China / Hong Kong Company Guide

Longi Green Energy Technology

Bloomberg: 601012 CH Equity | Reuters: 601012.SS

Refer to important disclosures at the end of this report

DBS Group Research . Equity

24 Jan 2022

BUY (Initiating Coverage)

Last Traded Price (21 Jan 2022):RMB76.00(CSI300 Index : 4,779)

Price Target 12-mth:RMB95.00 (25.0% upside)

Analyst

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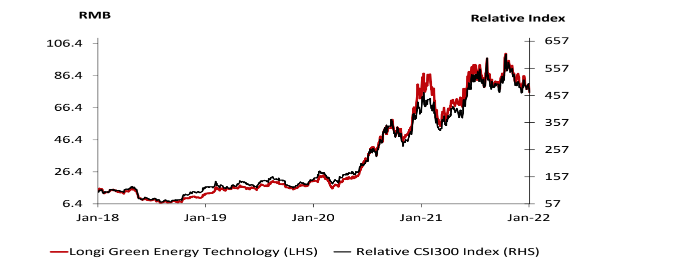
Price Relative



Forecasts and Valuation

FY Dec (RMBm)	2020A	2021F	2022F	2023F
Turnover	54,583	90,577	121,373	150,560
EBITDA	12,320	16,236	20,787	27,746
Pre-tax Profit	9,912	12,693	15,959	21,314
Net Profit	8,552	11,152	14,021	18,726
Net Pft (Pre Ex) (core profit)	8,552	11,152	14,021	18,726
Net Profit Gth (Pre-ex) (%)	62.0	30.4	25.7	33.6
EPS (RMB)	1.62	2.11	2.66	3.55
EPS Gth (%)	54.2	30.4	25.7	33.6
Diluted EPS (RMB)	1.62	2.11	2.66	3.55
DPS (RMB)	0.18	0.23	0.30	0.39
BV Per Share (RMB)	6.65	8.76	11.41	14.96
PE (X)	46.9	36.0	28.6	21.4
CorePE (X)	46.9	36.0	28.6	21.4
P/Cash Flow (X)	36.4	70.2	34.4	22.0
P/Free CF (X)	61.9	nm	nm	nm
EV/EBITDA (X)	30.9	24.1	19.2	14.7
Net Div Yield (%)	0.2	0.3	0.4	0.5
P/Book Value (X)	11.4	8.7	6.7	5.1
Net Debt/Equity (X)	CASH	CASH	CASH	0.1
ROAE(%)	27.3	27.4	26.3	26.9
Earnings Rev (%):		New	New	New
Consensus EPS (RMB)		2.02	2.74	3.39
Other Broker Recs:		B:43	S:0	H:3

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

Rational pricing in value chain to boost installations

- Beneficiary of sustained demand growth for solar power, both in China and globally
- Top wafer and module supplier in the world with industry-leading margins
- Pick-up in solar installations in 2022-23 could lift sentiment on the counter
- Initiate with BUY and TP of Rmb95

Long-term beneficiary of demand growth for solar globally. We estimate global new solar installations of c.171GW to 282GW per year in 2021-25, translating to CAGR of 13%. LONGi has set long-term targets to capture global market share of >30% in modules and >40% in silicon wafers, up from c.13% and c.26% in 2021.

Top wafer and module supplier in the world. LONGi is the world's largest manufacturer of solar components with 85GW and 50GW of silicon wafer and solar module production capacity respectively. The company also enjoys industry-leading margins, thanks to technological innovation, careful capital management, and supply chain efficiencies.

Pick-up in solar installations in 2022-23 could act as a positive catalyst. Elevated polysilicon prices in 2021 have led to a delay in solar installations. With new polysilicon supply coming to market, downstream operators should resume their installations in 2022-23. Combined with a more favourable comparison base in 2021, faster-than-expected solar installations could act as a positive catalyst to LONGi's share price.

Valuation:

We have a BUY recommendation on LONGi. Based on a target PEG of 1.2x, we derive our target price (TP) of Rmb95. Our TP is near 1 SD above the 1-year historical average.

Key Risks to Our View:

Slowdown in solar installations, supply chain bottlenecks, input cost fluctuations, ASP fluctuations for wafers and modules, intensifying competition, sanctions on products by overseas governments.

