

PSI Roadshow in Q4,2023

20 Dec. 2023

Safe Harbor Notice

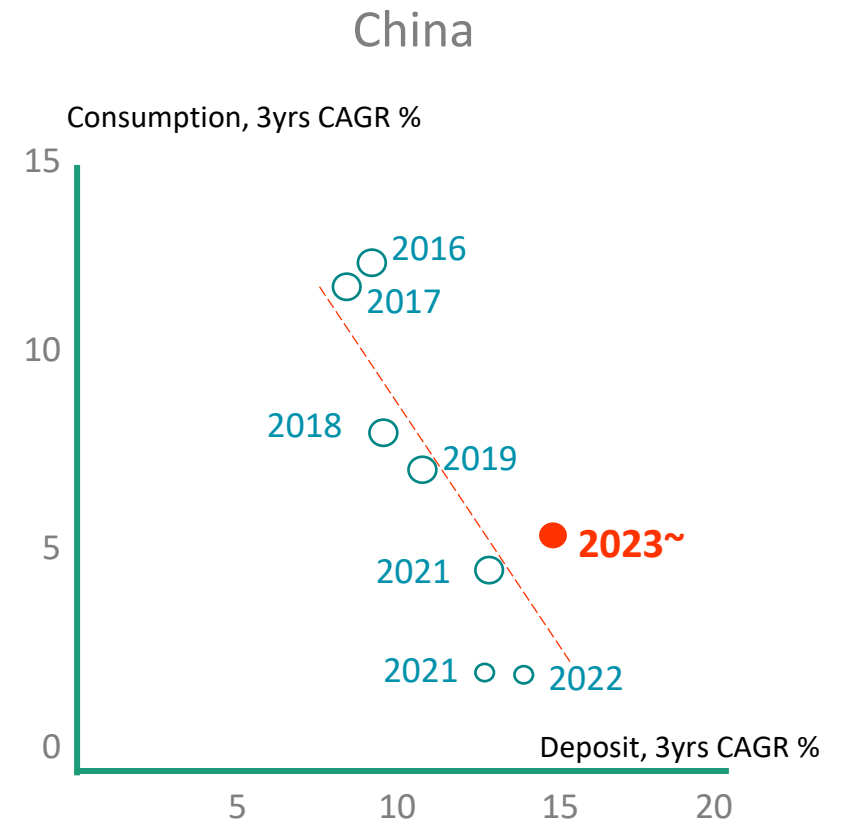
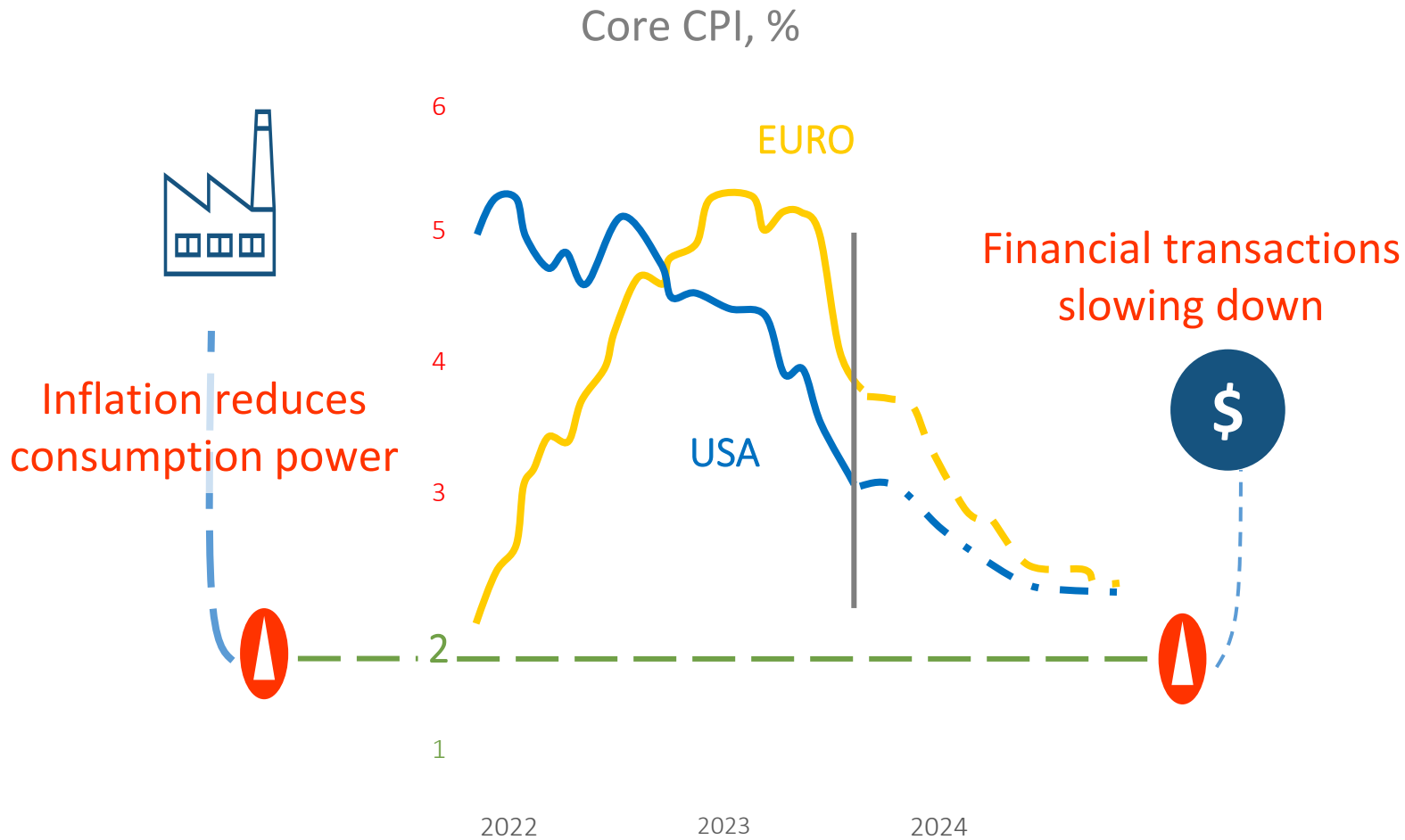
- Psi's statements of its current expectations are forward-looking statements subject to significant risks and uncertainties and actual results may differ materially from those contained in the forward-looking statements.
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- The numbers of the presentation are prepared under IFRS.

Agenda

- 2024 macro economics forecast
- Semi industry trending
- PSI strategies update
- ESG subject update
- Key takeaways

