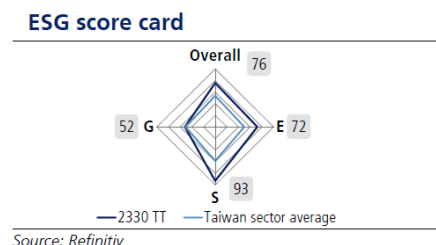


## TSMC (2330.TW/2330 TT)

### How far can TSMC expand CoWoS capacity?

FTSE4Good TIP Taiwan ESG Index stock			
<b>Outperform · Maintained</b>			
Price as of August 21 (NT\$)	958		
12M target price (NT\$)	1,290		
Previous target price (NT\$)	1,290		
Unchanged (%)	0.0		
Upside (%)	34.7		
<b>Key message</b>			
1. Bottlenecks for further capacity expansion in 2025-26 have been removed. 2. We revise up CoWoS capacity from 60-62kwpwm to 70kwpwm by end-2025F. 3. Upside at TSMC = downside at non-TSMC CoWoS supply chain.			
<b>Trading data</b>			
Mkt cap (NT\$/bn/US\$mn)	24,844 / 762,354		
Outstanding shares (mn)	25,934		
Foreign ownership (mn)	19,125		
3M avg. daily trading (mn)	35.59		
52-week trading range (NT\$)	519–1,080		
<b>Performance</b>			
	<b>3M</b>	<b>6M</b>	<b>12M</b>
Absolute (%)	13.9	40.7	78.4
Relative (%)	9.2	21.6	42.6

<b>Quarterly EPS</b>				
NT\$	1Q	2Q	3Q	4Q
2023	7.98A	7.01A	8.14A	9.21A
2024	8.70A	9.56A	11.61F	11.81F
2025	10.85F	11.55F	14.23F	15.10F



#### Event

On August 15, TSMC announced it will buy Innolux's 5.5G fab in Tainan, Taiwan for NT\$17.1bn. We believe the move is motivated by CoWoS capacity expansion in the short-term and potential of FOPLP in the long-term. In this report, we provide an update on the latest CoWoS status and our estimate for how much TSMC can expand CoWoS capacity by as of end-2026.

#### Impact

**Bottlenecks for further capacity expansion in 2025-26 have been removed.** Based on our understanding, the bottlenecks for CoWoS supply is the lead time for equipment, as well as the land and space required for capacity expansion. Currently, TSMC's CoWoS capacity expansion has mainly been at advanced packaging AP6 in Zhunan, Taiwan, and expansion at AP5 in Taichung, Taiwan will take place in 4Q24. Construction at AP7 phase 1 in Chaiyi, Taiwan is expected to be completed in 2026, with production commencing in late 2027 and 2028. Thus, the move to acquire Innolux's (3481 TT, NT\$14.55, N) 5.5G fab will speed up TSMC's CoWoS capacity expansion plan to meet strong AI demand, particularly from NVIDIA (US), and will provide a backup in case of delay of AP7 phase 1 due to discovery of a buried historical site, which is likely to be resolved soon. By our estimate, Innolux's 5.5G fab could accommodate up to an additional 30kwpwm of CoW capacity.

**We revise up CoWoS capacity from 60-62kwpwm to 70kwpwm by end-2025F.** According to our channel check, we revise up TSMC's CoWoS capacity estimate to 70kwpwm by end-2025. The additional 10kwpwm of CoW capacity (oS will be outsourced) in 4Q25 accounts for 0.3% of our 2025 sales forecast and 1.0-1.3% of our 2026 forecast. Primarily, those will be mainly CoW-S instead of CoW-L, due to changes in NVIDIA's roadmap (for B200A, single GPU version of Blackwell). We do not yet know the full picture for CoWoS expansion in 2026, but Innolux's fab will likely contribute another 3.0-3.5% to TSMC revenue at most. Based on our calculations, we forecast every 10kwpwm of CoWoS capacity will contribute 1.0-1.2% of TSMC sales, depending on the pricing and respective weightings of CoW-S and CoW-L.

**Upside at TSMC = downside at non-TSMC CoWoS supply chain.** ASE (3711 TT, NT\$152.5, NR) is a major oS partner for TSMC's CoWoS production, but the market believes it might add 10kwpwm of CoW capacity in 2H25. However, with the CoWoS bottleneck at TSMC having been removed, we believe it is unlikely that TSMC will outsource CoW due to higher margins from internal production. Due to a lack of CoWoS-L capabilities and low-yield for CoWoS-S, non-TSMC suppliers might see some downside to business from NVIDIA as TSMC's order fulfillment rate might improve. We now forecast respective TSMC monthly CoWoS capacity of 34kwpwm, 70kwpwm, and 110-120kwpwm (previously 34kwpwm, 60kwpwm, and 85-90kwpwm) in 2024-26.

#### Valuation & Action

To factor in the upside of CoWoS capacity expansion, we slightly revise up our 2025 EPS forecast by 0.3% to NT\$51.73, versus consensus of NT\$53.37, with more upside in 2026. We maintain Outperform and our target price of NT\$1,290, based on 25x 2025F EPS. We recommend investors maintain positions in the industry leader.

#### Risks

Global macro and geopolitical uncertainties; prolonged inventory correction.

#### Key financials and valuations

	Dec-21A	Dec-22A	Dec-23A	Dec-24F	Dec-25F
Revenue (NT\$mn)	1,587,415	2,263,891	2,161,736	2,797,827	3,366,101
Gross profit (NT\$mn)	819,537	1,348,355	1,175,111	1,492,123	1,842,969
Operating profit (NT\$mn)	649,981	1,121,279	921,088	1,200,084	1,505,929
Net profit (NT\$mn)	596,540	1,016,530	838,498	1,080,555	1,341,272
EPS (NT\$)	23.01	39.20	32.34	41.67	51.73
Cash DPS (NT\$)	11.00	11.00	13.00	16.00	18.00
EPS growth (%)	15.2	70.4	(17.5)	28.9	24.1
PE (x)	41.6	24.4	29.6	23.0	18.5
PB (x)	11.5	8.4	7.2	5.9	4.8
EV/EBITDA (x)	22.6	15.3	16.2	12.2	10.0
Net debt to equity (%)	Net cash	Net cash	Net cash	Net cash	Net cash
Dividend yield (%)	1.1	1.1	1.4	1.7	1.9
Return on average equity (%)	29.7	39.8	26.2	28.1	28.6

Source: Company data, KGI Research estimates

**Upside for CoWoS capacity expansion.** TSMC’s CoWoS capacity is unable to match skyrocketing AI demand, despite its aggressive expansion plan. According to our channel check, the lead time for equipment is the main bottleneck, but available land and space is also insufficient for upward revisions to the capacity expansion plan. In addition, TSMC’s AP7 phase 1 (construction to be completed by 2026) faces potential delays due to discovery of a buried historical site, but this is likely to be resolved soon. Therefore, the acquisition of Innolux’s 5.5G fab in Tainan, Taiwan will speed up TSMC’s CoWoS expansion plan and help mitigate the impact of the current capacity shortage.