At A Glance

Issued Capital (m shrs)	5,280
Mkt Cap (RMBm/USm)	401,280 / 63,303
Major Shareholders (%)	
Li (Zhenguo)	14.1
Hillhouse Capital Management Ltd.	5.9
Li (Xi Yan)	5.0
Free Float (%)	75.0
3m Avg. Daily Val. (US$m)	1029.92
GICS Industry: Industrials / Capital Goods	

ed-TH / sa- CS /AH

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Investment Summary

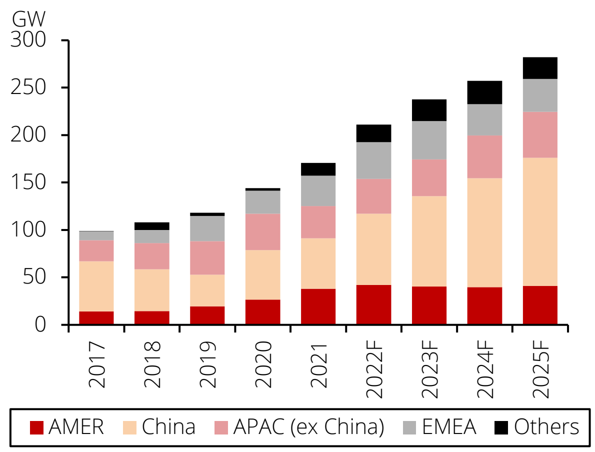
Beneficiary of sustained demand growth for solar power, both within China and overseas.

LONGi Green Energy Technology Co. Ltd. (LONGi) is the world's largest manufacturer of solar components with 85GW and 50GW of silicon wafer and solar module production capacity as at Dec-20. The company's FY21 capacity targets are 105GW of wafer and 65GW of modules. As countries pursue their energy transition plans earnestly, LONGi stands to be one of the most significant beneficiaries of the expected growth in demand for solar power globally.

China to lead global new solar installations.

We estimate global new solar installations of c.171GW to 282GW per year in 2021-25 or CAGR of 13%. With solid policy support to achieve its dual "30-60" carbon emission reduction goals, we expect China to account for c.36-48% of new solar installations. We estimate this translates to c.53GW to 135GW of annual new installations in China in 2021-25, or CAGR of c.26%.

Global new solar installation estimate



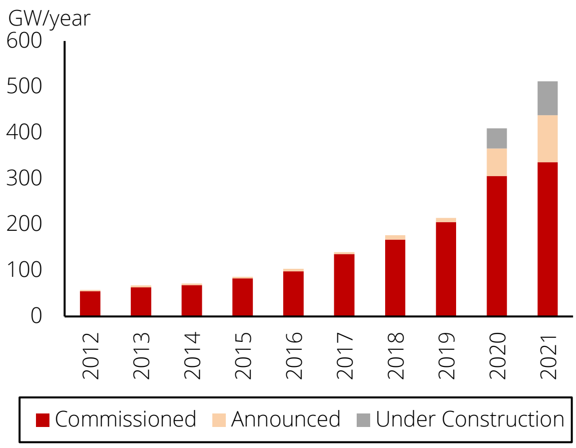
Source: DBS HK estimate, BNEF.

The Chinese government has repeatedly demonstrated strong policy support for solar energy. Leading up to COP26, the Chinese government has released more details on its decarbonisation road map. For the energy sector, China targets to reduce carbon emission per unit of GDP by 18% by 2025 compared to 2020 levels, and 65% reduction by 2030 compared to 2005 levels. China also aims to increase the share of non-fossil fuel sources in its primary energy mix to 20% by 2025, and 25% by 2030, compared to 16% in 2020. In Oct-21, China also reiterated its goal of achieving combined wind and solar capacity of >1,200GW by 2030.

LONGi is the top wafer and module supplier in the world

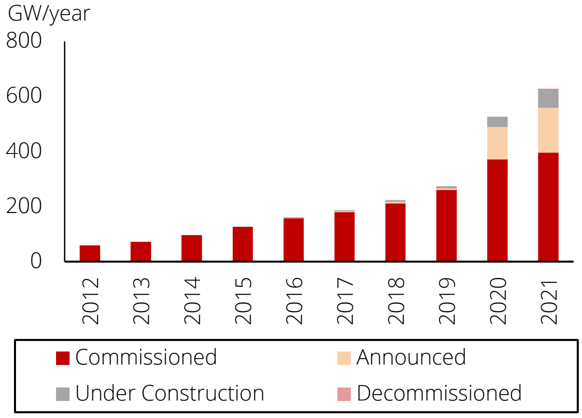
According to estimates from Bloomberg New Energy Finance (BNEF), global wafer and module commissioned production capacity should reach 336GW and 396GW per year respectively in 2021. Announced capacity not under construction for wafer and module were 102GW and 162GW per year respectively. Around 74GW and 69GW per year of wafer and module construction capacity are currently under construction. We estimate global production capacity of wafers could grow 21-26% p.a. to reach >500GW per year in 2023. For modules, we project production capacity to grow 23-29% p.a. to reach >600GW per year in 2023. LONGi is currently the top solar component producer in the world by commissioned production capacity. BNEF estimates LONGi accounts for c.26% of wafer and c.13% of module commissioned production capacity in 2021.