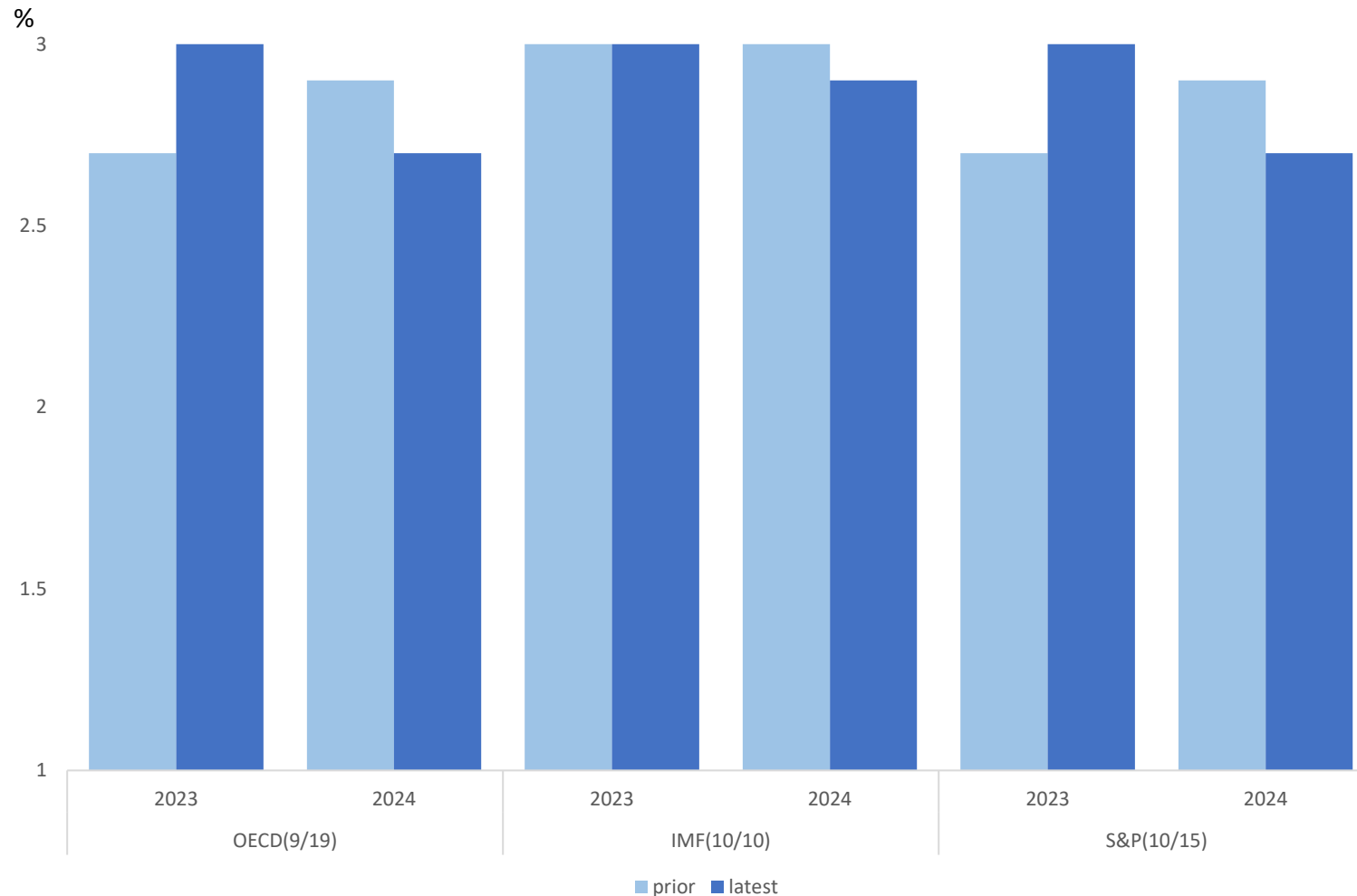
2024 Macro & Semi Outlook

Macro Economic



Source: Bloomberg, Cathay United Bank

World GDP FCST



- Slower, **Elusive**
- Interest rate **Higher** for longer
- Little margin for policy error

Source: S&P, IMF, OECD

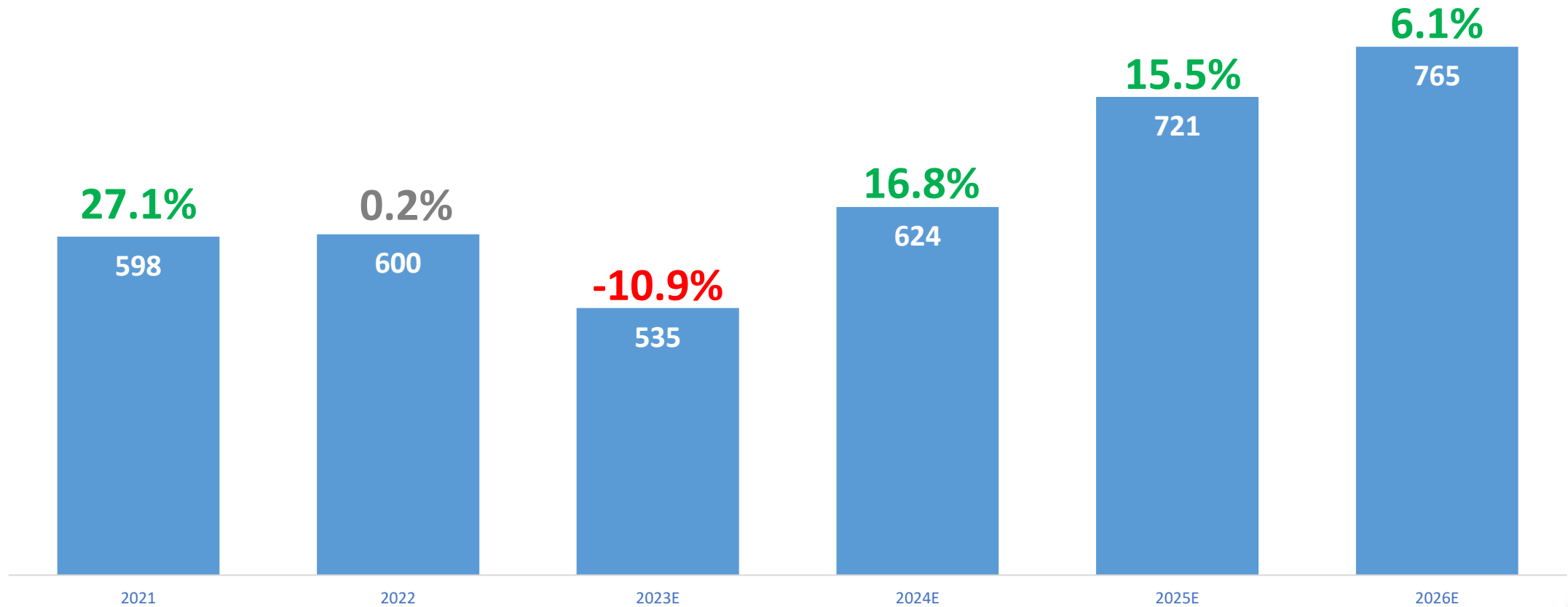


Semi Industry Trending