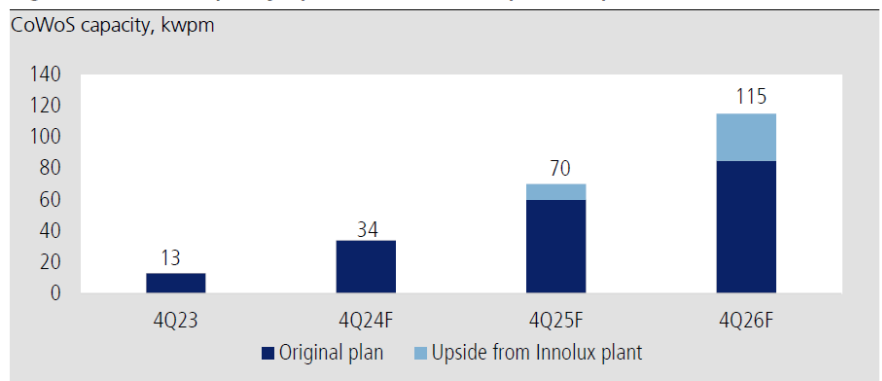
**Figure 1: Overview of TSMC’s advanced packaging fabs**

TSMC AP fab	Location	Bumping	InFO	CoW-S	CoW-L	oS	SoIC	Status
AP1 (RD)	Hsinchu	V		V	V	V	V	Online
AP2	Tainan	V						Online
AP3	Longtan		V	V	V			Online
AP5	Taichung		V	V	V	V		To come online in 4Q24
AP6	Zhunan		V	V	V		V	Online
AP7 (P1)	Chiayi			V	V			P1 potentially delayed due to discovery of buried historical site
AP7 (P2)	Chiayi		V					P2 on track, with construction to be completed in 2026F
AP8	Tainan (Innolux)			V	V		V	Initially 10kwpm for CoW-S for B200A in 4Q25

Source: KGI Research estimates

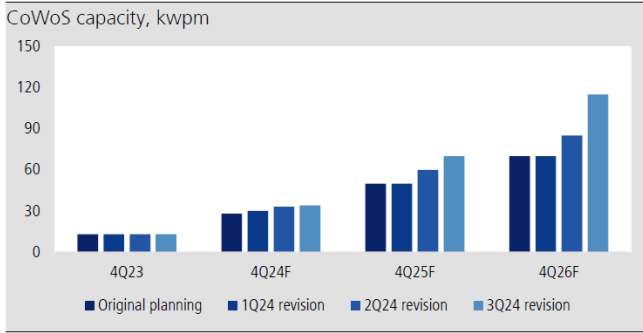
According to our channel check, we revise up TSMC’s CoWoS capacity estimate from 60-62kwpm to 70kwpm by end-2025. The additional 10kwpm of CoW capacity (oS will be outsourced) in 4Q25 accounts for 0.3% of our 2025 sales forecast and 1.0-1.3% of our 2026 forecast. Primarily, those additional capacity will be mainly CoW-S instead of CoW-L, due to changes in NVIDIA’s roadmap (B200A, single GPU version of Blackwell). We do not yet know the full picture for CoWoS expansion in 2026, but Innolux’s 5.5G fab will likely contribute another 3.0-3.5% to TSMC revenue at most. Based on our calculations, we forecast every 10kwpm of CoWoS capacity will contribute 1.0-1.2% of TSMC sales, depending on the pricing and respective weightings of CoW-S and CoW-L.

**Figure 2: CoWoS capacity upside from Innolux plant acquisition**

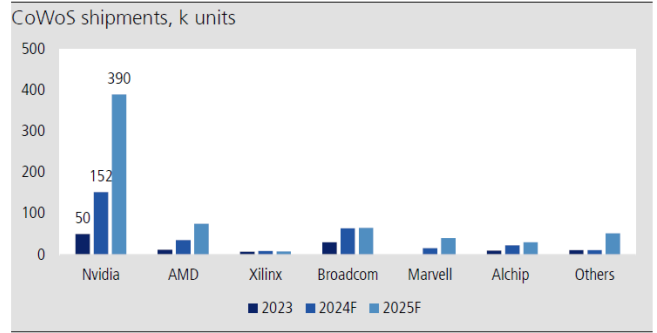


Source: KGI Research estimates

We forecast TSMC’s annual CoWoS capacity may grow from 310k units in 2024 to 660k units in 2025, up 112% YoY. Meanwhile, we estimate TSMC might supply 390k CoWoS units to NVIDIA, with its fulfillment rate rising above 80%.

**Figure 3: CoWoS capacity forecast revisions**


Source: KGI Research estimates

**Figure 4: 2023-25 CoWoS client demand forecasts**


Source: KGI Research estimates

**Figure 5: Breakdown of 2024-25 forecast revisions vs. consensus**

NT\$m	2024F						2025F					
	Revision	Previous	Chg. (%)	YoY (%)	Consensus	Diff. (%)	Revision	Previous	Chg. (%)	YoY (%)	Consensus	Diff. (%)
Revenue	2,797,827	2,797,827	0.0	29.4	2,814,132	(0.6)	3,366,101	3,354,954	0.3	20.3	3,472,076	(3.1)
Gross profit	1,492,123	1,492,123	(0.0)	27.0	1,514,200	(1.5)	1,842,969	1,836,672	0.3	23.5	1,913,704	(3.7)
Operating profit	1,200,084	1,200,084	(0.0)	30.3	1,215,166	(1.2)	1,505,929	1,500,727	0.3	25.5	1,558,997	(3.4)
Net profit	1,080,555	1,080,554	0.0	28.9	1,086,115	(0.5)	1,341,272	1,336,796	0.3	24.1	1,386,770	(3.3)
EPS (NT\$)	41.67	41.67	0.0	28.9	41.98	(0.7)	51.73	51.56	0.3	24.1	53.37	(3.1)
Gross margin (%)	53.3	53.3	(0.0)ppts	(1.0)ppts	53.8	(0.5)ppts	54.8	54.7	0.0 ppts	1.4 ppts	55.1	(0.4)ppts
OP margin (%)	42.9	42.9	(0.0)ppts	0.3 ppts	43.2	(0.3)ppts	44.7	44.7	0.0 ppts	1.8 ppts	44.9	(0.2)ppts
Net margin (%)	38.6	38.6	0.0 ppts	(0.2)ppts	38.6	0.0 ppts	39.8	39.8	0.0 ppts	1.2 ppts	39.9	(0.1)ppts