Global wafer production capacity over time



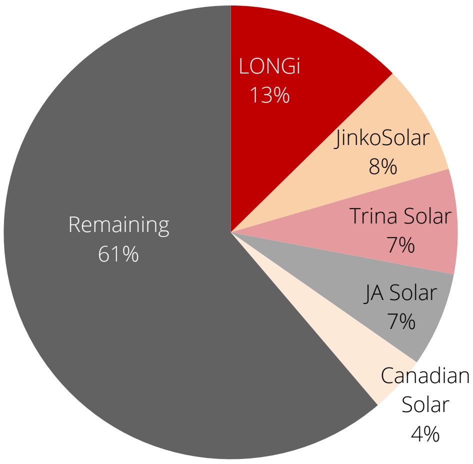
Source: BNEF

Global module production capacity over time



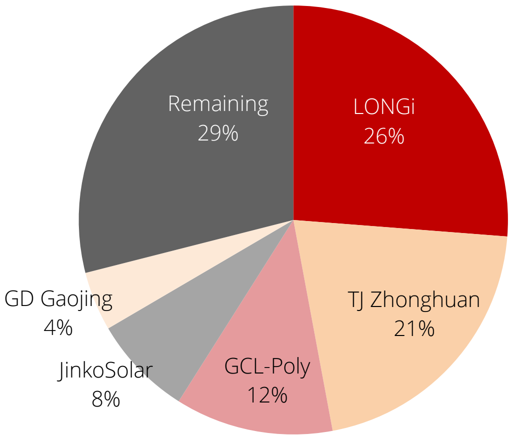
Source: BNEF

Share of commissioned module capacity



Source: BNEF

Share of commissioned wafer capacity

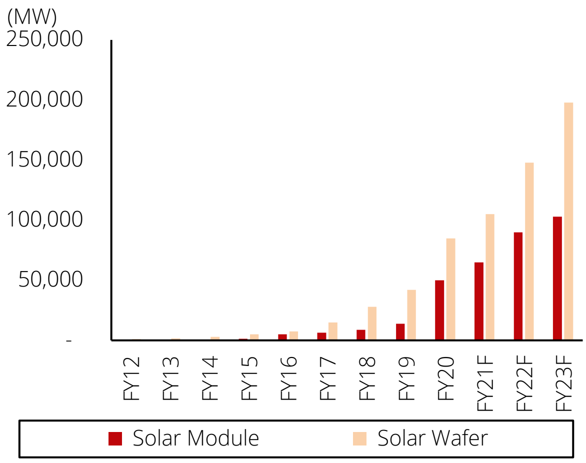


Source: BNEF

Expect revenue growth of 24% supported by market share gains

As at FY20, LONGi's revenue mix primarily consisted of sales of modules (61%) and silicon wafers (35%). The company has set long-term targets to achieve global market share of >30% in modules and >40% in silicon wafers. The company is aggressively expanding its wafer and module production capacity to 105GW and 65GW in FY21, up 24% and 30% y-o-y respectively. We expect LONGi to add c.15-19GW and 20-44GW per year of module and wafer capacity by FY23. We reckon the market share targets are achievable given LONGi's sustained research and development (R&D) efforts which should translate into better demand for its products compared to its competitors. We have conservatively estimated that the company will achieve its market share targets by 2025. This should translate into a revenue CAGR of c.24% in 2021-25.