Back To Expansion Cycle

USD M

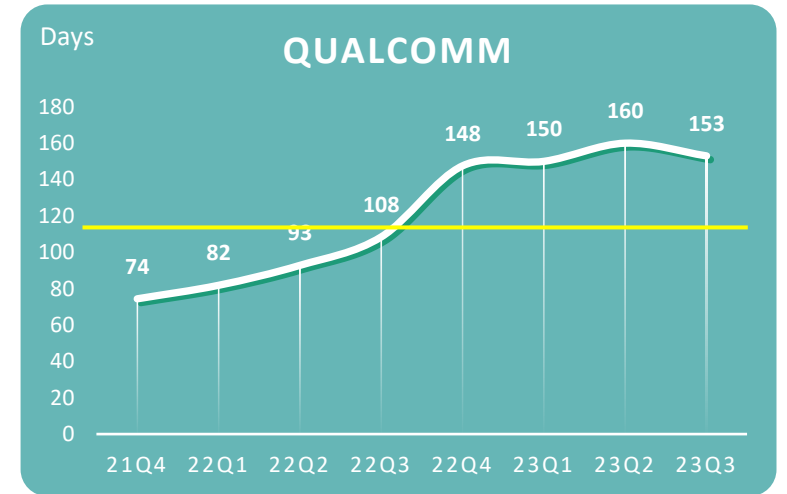
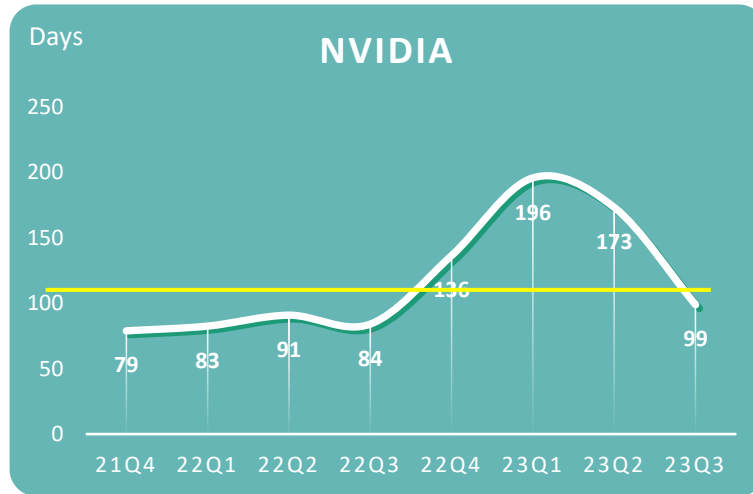
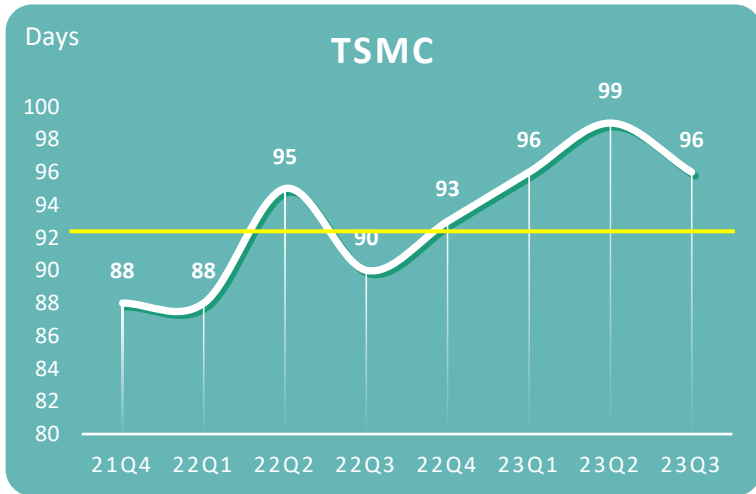
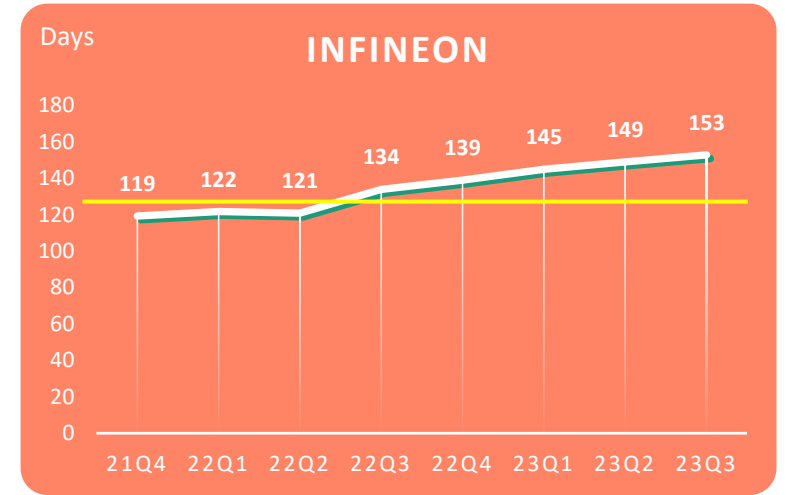
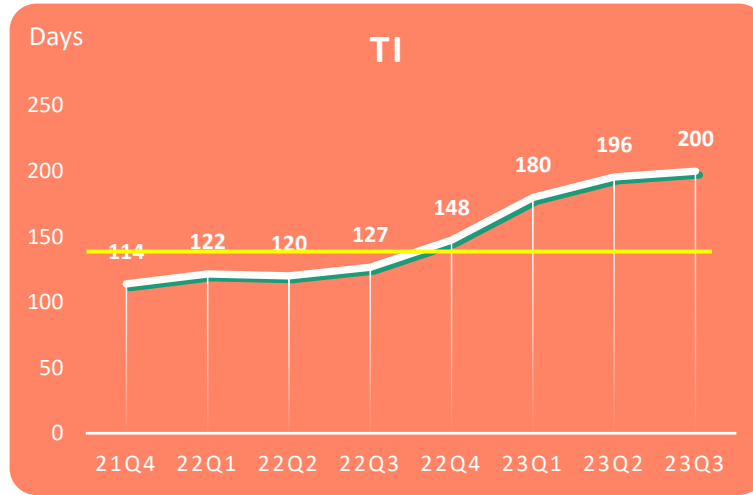
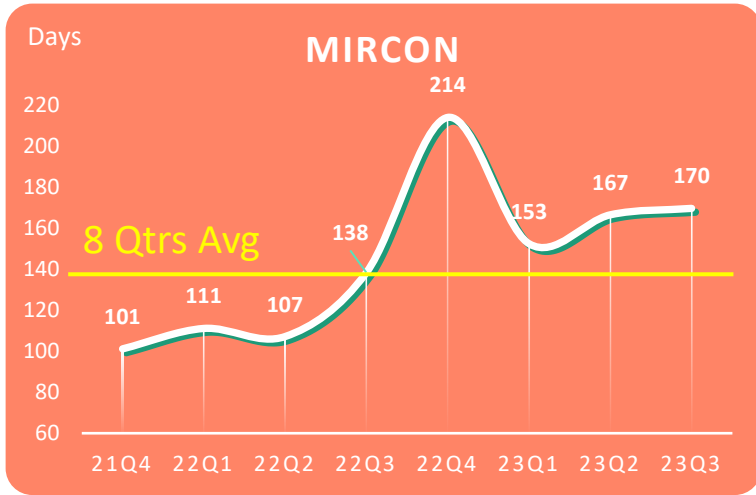
Driven by **AI** (Data processing) & **Smart EV** (Automotive)