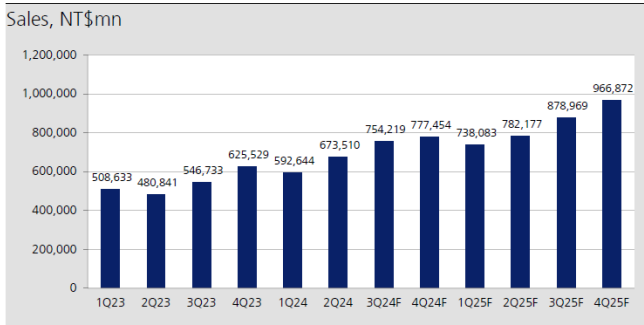
Source: Bloomberg, KGI Research estimates

**Figure 6: Company profile**

Taiwan Semiconductor Manufacturing Company (TSMC), the world's largest dedicated semiconductor foundry, has increased its market share in recent years. Capacity exceeded 16mn 8-inch equivalent wafers in 2013. TSMC operates six advanced 300mm wafer fabs, six 8-inch wafer fabs, and one 6-inch wafer fab, and is building a new 300mm wafer fab. The company provides the following services: wafer manufacturing, wafer probing, assembly and testing, mask production, and design services.

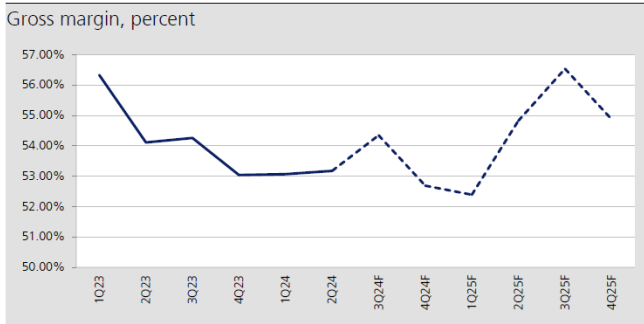
Source: Company data, KGI Research

**Figure 8: Sales**



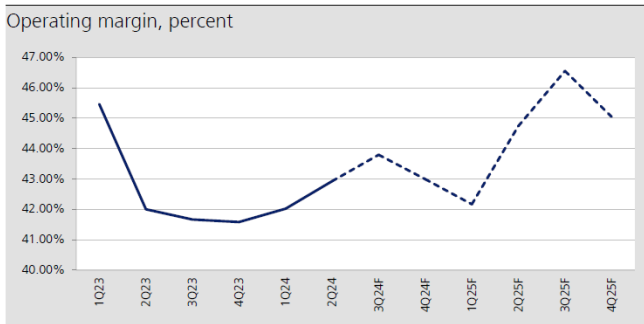
Source: KGI Research

**Figure 10: Gross margin**



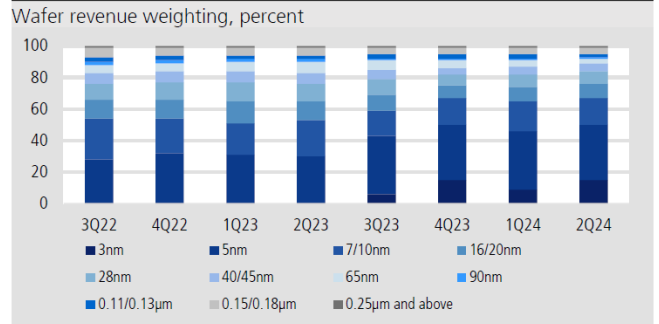
Source: KGI Research

**Figure 12: Operating margin**



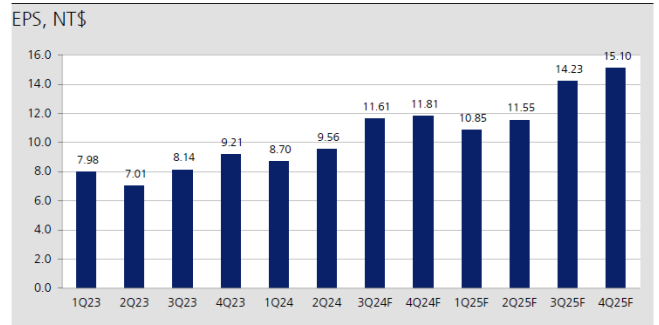
Source: KGI Research

**Figure 7: TSMC's wafer revenue by node**



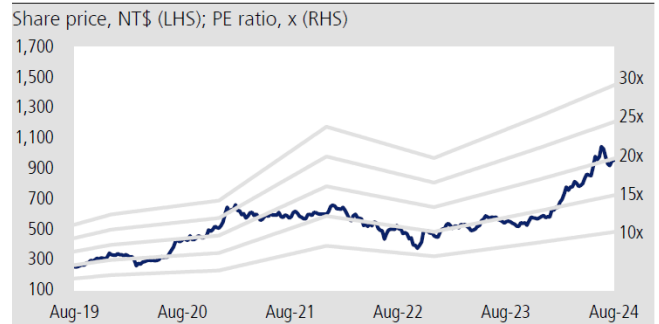
Source: Company data, KGI Research

**Figure 9: EPS**



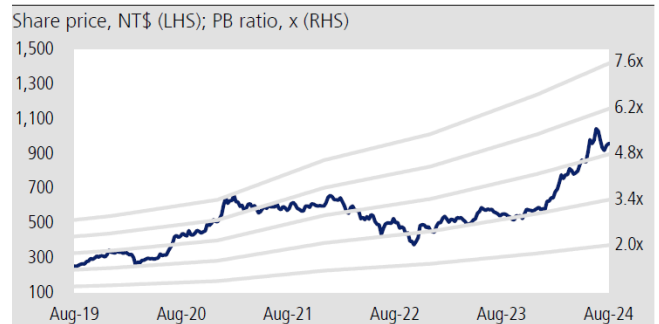