LONGi's production capacity



Source: LONGi

Expect 20-25% gross margin on wafers despite ASP fluctuations. The wafer market in China continues searching for an equilibrium in late-2021 to 1Q22. In Dec-21, LONGi's shares saw some weakness on media reports that the company had cut its wafer prices twice, down 9.8% followed by another 5.7%. Tianjin Zhonghuan (002129.CH) has also reportedly cut its wafer ASP by c.12% in early Dec-21. LONGi clarified the price cuts are implemented to establish a more rational pricing for the entire solar supply chain. More recently in Jan-22, PV-Info reported LONGi had hiked ASP on its wafers by 2.4-5.1%. We are not too concerned about these ASP fluctuations given polysilicon supply is expected to grow 36% y-o-y in 2022, according to BNEF estimates. We reckon the release of polysilicon supply should help partially offset the cost pressure on the wafer segment's gross margin arising from a top-line ASP cut. In the longer term, LONGi's R&D efforts should also drive product mix improvements and maintain gross margins. LONGi is maintaining its gross margin guidance of 20-25% for its wafers and 15-20% for modules. We forecast 23% and 19% FY22-23 gross margins for wafers and modules respectively.

Catalyst. Solar installations worldwide are likely to be delayed in 2021 as high polysilicon prices have pushed up costs along the value chain. Downstream players are observing and waiting for more rational pricing. Therefore, capacity scheduled to be installed in 2021 is likely to be delayed. As additional polysilicon supply comes to the market in 2022, installations should proceed more smoothly. We currently estimate global new solar installations of c.211GW in 2022. Given a favourable comparison base in 2021, **higher-than-expected growth in solar installations in 2022 could act as a positive catalyst** for LONGi's share price.

Initiate with BUY and TP of Rmb95. Thanks to higher gross margins, LONGi also enjoys industry-leading ROE. We reckon the counter deserves a premium. We rate LONGi a BUY with a TP of Rmb95. Our TP is based on target PEG ratio of 1.2x. This implies an FY22F PE ratio c.36x, which is near 1 standard deviation above the 1-year average.

Valuation & Peer Comparison

Trading at near average PE compared to peers but enjoys substantially higher ROE.

Compared to peer solar module manufacturers, LONGi trades at 29x FY22F PE, compared to the peer average of 25x. However, LONGi posted ROE of 15-24% in FY18-20, higher than the 2-16% ROE of peers in the same period.

LONGi's higher ROE stems from industry-leading gross margins. LONGi has managed to keep its overall gross margin at 21-28% since FY18. This is higher than its closest module manufacturing competitors which have managed to achieve 8-21% gross margin in the same period. LONGi's industry-leading margins are attributable to efficiencies the company has accumulated, mainly in the wafer segment. The module segment does not enjoy significantly higher margins than peers.

LONGi has been manufacturing wafers since 2006. The company has substantial experience and has made many innovations in its manufacturing processes and products. Although the gap in technical expertise for wafer production has narrowed between competitors, LONGi continues to retain the leading position. Also, LONGi is careful in managing its invested capital when developing production plants. Unlike peers, LONGi prefers to own mainly machinery and equipment but not the land on which the factory sits. This has helped to boost LONGi's return on assets. Finally, LONGi also has an advantage in supply chain management. With vertical integration in wafer, cells, and modules, LONGi can respond rapidly to changes in market conditions, which results in lower costs.

PEG valuation

In Dec-21, LONGi announced a price cut for its wafers which led to the counter correcting by c.26% from the previous peak. We initiate coverage on the counter with a BUY call and TP of Rmb95. Our TP is based on a target PEG ratio of 1.2x on FY20-23 EPS CAGR. This implies an FY22F PE ratio of 36x, which is near 1 standard deviation above the 1-year average PE.

Peer comparison - valuation

Company Name	Code	Price Local$	Mkt Cap US$m	Fiscal Yr	EPS 21F Local$	EPS 22F Local$	PE 21F x	PE 22F x	PE 23F x	PEG 22F x	PEG 23F x	P/Bk 21F x	P/Bk 22F x	EV/EBITDA 21F x	EV/EBITDA 22F x	ROE 21F %	ROE 22F %
Module and wafer																	
Longi Green En.Tech.'A'*	601012 CH	76.00	64,900	Dec	2.11	2.66	36.0	28.6	21.4	1.1	0.6	8.7	6.7	24.1	19.2	27.4	26.3
Risen Energy 'A'	300118 CH	23.45	3,335	Dec	1.20	1.25	19.5	18.8	13.5	4.5	0.3	2.2	2.0	n.a.	n.a.	13.6	12.6
Trina Solar 'A'	688599 CH	67.07	21,942	Dec	0.92	1.77	72.9	37.9	28.1	0.4	0.8	8.5	7.1	46.9	22.0	11.4	18.8
Jinkosolar Holding Adr 1:4	JKS US	43.37	2,068	Dec	1.89	3.54	22.9	12.2	10.2	0.1	0.5	1.1	1.0	11.5	7.0	5.2	11.0
Ja Solar Technology 'A'	002459 CH	87.9	22,175	Dec	1.26	2.28	69.5	38.6	28.6	0.5	0.8	8.8	7.3	39.0	20.6	12.7	18.9
Canadian Solar	CSIQ US	25.18	1,511	Dec	1.33	2.79	19.0	9.0	8.4	0.1	1.2	0.8	0.7	8.1	6.0	5.7	10.0
Tianjin Zhonghuan Semicon.'A'	002129 CH	40.91	20,858	Dec	1.17	1.33	35.1	30.8	25.0	2.2	1.1	5.3	4.6	28.2	14.0	13.5	14.6
							39.3	25.1	19.3	1.3	0.8	5.1	4.2	26.3	14.8	12.8	16.0