Source: Gartner, Oct. 2023

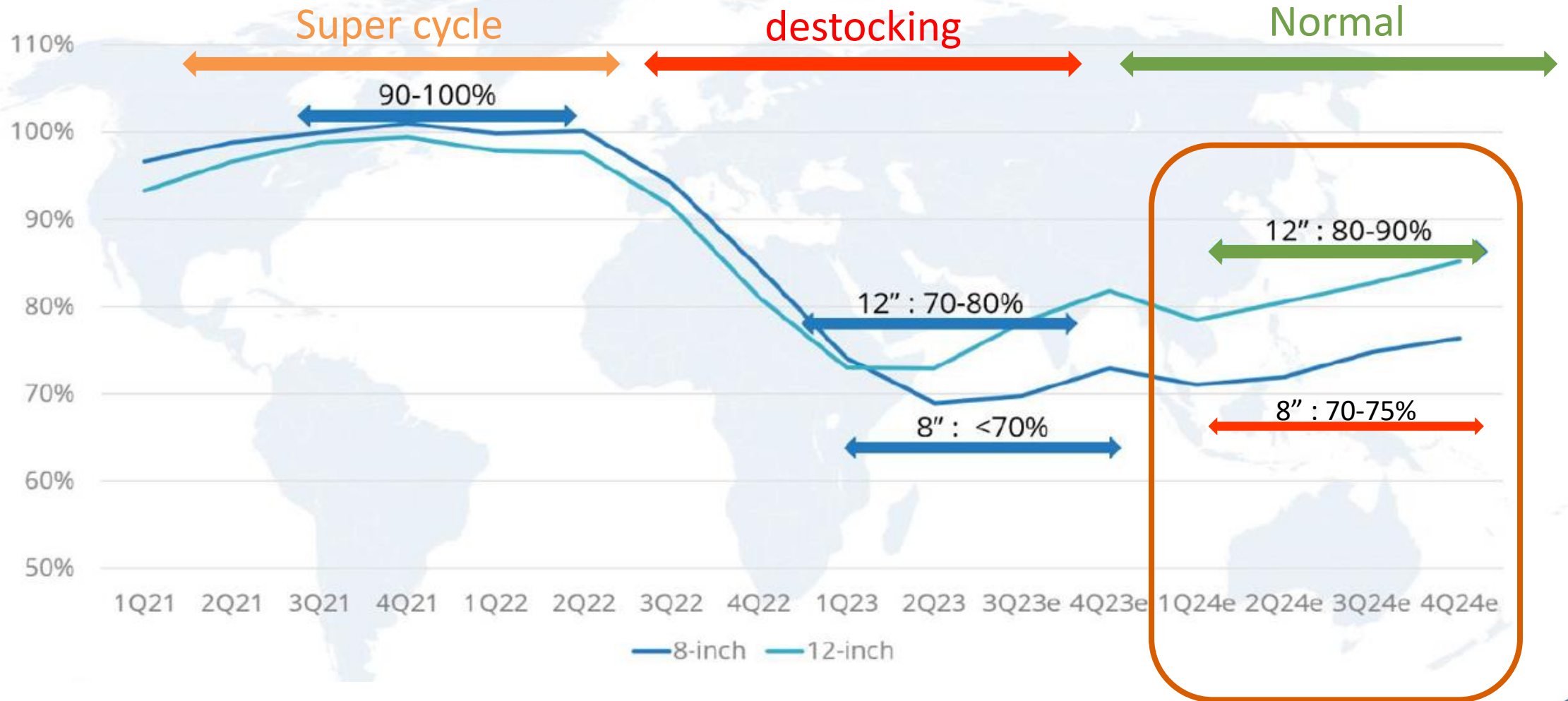


Inventory Under Control Except Power Semi



Source: company data

What's Different in Foundry UTR



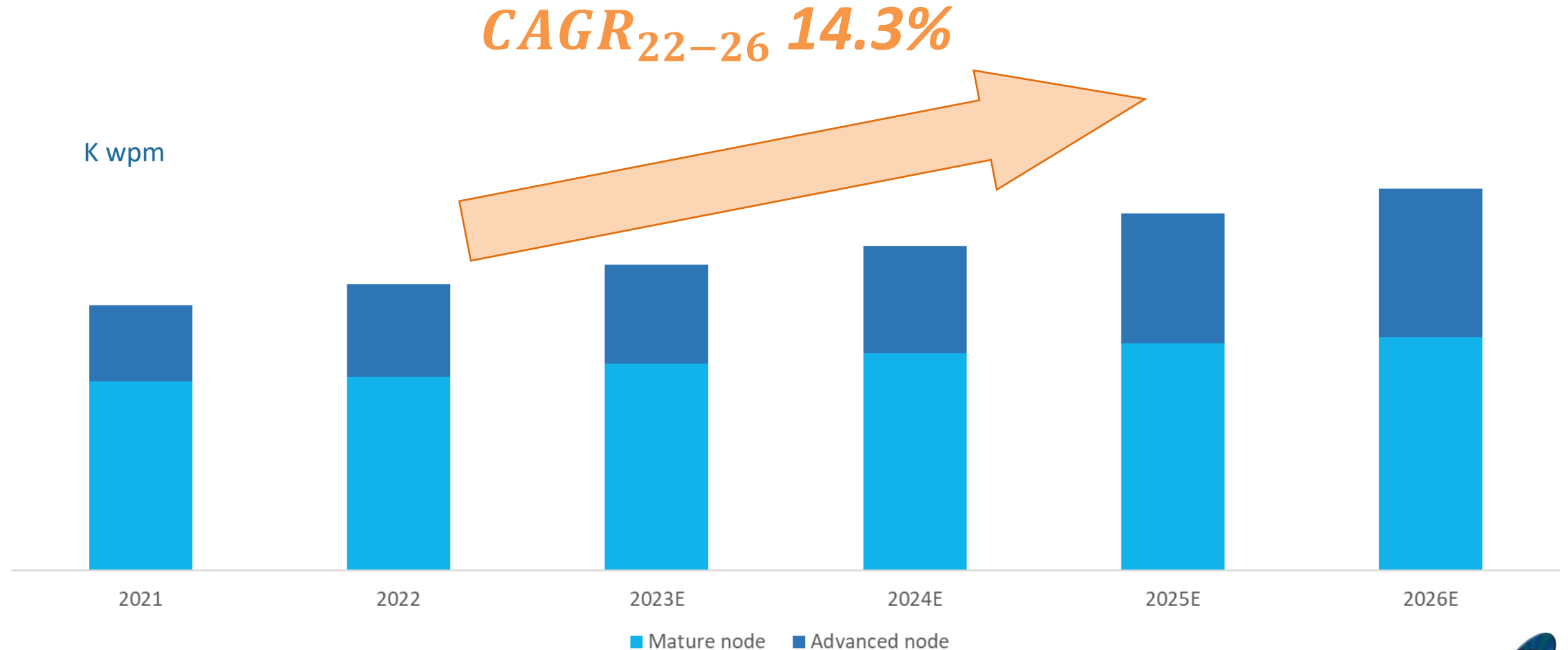
Source: Semi. Org, IDC, PSI estimate

Wafering Business Line

Reclaim demand up driven by advanced node & 3D-IC packaging

Test wafer for carrier wafers emerging in permanent bond SoIC & 2nm BSPD

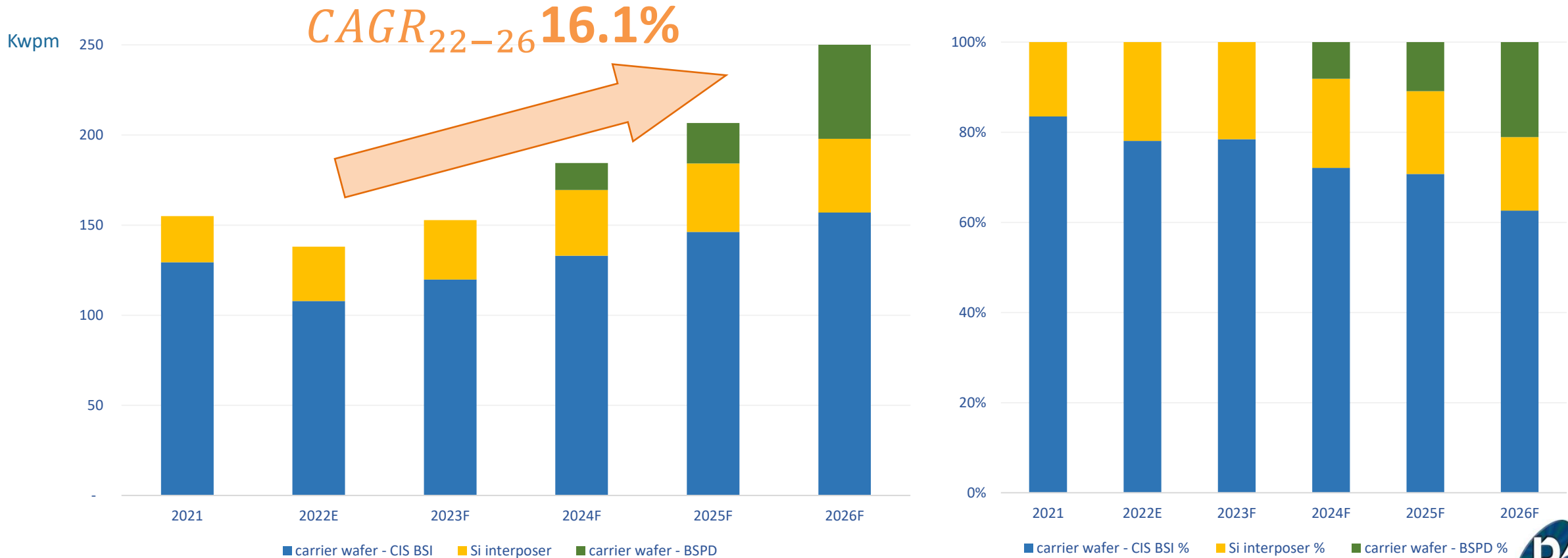
Advanced Node: Semi Major Growth Driver



Source: Research institution, PSI

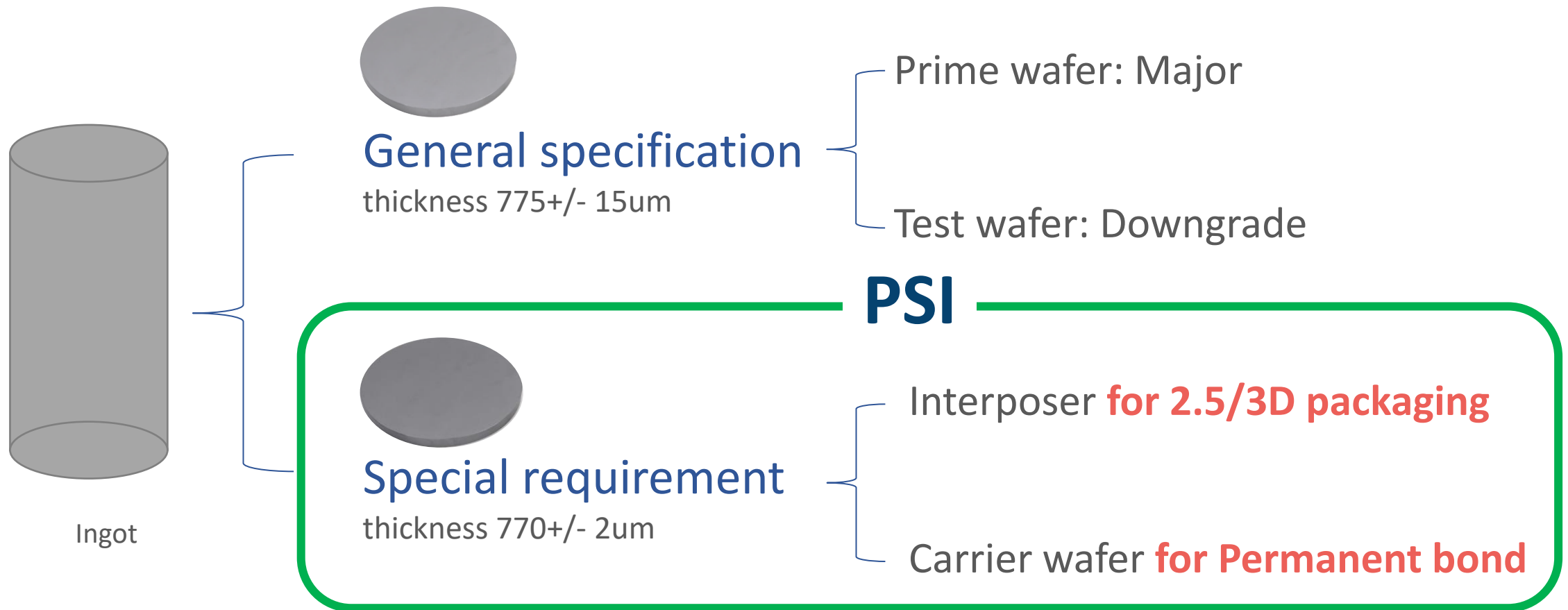
Market Surging in Si Interposer & Carrier wafer

- Carrier wafer includes CIS BSI & BSPD
- Si interposer major for 2.5, 3D packaging and SoIC (SoIC not included)