Source: KGI Research

**Figure 11: 12M forward PE band**



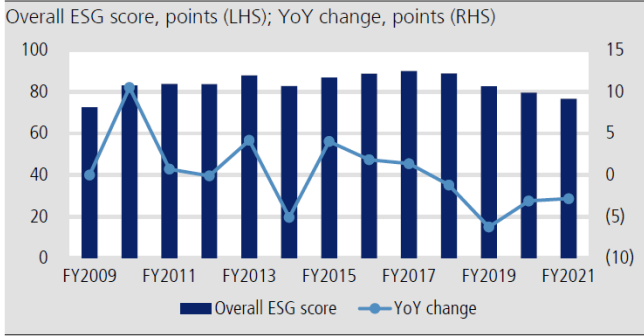
Source: TEI, KGI Research estimates

**Figure 13: 12M forward PB band**



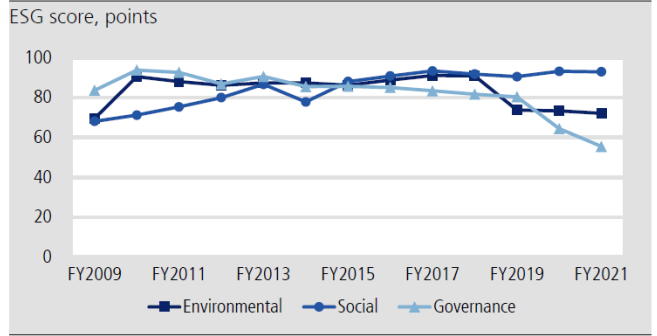
Source: TEI, KGI Research estimates

**Figure 14: Overall ESG score**



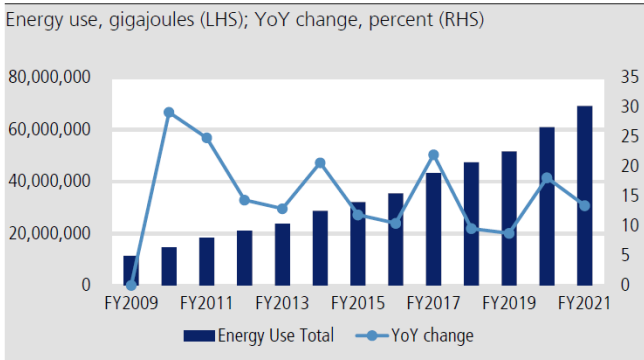
Source: Refinitiv, Company data

**Figure 15: ESG score by category**



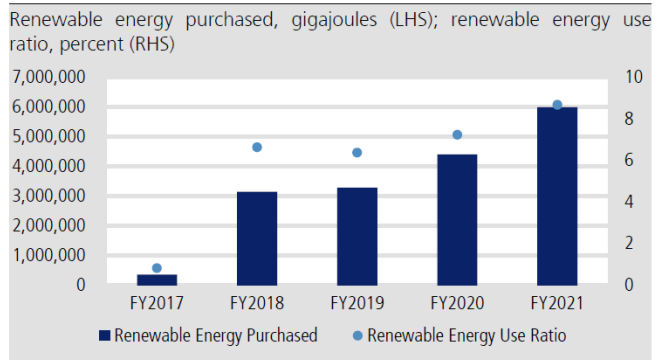
Source: Refinitiv, Company data

**Figure 16: Energy use**



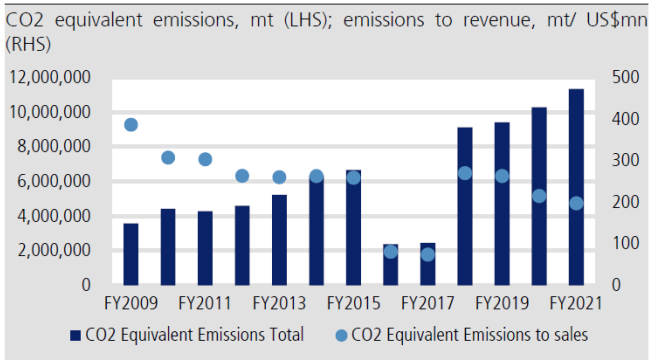
Source: Refinitiv, Company data

**Figure 17: Renewable energy**



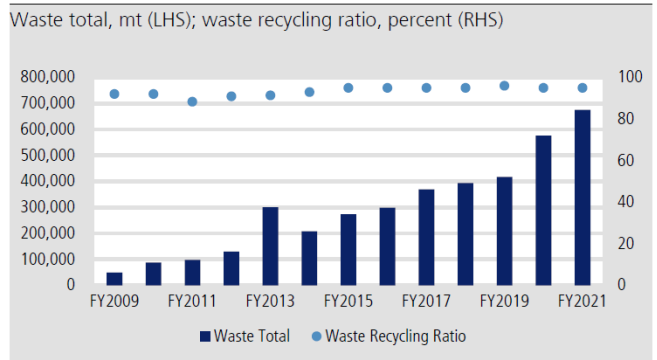
Source: Refinitiv, Company data

**Figure 18: CO2 equivalent emissions**



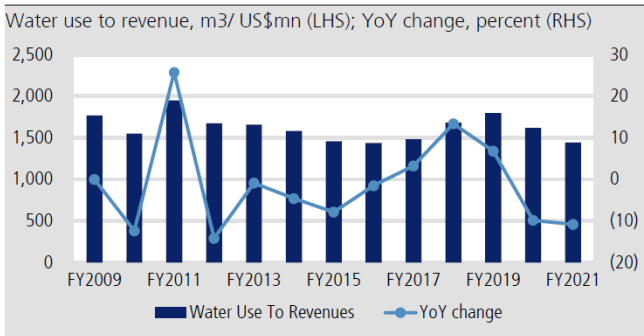
Source: Refinitiv, Company data

**Figure 19: Waste total**



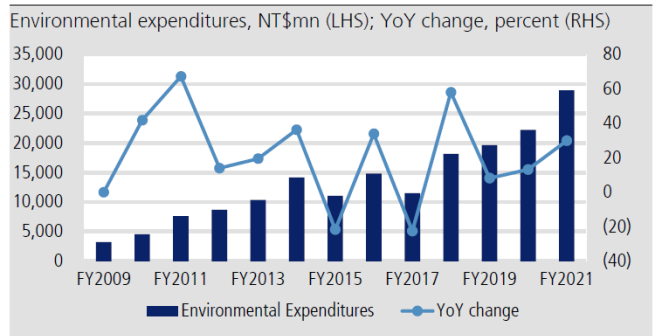
Source: Refinitiv, Company data

**Figure 20: Water use to revenue**

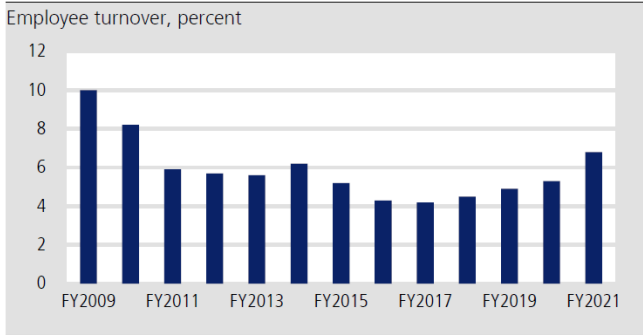


Source: Refinitiv, Company data

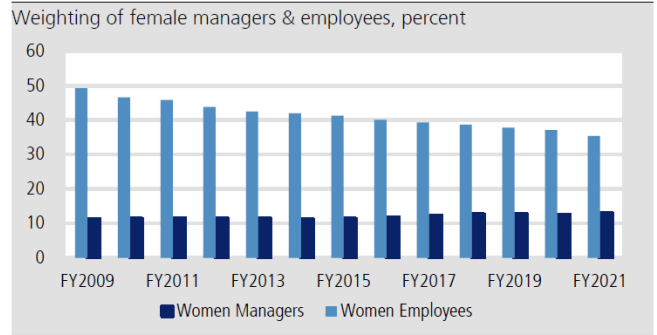
**Figure 21: Environmental expenditures**



