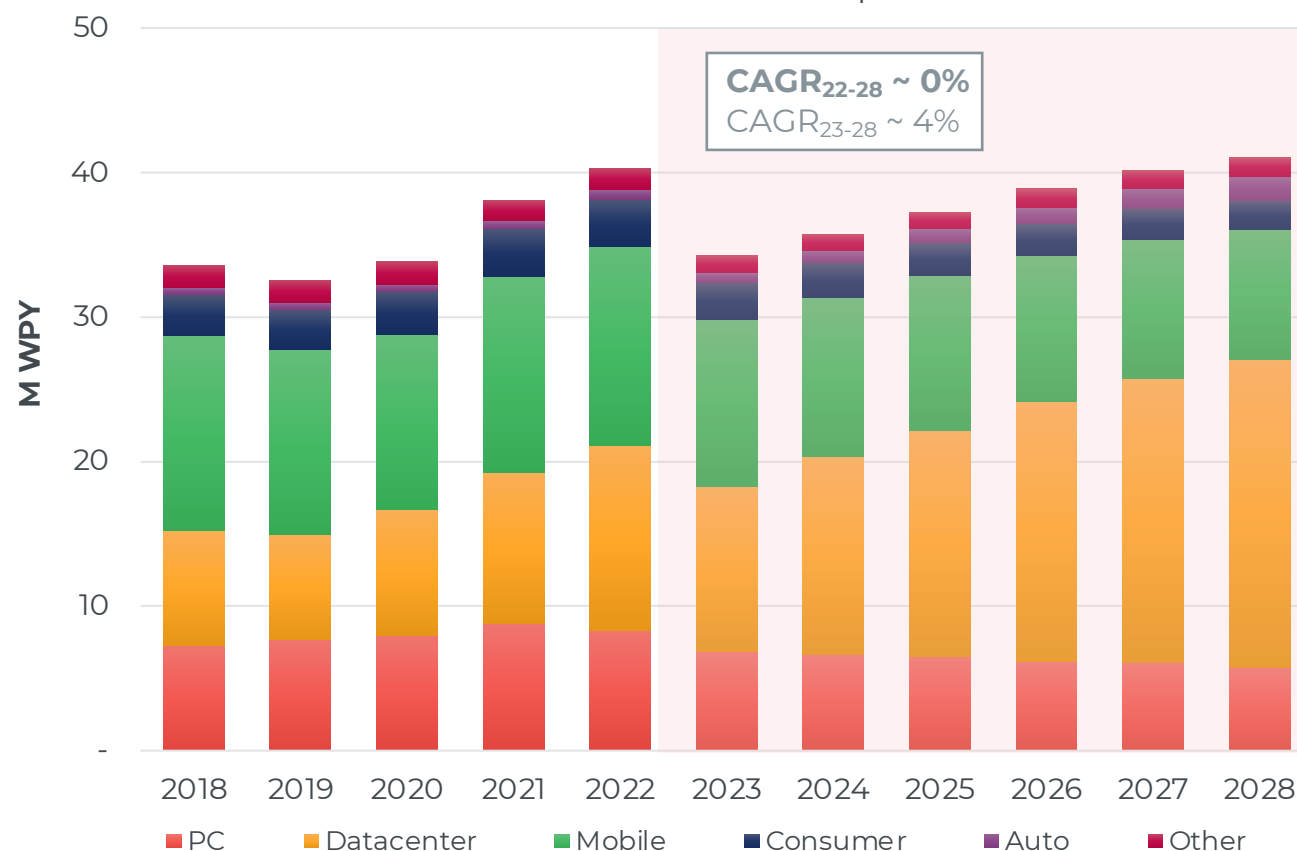


# 2018-2028 Memory Wafer Demand

## Breakdown by end market

### NAND and DRAM Wafer Demand

in Million 12" Wafers per Year



Source: DRAM and NAND market monitors (Q2-2023) by Yole Intelligence

### Wafer Demand Growth Rates



**PC/Client**

CAGR<sub>22-28</sub>: -6%



**Data Center**

CAGR<sub>22-28</sub>: 9%



**Mobile**

CAGR<sub>22-28</sub>: -7%



**Consumer**

CAGR<sub>22-28</sub>: -8%



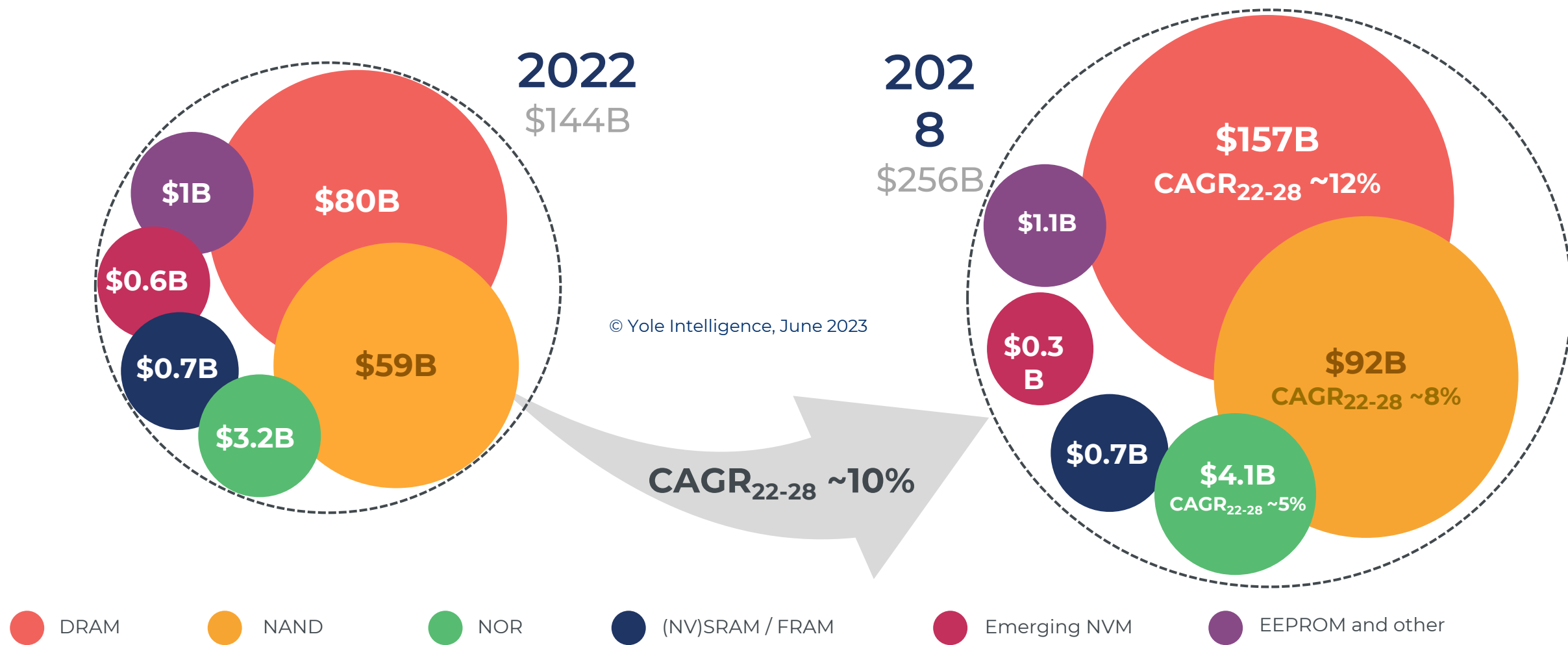
**Automotive**

CAGR<sub>22-28</sub>: 17%

**Other**  
CAGR<sub>22-28</sub>: -2%

# 2022-2028 Memory Market Evolution

## Breakdown by technology



Source: "Status of the Memory Industry 2023" report by Yole Intelligence

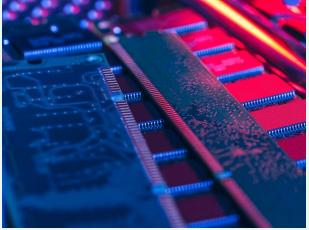
# Acknowledgements – Yole’s Memory Team

<b>Walt Coon</b> VP of NAND and Memory Research	<b>Mike Howard</b> VP of DRAM and Memory Research	<b>Simone Bertolazzi, PhD</b> Principal Technology and Market Analyst - Memory	<b>Thibault Grossi</b> Senior Technology and Market Analyst - Memory	<b>Diego Alfaro, PhD</b> Technology and Market Analyst - Memory	<b>Belinda Dube</b> Senior Technology and Cost Analyst – Memory & Integrated Circuits
					