Source: Company data, Digitimes, PSI

Strategic Focus-on “Special” Test Wafer



Permanent Bonding With Carrier Wafer

BSPD
2nm/18A

STEP 1



Device Fin and STI processing

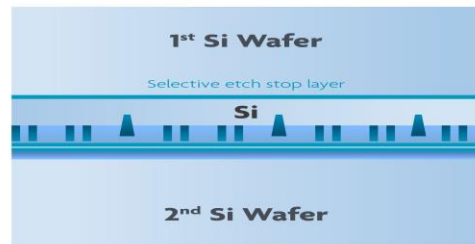


Buried rail process



Front-end device processing

STEP 2



Permanent bonding to second Si wafer



Wafer grinding and thinning to $< 5\mu\text{m}$

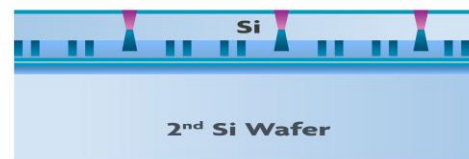


Selective Si etch and removal of the buffer layer

STEP 3



Backside passivation



Backside nTSV processing



Backside single Cu damascene metallization

© imec

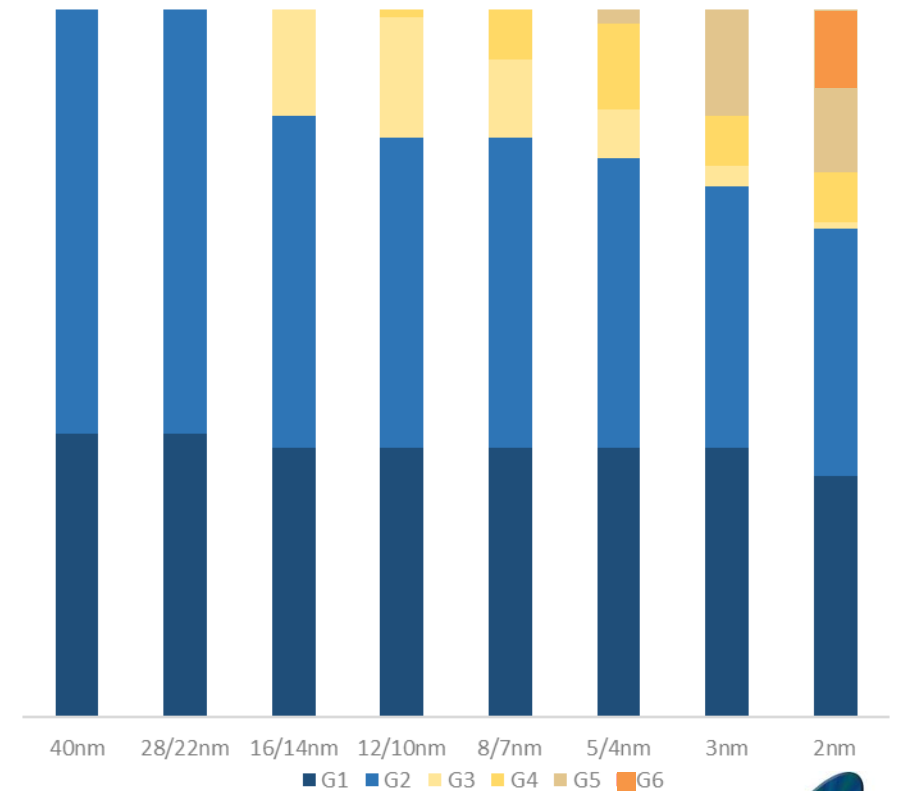
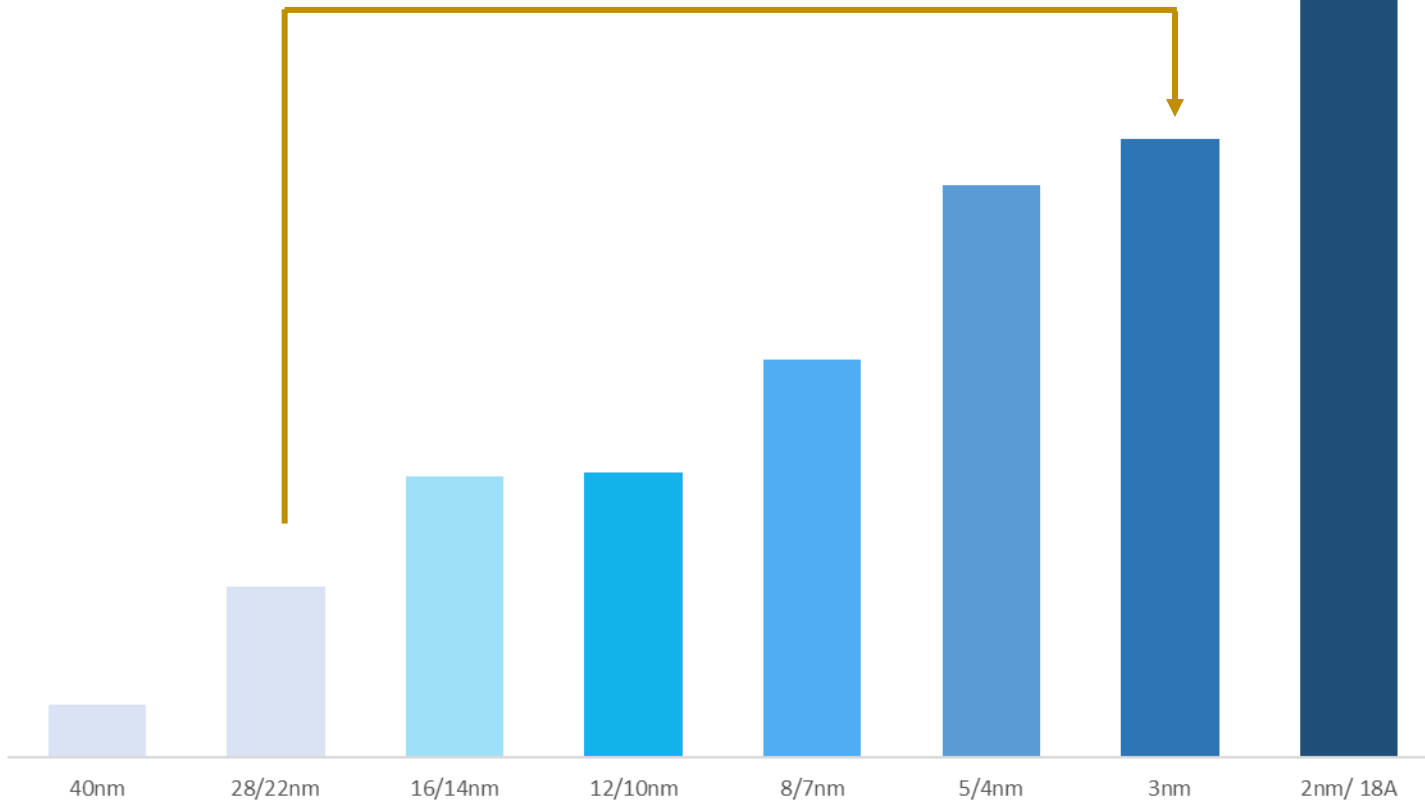
Reclaim Market Size By Technology Node