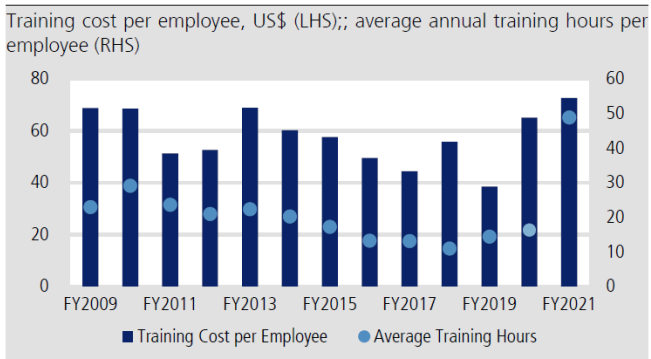
Source: Refinitiv, Company data

**Figure 22: Employee turnover**


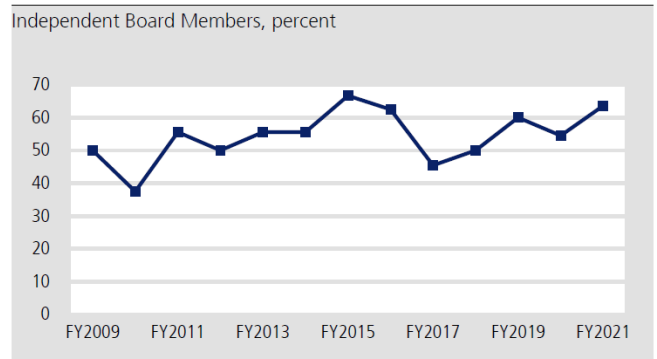
Source: Refinitiv, Company data

**Figure 23: Gender diversification**


Source: Refinitiv, Company data

**Figure 24: Employee training**


Source: Refinitiv, Company data

**Figure 25: Independent Board Members**


Source: Refinitiv, Company data

**ESG chart definition**

Item	Definition	Remarks
Energy use	<p>Total direct and indirect energy consumption in gigajoules.</p> <ul style="list-style-type: none"> <li>- the total amount of energy that has been consumed within the boundaries of the company's operations</li> <li>- total energy use = total direct energy consumption + indirect energy consumption</li> <li>- purchased energy and produced energy are included in total energy use</li> <li>- for utilities, transmission/ grid loss as part of its business activities is considered as total energy consumed and data does not consider electricity produced to answer energy use (utility company produces to sell)</li> <li>- for utilities, raw materials such as coal, gas or nuclear used in the production of energy are not considered under 'total energy use'</li> </ul>	
Renewable energy purchased	<p>Total primary renewable energy purchased in gigajoules.</p> <ul style="list-style-type: none"> <li>- energy consumed by the company from various sources and among the purchased energy, how much energy is renewable in nature (solar, wind, hydro, biomass, geothermal) are in scope</li> <li>- if there is no evidence that renewable energy is produced by the company, then we consider the reported energy figure as renewable energy purchased</li> </ul>	
Renewable energy use ratio	Renewable energy to total energy used	
CO2 equivalent emissions	<p>Direct CO2 and CO2 equivalent emissions in metric tons.</p> <ul style="list-style-type: none"> <li>- direct emissions from sources that are owned or controlled by the company (scope 1 emissions)</li> <li>- following gases are relevant: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorinated compound (PFCS), sulfur hexafluoride (SF6), nitrogen trifluoride (NF3)</li> </ul>	
CO2 equivalent emissions to sales	<p>Direct CO2 and CO2 equivalent emissions (metric tons) to sales (NT\$m)</p> <ul style="list-style-type: none"> <li>- direct emissions from sources that are owned or controlled by the company (scope 1 emissions)</li> <li>- following gases are relevant: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorinated compound (PFCS), sulfur hexafluoride (SF6), nitrogen trifluoride (NF3)</li> </ul>	
Waste total	<p>Total amount of waste produced in metric tons.</p> <ul style="list-style-type: none"> <li>- total waste = non-hazardous waste + hazardous waste</li> <li>- only solid waste is taken into consideration, exceptionally if liquid waste is reported in metric tons, then we do the summation to derive total including liquid waste</li> <li>- for sectors like mining, oil &amp; gas, waste generation like tailings, waste rock, coal and fly ash are also considered</li> </ul>	
Waste recycling ratio	<p>The waste recycling ratio as reported by the company.</p> <ul style="list-style-type: none"> <li>- waste recycling ratio = waste recycled/total waste*100</li> <li>- waste to energy or waste incinerated with energy recovery are considered as waste recycled</li> <li>- waste recovered via composting is considered as recycled waste</li> </ul>	
Water withdrawal total	<p>Total water withdrawal in cubic meters.</p> <ul style="list-style-type: none"> <li>- the total volume of water withdrawn from any water source that was either withdrawn directly by the reporting organization or through intermediaries such as water utilities</li> <li>- different sources of water like wells, town/utility/municipal water, river water, and surface water are considered</li> </ul>	
Environmental expenditures	<p>Total amount of environmental expenditures.</p> <ul style="list-style-type: none"> <li>- all environmental investment &amp; expenditures for environmental protection or to prevent, reduce, control environmental aspects, impacts, and hazards. It also includes disposal, treatment, sanitation, and clean-up expenditures</li> </ul>	
Turnover of employees	<p>Percentage of employee turnover.</p> <ul style="list-style-type: none"> <li>- includes employees who left the company for any reason (voluntary or involuntary), such as resignations, retirement, natural departure/death, medical incapacitation, redundancy, layoffs, restructuring, dismissal, retrenchment or end of a fixed-term contract</li> <li>- employees turnover rate = (employees leaving/average number of employees)*100</li> <li>- where the average number of employees = (employees at the end of the current year + employees at the end of the previous year)/2</li> <li>- employees at the end of the current fiscal year = employees at the end of the previous fiscal year + new employees - employees leaving</li> </ul>	
Women managers	<p>Percentage of women managers.</p> <ul style="list-style-type: none"> <li>- percentage of women managers among total managers of the company</li> <li>- if there is a breakdown by category in percentage, such as top, senior, middle, and junior management, then we consider the percentage of middle women managers</li> <li>- percentage of women managers = number of women managers/total number of managers*100</li> </ul>	
Women employees	<p>Percentage of women employees.</p> <ul style="list-style-type: none"> <li>- percentage of women employees to the total number of employees of the company</li> <li>- percentage of women employees = number of women/total number of employees*100</li> </ul>	
Training hours total	<p>Total training hours performed by all employees.</p> <ul style="list-style-type: none"> <li>- consider only employee training hours</li> <li>- includes all types of training given to general employees (such as health &amp; safety, environmental, emergency response, skills &amp; career development training)</li> <li>- if the value is given in days, multiply by 8, assuming that 1 day = 8 hours worked</li> </ul>	
Training hours per employee	Training hours per employee per year	