<ul style="list-style-type: none"><li>› <b>Experience</b> 15+ years in memory</li><li>› <b>At Yole</b> NAND</li><li>› <b>Education</b> MBA Bachelor of Science in Chemical Engineering Bachelor of Arts in Finance</li></ul>	<ul style="list-style-type: none"><li>› <b>Experience</b> 15+ years in memory</li><li>› <b>At Yole</b> DRAM</li><li>› <b>Education</b> MBA Bachelor of Science in Chemical Engineering Bachelor of Arts in Finance</li></ul>	<ul style="list-style-type: none"><li>› <b>Experience</b> 15 years in emerging semiconductor devices</li><li>› <b>At Yole</b> Memory</li><li>› <b>Education</b> Ph.D. in Nanoelectronics M.Sc. in Micro &amp; Nanotechnology M.Sc. in Engineering Physics</li></ul>	<ul style="list-style-type: none"><li>› <b>Experience</b> 15+ in electronic procurement (semiconductor, PCBA and software)</li><li>› <b>At Yole</b> Memory</li><li>› <b>Education</b> M.Sc. in Electronic and Computing science</li></ul>	<ul style="list-style-type: none"><li>› <b>Experience</b> 5+ years in emerging semiconductor devices</li><li>› <b>At Yole</b> Memory</li><li>› <b>Education</b> Ph.D. in Nanoelectronics and Nanotechnology M.Sc. in Electronic Integrated Systems</li></ul>	<ul style="list-style-type: none"><li>› <b>Experience</b> 5+ years in memory and integrated circuits</li><li>› <b>At Yole SystemPlus</b> Memory</li><li>› <b>Education</b> M.Sc. in Nanoelectronics and Nanotechnology</li></ul>

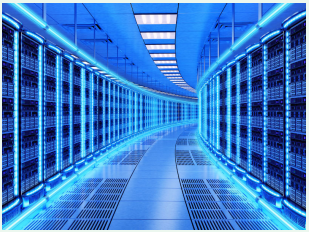


# Yole Group Memory Products

*Non-exhaustive list*



[NAND Market Monitor](#)



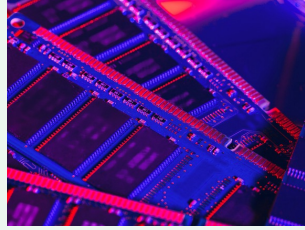
[Status of the Memory Industry 2023](#)



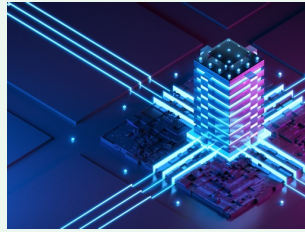
[Solid-State Drives 2023](#)



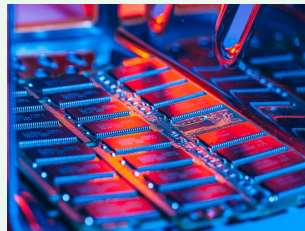
[Memory Packaging 2023](#)



[DRAM Market Monitor](#)



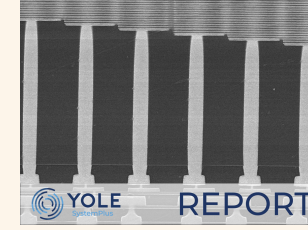
[Emerging Non-Volatile Memory 2023](#)



[DRAM Modules 2023](#)



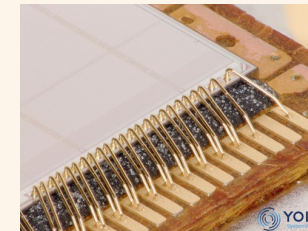
[Memory for Automotive 2022](#)



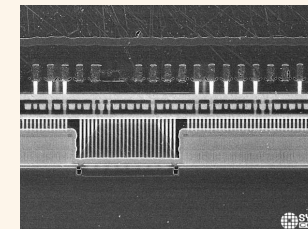
[YMTC 232-layer 3D NAND Memory](#)



[16Gb DDR5 DRAM Memory from Micron](#)



[Everspin Technologies Latest STT-MRAM in 28nm](#)



[LPDDR5 Memory Comparison 2022](#)



# Thank you for your attention

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