USD Bn

3.6 times

High Grade > 25%

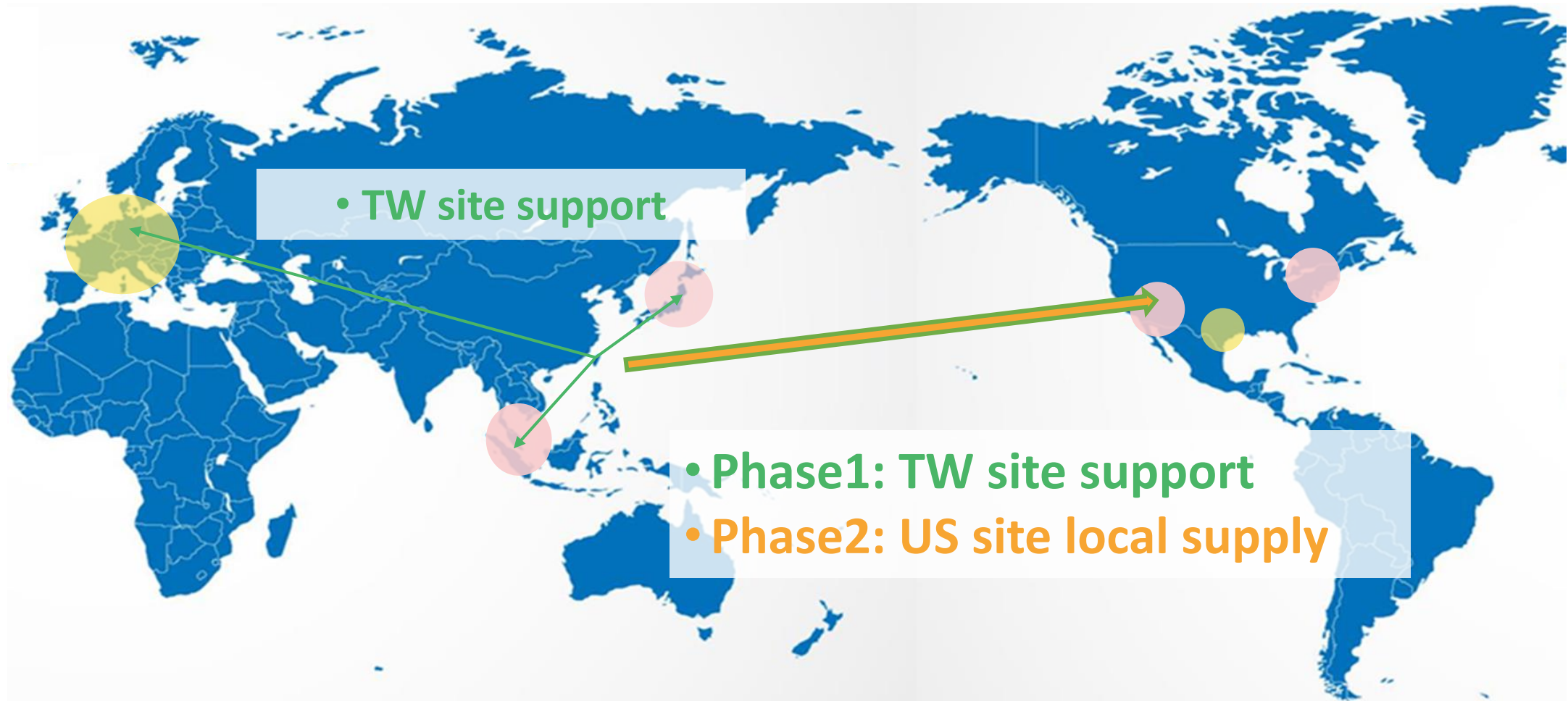
Higher Grade emerging



Source: PSI, company data



Strategic Expansion in Customers and MFG



● New customers ● Customers' overseas site

WW No.1 Lights out Wafering Fab

100

2021

40

2023

15

2025

5

2027



WW No.1 Wafering Fab Capacity

12

2023

20

2025

30

2027

+60

Tbd building 2



Thinning Business Line

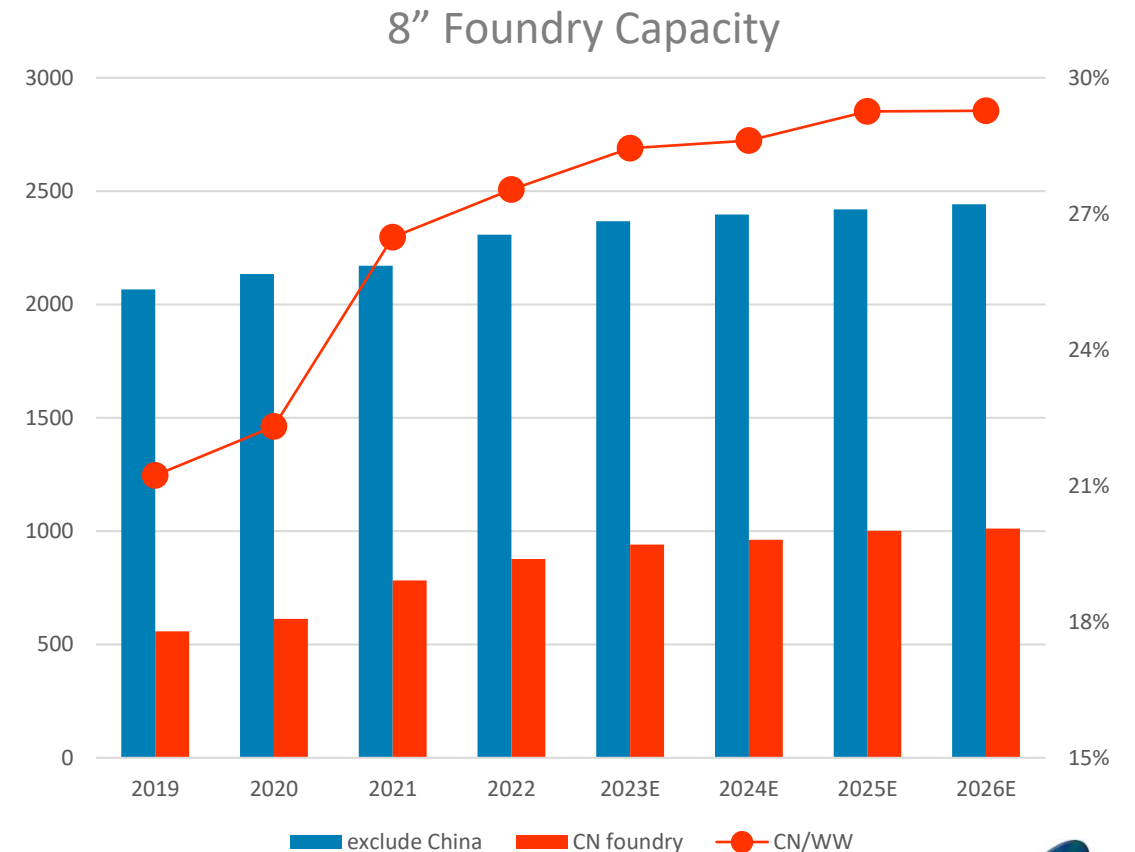
Focus on non-China high added valued

Next generation focus on SiC and 12"

8" Foundry Capacity in Turbulence

Company	2020	2021	2022	2023E	2024F	2025F	2026F
TSMC	580	580	580	580	580	580	580
UMC	322	329	341	354	354	354	354
Samsung	250	250	250	260	270	275	290
SMIC	249	318	358	396	396	396	396
Vanguard	243	252	270	287	303	318	323
Hua Hong	178	178	178	178	178	178	178
SMEC	35	75	100	120	140	160	170
TowerJazz	141	148	148	148	148	148	148
Dongbu Hitek	130	138	151	151	151	151	151
PSMC	95	110	118	124	126	126	126
GF	109	117	120	123	123	123	123
Xfab	86	86	86	86	86	86	86
Key Foundry	82	82	82	82	82	82	82
CSMC	60	60	70	76	76	76	76
L Foundry	42	42	42	42	42	42	42
SilTerra	35	35	35	41	41	41	41
GTA Semi	49	89	89	89	89	109	109
Skywater	13	13	13	13	13	13	13
Qingdao SiEn	0	20	40	40	40	40	40
Others	49	31	114	117	120	122	124
Total	2,748	2,953	3,185	3,308	3,358	3,421	3,453

China accountant for 29%



Source: WSTS, Gartner

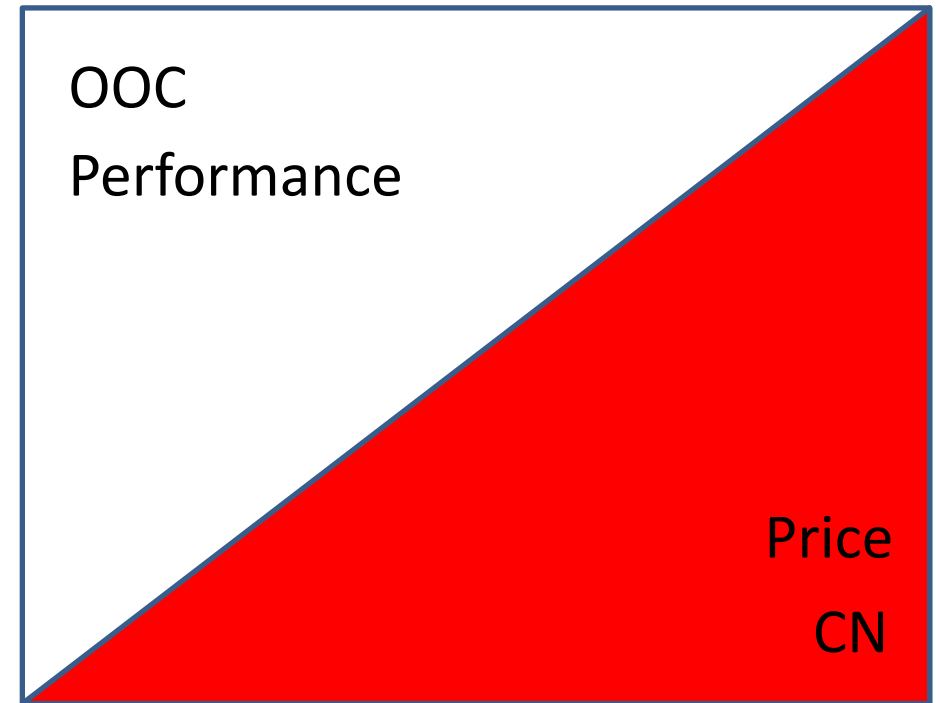
Power Semi Game Changing

● Supply & Demand in short term

- Over supply remained till 2024
- Price disruption in China

● Geopolitical factors in long term

- Trade deficit drives CN semi localization
- Chip/Cold war creates separate supply chain