Source: Refinitiv, KGI Research

**Income statement**

	Quarterly								Annually		
	Mar-24A	Jun-24A	Sep-24F	Dec-24F	Mar-25F	Jun-25F	Sep-25F	Dec-25F	Dec-23A	Dec-24F	Dec-25F
<b>Income statement (NT\$m)</b>											
<b>Revenue</b>	592,644	673,510	754,219	777,454	738,083	782,177	878,969	966,872	2,161,736	2,797,827	3,366,101
Cost of goods sold	(278,139)	(315,386)	(344,349)	(367,832)	(351,417)	(353,378)	(382,037)	(436,300)	(986,625)	(1,305,705)	(1,523,132)
<b>Gross profit</b>	<b>314,505</b>	<b>358,124</b>	<b>409,870</b>	<b>409,622</b>	<b>386,666</b>	<b>428,800</b>	<b>496,932</b>	<b>530,572</b>	<b>1,175,111</b>	<b>1,492,123</b>	<b>1,842,969</b>
Operating expenses	(65,487)	(69,022)	(79,570)	(75,413)	(75,432)	(78,843)	(87,721)	(95,044)	(254,022)	(292,039)	(337,040)
<b>Operating profit</b>	<b>249,018</b>	<b>289,103</b>	<b>330,300</b>	<b>334,209</b>	<b>311,234</b>	<b>349,956</b>	<b>409,211</b>	<b>435,529</b>	<b>921,088</b>	<b>1,200,084</b>	<b>1,505,929</b>
Depreciation of fixed assets	(156,697)	(162,929)	(194,771)	(182,809)	(182,785)	(190,193)	(197,601)	(192,045)	(522,933)	(697,207)	(762,624)
Amortisation of intangible assets	(2,326)	(2,237)	(4,151)	(4,463)	(3,637)	(3,741)	(4,212)	(3,667)	(9,258)	(13,178)	(15,257)
<b>EBITDA</b>	<b>408,041</b>	<b>454,269</b>	<b>529,223</b>	<b>521,482</b>	<b>497,656</b>	<b>543,890</b>	<b>611,023</b>	<b>631,241</b>	<b>1,453,279</b>	<b>1,910,468</b>	<b>2,283,810</b>
Interest income	19,359	20,979	20,979	20,979	20,979	20,979	20,979	20,979	60,294	82,296	83,915
Investment income	950	1,355	1,200	1,200	1,200	1,200	1,200	1,200	5,119	4,705	4,800
Other non-op income	0	(0)	0	-	-	-	-	-	16	0	-
<b>Non-operating income</b>	<b>20,309</b>	<b>22,335</b>	<b>22,179</b>	<b>22,179</b>	<b>22,179</b>	<b>22,179</b>	<b>22,179</b>	<b>22,179</b>	<b>65,429</b>	<b>87,001</b>	<b>88,715</b>
Interest expense	(2,698)	(2,638)	(2,638)	(2,638)	(2,638)	(2,638)	(2,638)	(2,638)	(11,999)	(10,613)	(10,554)
Investment loss	-	-	-	-	-	-	-	-	-	-	-
Other non-op expenses	(86)	58	-	-	-	-	-	-	4,276	(27)	-
<b>Non-operating expenses</b>	<b>(2,784)</b>	<b>(2,580)</b>	<b>(2,638)</b>	<b>(2,638)</b>	<b>(2,638)</b>	<b>(2,638)</b>	<b>(2,638)</b>	<b>(2,638)</b>	<b>(7,723)</b>	<b>(10,641)</b>	<b>(10,554)</b>
<b>Pre-tax profit</b>	<b>266,543</b>	<b>308,858</b>	<b>349,840</b>	<b>353,750</b>	<b>330,774</b>	<b>369,497</b>	<b>428,751</b>	<b>455,069</b>	<b>978,794</b>	<b>1,276,444</b>	<b>1,584,091</b>
Current taxation	(41,322)	(58,649)	(48,978)	(47,756)	(49,616)	(70,204)	(60,025)	(63,710)	(141,404)	(196,705)	(243,555)
Minorities	264	184	184	184	184	184	184	184	730	816	736
<b>Normalised net profit</b>	<b>225,485</b>	<b>250,393</b>	<b>301,047</b>	<b>306,178</b>	<b>281,342</b>	<b>299,476</b>	<b>368,910</b>	<b>391,543</b>	<b>838,120</b>	<b>1,080,555</b>	<b>1,341,272</b>
Extraordinary items	(0)	(2,547)	-	-	-	-	-	-	377	-	-
<b>Net profit</b>	<b>225,485</b>	<b>247,846</b>	<b>301,047</b>	<b>306,178</b>	<b>281,342</b>	<b>299,476</b>	<b>368,910</b>	<b>391,543</b>	<b>838,498</b>	<b>1,080,555</b>	<b>1,341,272</b>
EPS (NT\$)	8.70	9.56	11.61	11.81	10.85	11.55	14.23	15.10	32.34	41.67	51.73
<b>Margins (%)</b>											
Gross profit margin	53.1	53.2	54.3	52.7	52.4	54.8	56.5	54.9	54.4	53.3	54.8
Operating margin	42.0	42.9	43.8	43.0	42.2	44.7	46.6	45.0	42.6	42.9	44.7
EBITDA margin	68.9	67.4	70.2	67.1	67.4	69.5	69.5	65.3	67.2	68.3	67.8
Pretax profit margin	45.0	45.9	46.4	45.5	44.8	47.2	48.8	47.1	45.3	45.6	47.1
Net profit margin	38.0	36.8	39.9	39.4	38.1	38.3	42.0	40.5	38.8	38.6	39.8
<b>Sequential growth (%)</b>											
Revenue growth	(5.3)	13.6	12.0	3.1	(5.1)	6.0	12.4	10.0			
Gross profit growth	(5.2)	13.9	14.4	(0.1)	(5.6)	10.9	15.9	6.8			
Operating profit growth	(4.3)	16.1	14.3	1.2	(6.9)	12.4	16.9	6.4			
EBITDA growth	(0.7)	11.3	16.5	(1.5)	(4.6)	9.3	12.3	3.3			
Pretax profit growth	(4.2)	15.9	13.3	1.1	(6.5)	11.7	16.0	6.1			
Net profit growth	(5.5)	9.9	21.5	1.7	(8.1)	6.4	23.2	6.1			
<b>YoY growth (%)</b>											
Revenue growth	16.5	40.1	38.0	24.3	24.5	16.1	16.5	24.4	(4.5)	29.4	20.3
Gross profit growth	9.8	37.6	38.2	23.5	22.9	19.7	21.2	29.5	(12.8)	27.0	23.5
Operating profit growth	7.7	43.1	45.0	28.5	25.0	21.0	23.9	30.3	(17.9)	30.3	25.5
EBITDA growth	19.5	39.4	41.1	27.0	22.0	19.7	15.5	21.0	(6.8)	31.5	19.5
Pretax profit growth	9.1	43.9	44.8	27.2	24.1	19.6	22.6	28.6	(14.5)	30.4	24.1
Net profit growth	8.9	36.3	42.7	28.3	24.8	20.8	22.5	27.9	(17.5)	28.9	24.1