*Source: Thomson Reuters, *DBS HK*

Closing prices as at Jan 21st, 2022

Peer comparison – operational

Operational	LONGi	JinkoSolar	JA Solar	Comments
	601012 CH	JKS US	002459 CH	
Market Cap (USD bn)	64.9	2.1	22.2	
Products (% of FY20 Revenue)				
Solar modules	61	93	93	As manufacturers become more vertically integrated, the cell segment is combined with modules.
Silicon wafer	35	1	-	
Solar cells	-	1	-	
Solar projects / PV power station	4	5	7	
FY20 Production capacity (GW)				
Silicon wafer	85	22	c.14	LONGi is the largest wafer and module manufacturer globally and continues to expand.
Solar cell	30	11		
Solar module	50	31	23	
Production expansion plan FY21 (GW)				
Silicon wafer	105	33	c.32	JA solar did not directly disclose its expansion plan for wafer but plans to achieve capacity of c.80% of module capacity.
Solar cell	-	27	-	
Solar module	65	37	40	
Sales Region	China: 60.7% Asia ex China: 13.8% Americas: 16.2% Europe: 9.1% Africa: <1%	China: 18.1% North America: 28.7% Europe: 13.2% Asia ex China: 27.3% Rest of World: 12.7%	China 31.2% Export business: 68.8%	LONGi dominates the domestic China market.

Source: Company filings, DBS HK

Peer comparison – selected income statement items

Financial	LONGi	JinkoSolar	JA Solar	Comments
Revenue (Rmb m)				
FY18	21,987.6	25,042.6	19,648.9	
FY19	32,897.5	29,746.3	21,155.5	
FY20	54,583.2	35,129.5	25,846.5	
9M21	56,205.8	8,568.1	26,097.2	
Gross profit (Rmb m)				
FY18	4,891.9	3,513.7	3,701.6	
FY19	9,508.1	5,431.7	4,498.0	
FY20	13,437.6	6,171.7	4,229.4	
9M21	11,973.1	4,664.7	3,647.8	
Gross margin (%)				
FY18	22.2%	14.0%	18.8%	9M21 margins were lower due to increased input costs, particularly for polysilicon.
FY19	28.9%	18.3%	21.3%	
FY20	24.6%	17.6%	16.4%	
9M21	21.3%	8.2%	14.0%	
Net profit (Rmb m)				
FY18	2,558.0	406.5	719.1	
FY19	5,279.6	898.7	1,252.0	
FY20	8,552.4	230.4	1,506.6	
9M21	7,527.3	607.3	1,312.4	
Net margin (%)				
FY18	11.6%	1.6%	3.7%	LONGi enjoys wider margins, thanks to accumulated innovations in manufacturing, careful capital management, and supply chain management.
FY19	16.0%	3.0%	5.9%	
FY20	15.7%	0.7%	5.8%	
9M21	13.4%	1.1%	5.0%	