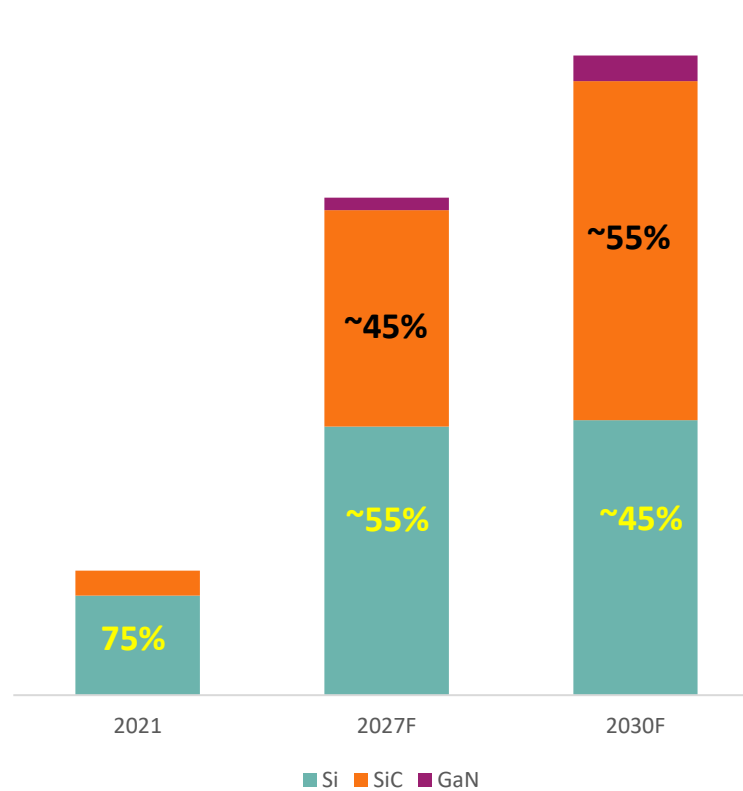


SiC Era's Booming

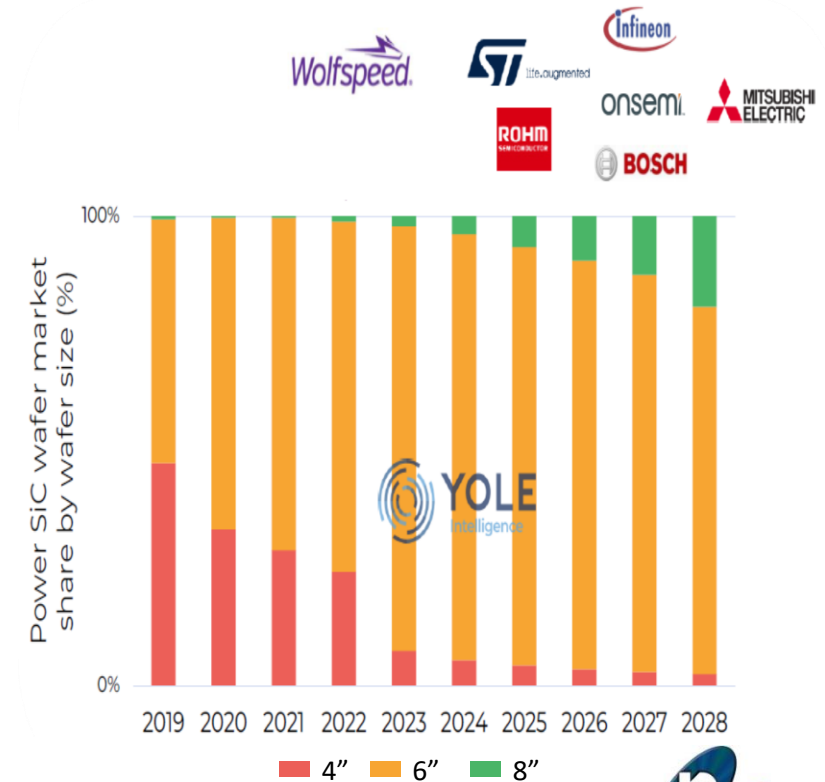
WW Sales SiC is Surging



SiC to take lead '27-'30



SiC 8" MP Ready Now

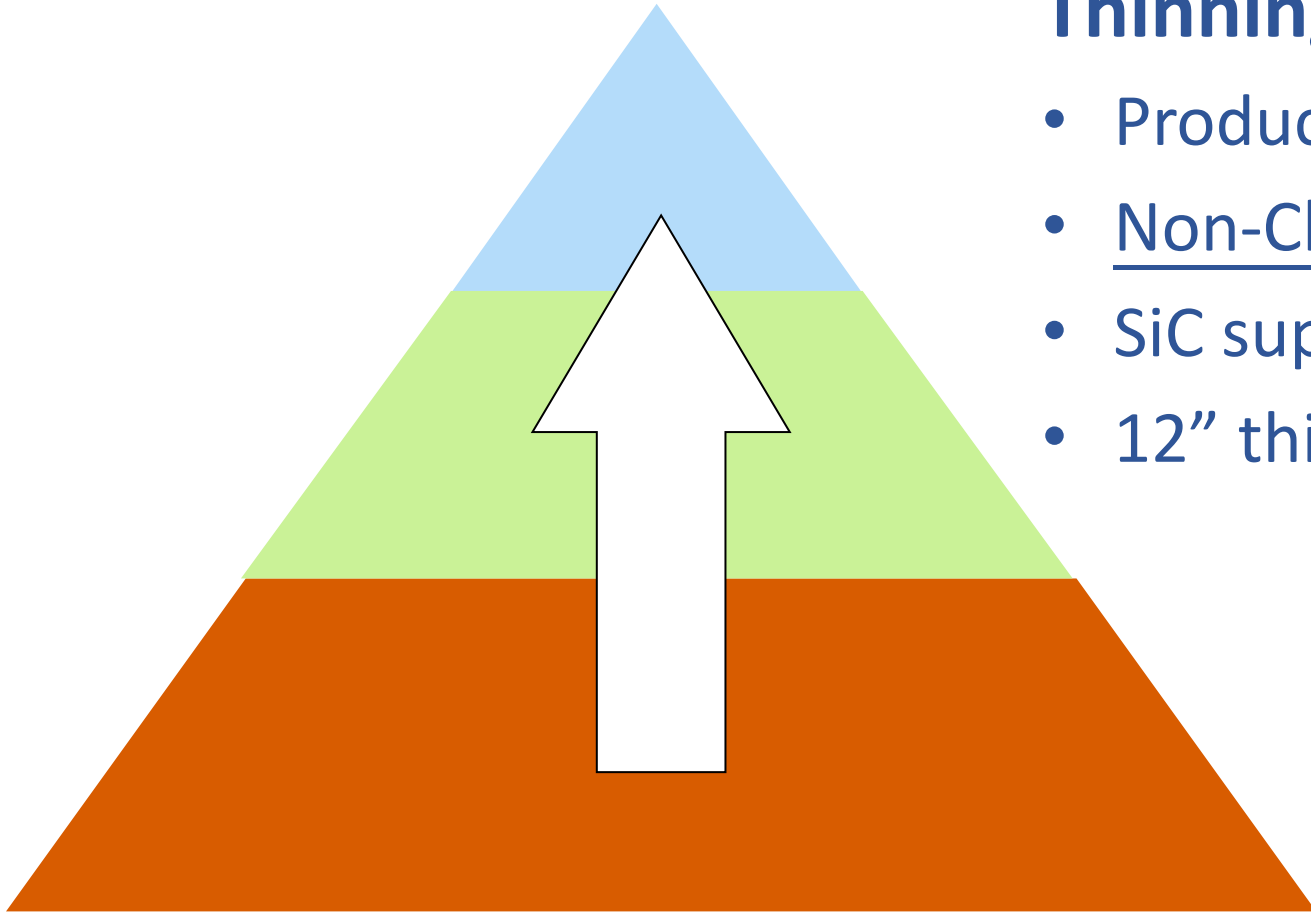


Source: Digitimes, Infineon, Yole

PSI's Thinning & Transforming

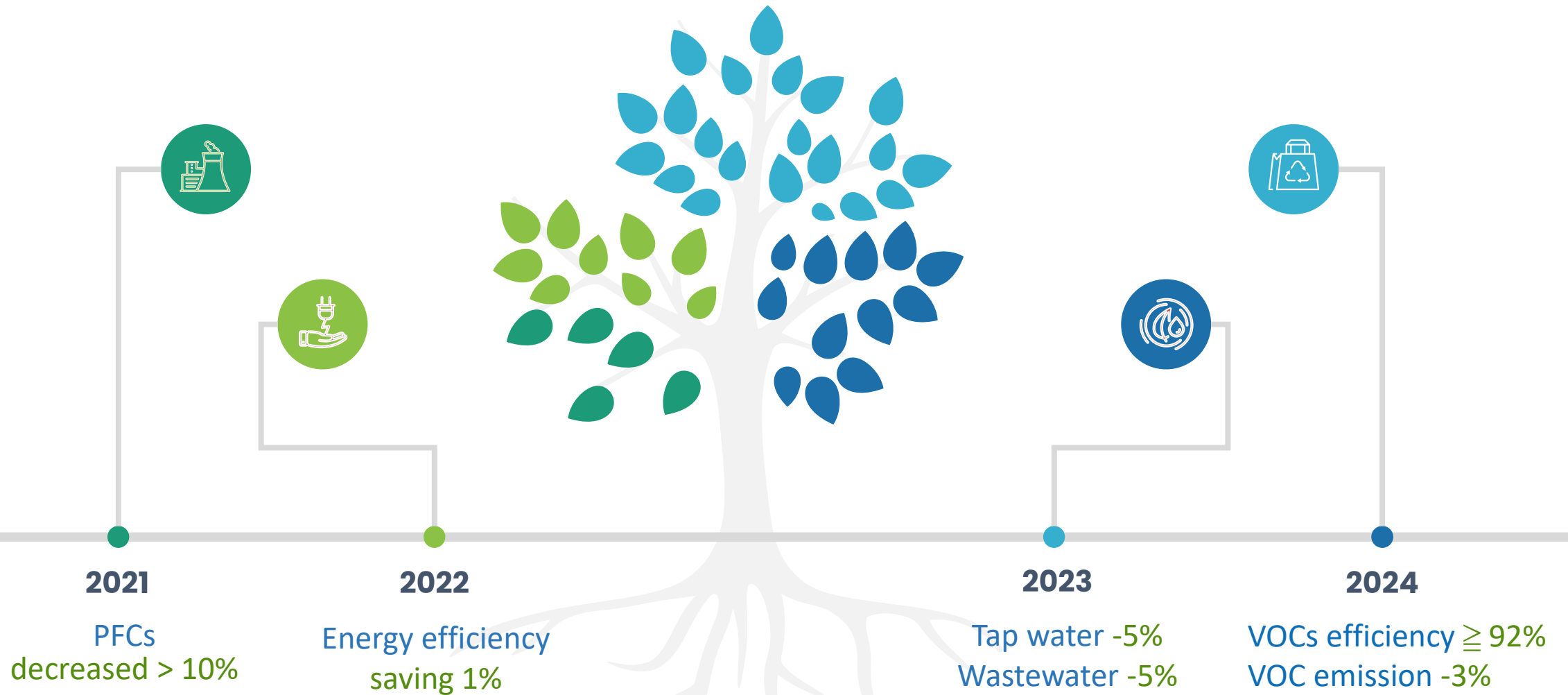
Thinning & Transforming Strategies

- Product focusing on AI & ATV
- Non-China customers centric
- SiC supply chain forming in Taiwan
- 12" thinning surging from 2024



ESG Subject Update

Green Manufacturing Goal



PSI ESG Report Plus

昇陽國際半導體股份有限公司
Phoenix Silicon International Corporation

承諾 · 永續 · 創新
Promise Sustainable Innovation

2022 永續報告書 Sustainability Report + 2024 TCFD

關於本報告書

昇陽國際半導體股份有限公司(以下稱昇陽半導體或本公司)主要提供半導體晶圓專業的加工服務,兩大事業項目為晶圓加工及晶圓薄化,以技術創新與品質優先的敬業精神,拓展全新測試晶圓領域,提供客戶更具競爭力的全方位服務。

報告主軸

本公司持續致力於企業社會責任,落實健全公司治理,並善盡環境保護及社會重大議題關注的責任。本報告書是昇陽半導體第一本永續報告書,我們每年將持續發行此報告,揭露本公司在環境面、社會面、經濟面之相關資訊與執行成果,以及未來公司永續發展之願景與策略。

報告書依據

本報告書內容架構主要是參照全球永續性報告協會GRI Standards (2021) 新版所列之指導方針及架構撰寫,同時符合「上市公司編製與申報永續報告書作業辦法」之要求。本報告書所揭露資料經由相關單位主管檢視,覆核後之修訂稿,再進行行政審核程序送各層主管核閱後定稿出版。

報告書邊界與揭露期間

發行時間: 2023年6月
涵蓋時間: 2022年1月1日至2022年12月31日
涵蓋範圍: 報告書涵蓋範圍包含昇陽半導體總公司及中港分公司
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竹科二廠: 新竹科學園區新竹市力行路8號3、4樓