Source: Company data, KGI Research estimates



**Balance sheet**

NT\$mn	Dec-21A	Dec-22A	Dec-23A	Dec-24F	Dec-25F
<b>Total assets</b>	<b>3,725,503</b>	<b>4,964,779</b>	<b>5,532,371</b>	<b>6,545,824</b>	<b>7,506,781</b>
<b>Current assets</b>	<b>1,607,073</b>	<b>2,052,897</b>	<b>2,194,033</b>	<b>2,863,513</b>	<b>3,435,021</b>
Cash & ST securities	1,188,456	1,561,486	1,687,644	2,168,032	2,603,730
Inventory	193,102	221,149	250,997	329,397	390,711
Accounts receivable	198,301	231,340	201,938	305,763	380,259
Other current assets	27,214	38,922	53,453	60,321	60,321
<b>Non-current assets</b>	<b>2,118,431</b>	<b>2,911,882</b>	<b>3,338,338</b>	<b>3,682,311</b>	<b>4,071,761</b>
LT investments	29,385	68,928	129,442	142,619	147,419
Net fixed assets	1,975,119	2,693,837	3,064,475	3,395,066	3,779,715
Other assets	113,927	149,117	144,421	144,626	144,626
<b>Total liabilities</b>	<b>1,554,770</b>	<b>2,004,290</b>	<b>2,049,108</b>	<b>2,283,884</b>	<b>2,318,434</b>
<b>Current liabilities</b>	<b>739,503</b>	<b>944,227</b>	<b>913,583</b>	<b>1,170,583</b>	<b>1,205,134</b>
Accounts payable	48,723	56,522	57,293	92,348	109,537
Interest bearing ST liabilities	119,488	19,314	9,293	23,075	23,075
Other current liabilities	571,293	868,391	846,997	1,055,160	1,072,521
<b>Non-current liabilities</b>	<b>815,267</b>	<b>1,060,063</b>	<b>1,135,525</b>	<b>1,113,300</b>	<b>1,113,300</b>
Long-term debt	613,380	839,096	918,283	945,143	945,143
Other L-T liabilities	181,123	191,203	188,560	138,956	138,956
<b>Total equity</b>	<b>2,170,733</b>	<b>2,960,489</b>	<b>3,483,263</b>	<b>4,261,941</b>	<b>5,188,348</b>
Share capital	259,304	259,304	259,321	259,336	259,336
Retained earnings reserve	1,536,379	2,323,223	2,846,884	3,902,918	4,829,325
Minority interests	2,447	14,836	24,349	28,745	28,745
Preferred shareholders funds	-	-	-	-	-

**Key ratios**

	Dec-21A	Dec-22A	Dec-23A	Dec-24F	Dec-25F
<b>Growth</b>					
Revenue growth	18.5%	42.6%	(4.5%)	29.4%	20.3%
Operating profit growth	14.7%	72.5%	(17.9%)	30.3%	25.5%
EBITDA growth	19.4%	45.3%	(6.8%)	31.5%	19.5%
Net profit growth	15.2%	70.4%	(17.5%)	28.9%	24.1%
EPS growth	15.2%	70.4%	(17.5%)	28.9%	24.1%
<b>Profitability</b>					
Gross profit margin	51.6%	59.6%	54.4%	53.3%	54.8%
Operating margin	40.9%	49.5%	42.6%	42.9%	44.7%
EBITDA margin	67.6%	68.8%	67.2%	68.3%	67.8%
Net profit margin	37.6%	44.9%	38.8%	38.6%	39.8%
Return on average assets	18.4%	23.4%	16.0%	17.9%	19.1%
Return on average equity	29.7%	39.8%	26.2%	28.1%	28.6%
<b>Stability</b>					
Gross debt to equity	33.8%	29.0%	26.6%	22.7%	18.7%
Net debt to equity	Net cash	Net cash	Net cash	Net cash	Net cash
Interest coverage (x)	123.5	98.4	82.6	121.3	151.1
Interest & ST debt coverage (x)	0.8	1.0	1.0	1.0	1.0
Cash flow interest coverage(x)	205.4	137.1	103.5	166.2	190.7
Cash flow/int. & ST debt (x)	8.9	51.8	58.3	52.4	59.9
Current ratio (x)	2.2	2.2	2.4	2.4	2.9
Quick ratio (x)	1.9	1.9	2.1	2.2	2.5
Net debt (NT\$mn)	(332,122)	(484,404)	(537,852)	(950,305)	(1,386,004)
<b>Per share data</b>					
EPS (NT\$)	23.01	39.20	32.34	41.67	51.73
CFPS (NT\$)	42.89	62.12	47.90	68.04	77.64
BVPS (NT\$)	83.62	113.60	133.38	163.26	198.99
Adj BVPS (NT\$)	83.62	113.60	133.40	163.26	198.99
SPS (NT\$)	61.22	87.31	83.37	107.90	129.82
EBITDA/share (NT\$)	41.36	60.11	56.05	73.68	88.08
Cash DPS (NT\$)	11.00	11.00	13.00	16.00	18.00
<b>Activity</b>					
Sales / avg assets	0.49	0.52	0.41	0.46	0.48
Days receivable	45.6	37.3	34.1	40.0	41.2
Days inventory	91.8	88.2	92.9	92.3	93.6
Days payable	23.2	22.5	21.2	25.9	26.2
Cash cycle	114.2	102.9	105.8	106.4	108.6