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董事長的話

各位關注昇陽半導體的朋友們:

這是昇陽半導體的第一本永續報告書,我們超前臺灣證券交易所的法規要求,於2023年下半年出版永續報告書,以體現公司治理健全,關注環境保護與社會重大議題,在充滿機會與挑戰的2022年,終端市場因高通貨膨脹及庫存調整而需求疲弱,在昇陽半導體經營團隊與全體同仁共同努力下,2022年營收達到新台幣31.38億元,連續兩年創下歷史新高,年成長率為18.12%,營業利益達到新台幣3.08億元,年成長率達32.44%,我們專注致力於本業,以具體數字展現我們的耐力與爆發力,為利害關係人創造價值與利益。

在十倍速時代競爭環境下,昇陽半導體用科技實踐創新,提升自動化及智慧製造技術含量,提升成長動能及深綠特色製造,全球最先進的再生晶圓廠-中港分公司,已於2022年9月正式進入量產,昇陽半導體12吋再生及測試晶圓產能在2022年底已達到每月46萬片。在2022年產能增加11%的同時,其用電量減少11%,用水量下降7%及廢水量下降9%,超越本公司制定的ESG環境目標指數,實現了節能減排與推動可再生能源等可持續性發展的願景。

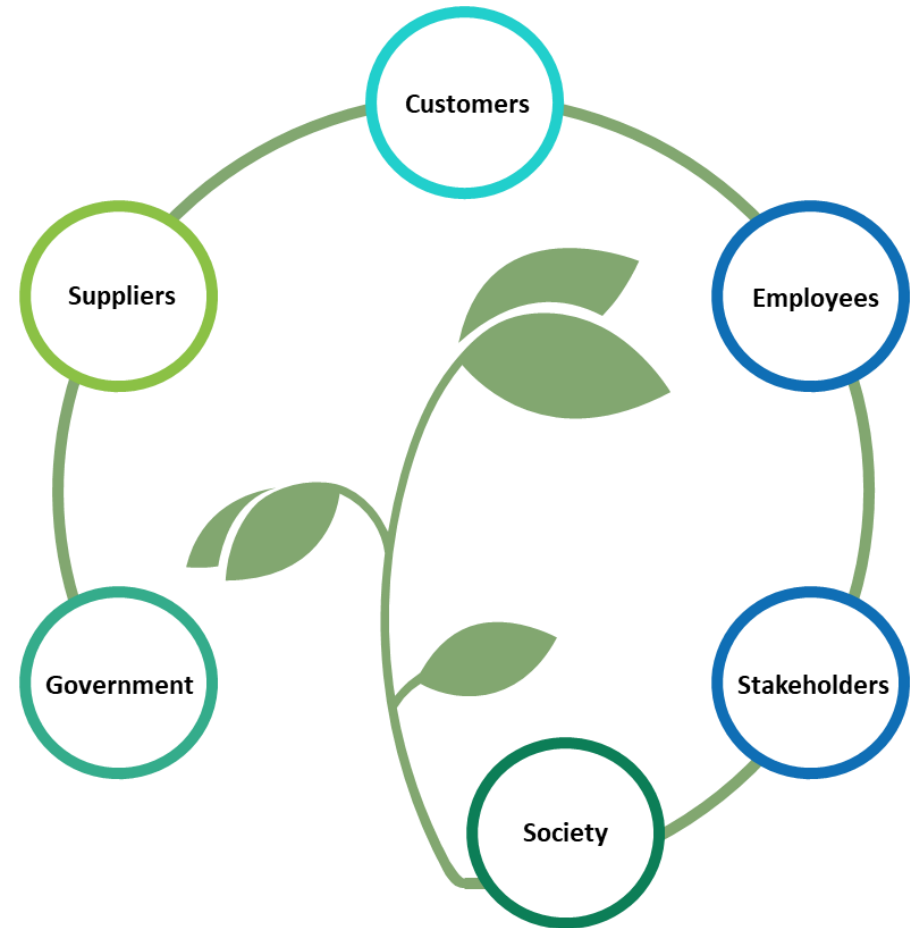
在成長的同時,我們不斷地完善員工福利,致力打造安全健康的友善職場,並成立員工持股信託,創造利益共享機制;我們重視人才培育及訓練,深耕校園促進產學合作交流,以落實專業技術人才培育;對社會注重是不遺餘力,我們與同業員工與公益團體合作,關懷社會弱勢及促進在地農業發展,發揮企業正面影響力並與社會共益前行。

昇陽半導體正走在一條永續的路上,我們以「Promise, Sustainable, Innovation」為永續宗旨,承諾以對社會負責和環境永續的態度,持續創新技術以優化利害關係人關注的議題,由昇陽台灣半導體產業鏈為根基,進一步拓展至全球半導體生態,以誠信創新為本,以人才環境為先,追求讓世界級半導體企業,達成永續經營的企業目標!

董事長 蔡幸川

Key Takeaways

- Global recovery remains slow: 2H24 is expected to outperform the 1H24, projected 1H:2H is 35:65
- PSI has been prepared to participate in Advanced node & 3D-IC packaging plus Compound Semi
- PSI, part of recycling economics, will focus on resource saving and climate change impact
- Performance will be improved YoY in 2024.
A bigger booming is expected in 2025-2026



Thank you