Source: Company data, KGI Research estimates

**Profit & loss**

NT\$mn	Dec-21A	Dec-22A	Dec-23A	Dec-24F	Dec-25F
<b>Revenue</b>	<b>1,587,415</b>	<b>2,263,891</b>	<b>2,161,736</b>	<b>2,797,827</b>	<b>3,366,101</b>
Cost of goods sold	(767,878)	(915,536)	(986,625)	(1,305,705)	(1,523,132)
<b>Gross profit</b>	<b>819,537</b>	<b>1,348,355</b>	<b>1,175,111</b>	<b>1,492,123</b>	<b>1,842,969</b>
Operating expenses	(169,556)	(227,076)	(254,022)	(292,039)	(337,040)
<b>Operating profit</b>	<b>649,981</b>	<b>1,121,279</b>	<b>921,088</b>	<b>1,200,084</b>	<b>1,505,929</b>
<b>Non-operating income</b>	<b>12,285</b>	<b>31,168</b>	<b>65,429</b>	<b>87,001</b>	<b>88,715</b>
Interest income	5,709	22,422	60,294	82,296	83,915
Investment income	5,965	8,065	5,119	4,705	4,800
Other non-op income	611	681	16	0	-
<b>Non-operating expenses</b>	<b>860</b>	<b>(8,256)</b>	<b>(7,723)</b>	<b>(10,641)</b>	<b>(10,554)</b>
Interest expense	(5,414)	(11,750)	(11,999)	(10,613)	(10,554)
Investment loss	-	-	-	-	-
Other non-op expenses	6,275	3,494	4,276	(27)	-
<b>Pre-tax profit</b>	<b>663,126</b>	<b>1,144,191</b>	<b>978,794</b>	<b>1,276,444</b>	<b>1,584,091</b>
Current taxation	(66,053)	(127,290)	(141,404)	(196,705)	(243,555)
Minorities	(533)	(370)	730	816	736
Extraordinary items	-	0	377	-	-
<b>Net profit</b>	<b>596,540</b>	<b>1,016,530</b>	<b>838,498</b>	<b>1,080,555</b>	<b>1,341,272</b>
<b>EBITDA</b>	<b>1,072,376</b>	<b>1,558,533</b>	<b>1,453,279</b>	<b>1,910,468</b>	<b>2,283,810</b>
EPS (NT\$)	23.01	39.20	32.34	41.67	51.73

**Cash flow**

NT\$mn	Dec-21A	Dec-22A	Dec-23A	Dec-24F	Dec-25F
<b>Operations cash flow</b>	<b>1,112,161</b>	<b>1,610,599</b>	<b>1,241,967</b>	<b>1,764,177</b>	<b>2,013,094</b>
Net profit	596,540	1,016,530	838,498	1,080,555	1,341,272
Depreciation & amortisation	422,395	437,254	532,191	710,385	777,881
Decrease in working capital	(100,384)	(53,286)	324	(147,170)	(118,620)
Other operating cash flow	193,610	210,100	(129,046)	120,407	12,561
<b>Investing cash flow</b>	<b>(836,366)</b>	<b>(1,190,928)</b>	<b>(906,121)</b>	<b>(1,022,784)</b>	<b>(1,162,530)</b>
Sale of ST investment	4,676	(128,838)	(55,781)	(15,707)	-
New investments	-	-	-	-	-
Capital expenditure	(839,196)	(1,082,672)	(949,817)	(1,052,349)	(1,162,530)
Others investing cashflow	(1,846)	20,582	99,478	45,272	-
<b>Free cash flow</b>	<b>59,845</b>	<b>289,078</b>	<b>361,161</b>	<b>512,834</b>	<b>755,865</b>
<b>Financing cash flow</b>	<b>136,608</b>	<b>(200,244)</b>	<b>(204,894)</b>	<b>(327,362)</b>	<b>(414,865)</b>
Increase in short term debt	35,668	(111,960)	-	-	-
Increase in long term loans	362,765	195,983	68,204	40,642	-
New ordinary shares issued	-	-	-	-	-
Ordinary dividends paid	(265,786)	(285,234)	(291,722)	(337,080)	(414,865)
Other financing cashflow	3,961	1,839	18,623	(30,925)	-
<b>Forex effects</b>	<b>(7,584)</b>	<b>58,397</b>	<b>(8,339)</b>	<b>39,065</b>	<b>-</b>
<b>Total cash generated</b>	<b>404,820</b>	<b>277,824</b>	<b>122,614</b>	<b>453,096</b>	<b>435,699</b>

**ROIC**

	Dec-21A	Dec-22A	Dec-23A	Dec-24F	Dec-25F
1 - COGS/revenue					
- Operating exp./revenue	10.7%	10.0%	11.8%	10.4%	10.0%
<b>= Operating margin</b>	<b>40.9%</b>	<b>49.5%</b>	<b>42.6%</b>	<b>42.9%</b>	<b>44.7%</b>
1 / (Working capital/revenue	(0.1)	(0.2)	(0.2)	(0.2)	(0.1)
+ Net PPE/revenue	1.2	1.2	1.4	1.2	1.1
+ Other assets/revenue)	0.0	0.0	0.0	0.1	0.0
<b>= Capital turnover</b>	<b>0.9</b>	<b>1.0</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>
Operating margin	40.9%	49.5%	42.6%	42.9%	44.7%
x Capital turnover	0.9	1.0	0.8	0.9	0.9
x (1 - tax rate)	90.0%	88.9%	85.6%	84.6%	84.6%
<b>= After-tax ROIC</b>	<b>32.9%</b>	<b>43.9%</b>	<b>29.4%</b>	<b>32.9%</b>	<b>35.7%</b>

Source: Company data, KGI Research estimates

**TSMC – Recommendation & target price history**



Date	Rating	Target	Price
2024-07-18	Outperform	1,290	1,005
2024-07-15	Outperform	1,270	1,040
2024-01-18	Outperform	688	588
2024-01-10	Outperform	688	584
2023-10-19	Outperform	703	546
2023-10-06	Outperform	703	532
2023-07-20	Outperform	658	579
2023-07-04	Outperform	716	585
2023-04-14	Outperform	591	516
2023-03-29	Outperform	603	530

Source: TEJ, KGI Research

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