Source: Company filings

Peer comparison – selected balance sheet items

Financial	LONGi	JinkoSolar Holding	JA Solar	Comments
Total Asset				
FY18	39,659.2	35,853.2	23,615.7	
FY19	59,304.0	47,844.7	28,527.6	
FY20	87,634.8	53,232.4	37,297.5	
3Q21	103,742.8	63,996.8	55,206.8	
Total liabilities				
FY18	22,834.5	27,339.2	18,012.3	
FY19	31,009.2	35,403.7	20,232.8	
FY20	52,036.8	40,241.6	22,457.8	
3Q21	57,580.2	49,915.6	39,210.3	
Shr. Equity (Rmb m)				
FY18	16,451.6	7,839.9	5,329.6	
FY19	27,628.8	9,303.3	7,989.4	3Q21: LONGi issued additional equity from the conversion of convertible bonds.
FY20	35,105.8	9,987.8	14,656.2	
3Q21	46,015.9	10,928.1	15,764.5	
Current Asset				
FY18	22,900.9	22,854.3	11,789.3	
FY19	37,366.5	31,688.2	14,831.5	
FY20	55,101.2	33,682.1	21,472.6	
3Q21	64,886.7	39,668.2	33,592.3	
Cash				
FY18	7,707.9	3,104.9	3,883.3	
FY19	19,335.8	5,653.9	5,721.5	
FY20	26,963.4	7,481.7	9,492.9	
3Q21	24,401.5	6,622.9	10,764.1	
Borrowings				
FY18	7,744.7	9,068.5	7,362.3	
FY19	5,930.0	10,633.4	8,615.3	
FY20	10,679.1	15,540.1	5,827.7	3Q21: LONGi repaid its convertible bond early.
3Q21	6,264.3	22,814.7	11,488.5	

Source: Company filings

Peer comparison – selected ratios

Financial	LONGi	JinkoSolar Holding	JA Solar	Comments
Net gearing* (%)				
FY18	0.2%	76.1%	65.3%	
FY19	Cash	53.5%	36.2%	
FY20	Cash	80.7%	Cash	
3Q21	Cash	148.2%	4.6%	
Current Ratio				
FY18	153.9%	94.7%	89.0%	
FY19	151.8%	101.3%	98.3%	
FY20	127.9%	107.9%	115.7%	
3Q21	130.5%	107.5%	106.1%	
Liability/Asset ratio				
FY18	57.6%	76.3%	76.3%	FY20: LONGi's liability-to-asset ratio increased due to issuance of convertible bonds with face value of Rmb5bn.
FY19	52.3%	74.0%	70.9%	
FY20	59.4%	75.6%	60.2%	
3Q21	55.5%	78.0%	71.0%	
AR Days				
FY18	140	89	65	
FY19	102	71	72	
FY20	79	51	53	

**Net debt as percentage of shareholder's equity*

Source: Company filings

Peer comparison – Dupont analysis

Dupont Analysis	LONGi	JinkoSolar Holding	JA Solar	Comments
ROE (%)				
FY18	15%	5%	13%	LONGi's higher ROE is mostly due to higher margins.
FY19	19%	10%	16%	
FY20	24%	2%	10%	
Net margin (%)				
FY18	12%	2%	4%	
FY19	16%	3%	6%	
FY20	16%	1%	6%	
Sales/Asset (%)				
FY18	55%	70%	83%	Asset turnover ratio has converged to similar levels recently.
FY19	55%	62%	74%	
FY20	62%	66%	69%	
Asset/Shr. Equity (%)				
FY18	236%	457%	443%	
FY19	210%	514%	357%	
FY20	246%	533%	254%	

Source: Company filings

Key Risks

Slowdown of solar installations. A slowdown in solar installations by downstream customers could negatively affect the sales volume of wafers and modules.

Supply chain bottlenecks. The key raw material used to produce wafers is polysilicon. Solar modules are dependent on components such as solar glass and ethylene vinyl acetate (EVA) film. Variation in expansion progress of these components will cause supply chain imbalances, leading to limited growth in new installation and adverse impact on LONGi's revenue.

Wafer and module ASP fluctuations. Wafer and module prices can be volatile. Unexpected and significant declines in wafer and module prices can result in lower sales and margin compression. In our estimation, a 1% increase/decrease in wafer price should result in 0.3% fluctuation in EPS. A 1% increase/decrease in module price should result in 0.7% fluctuation in EPS.

Competitive pressures from new/existing manufacturers. According to estimates from Bloomberg New Energy Finance (BNEF), LONGi is currently the largest wafer and module manufacturer in the world, accounting for 13% and 26% of 2021 worldwide commissioned production capacity for modules and wafers respectively. New and existing entrants can exert pressure on both revenue and margins.

LONGi's products may face sanctions from the US or other governments. In Nov-21, 40.31MW of LONGi's modules were detained by US Customs. This accounted for c.1.59% of LONGi's FY20 total export sales volume to the US, according to a filing made to the SSE. While the latest incident has minimal impact, the company remains vigilant regarding further action from the US Government. In particular, LONGi seeks to enhance product tracing to ensure the source of the polysilicon used in the modules complies with US regulations.

SWOT Analysis

Strengths	Weaknesses
• Top producer of solar modules and silicon wafers globally. • Consistent investments in technology bearing fruit, as evidenced by record-breaking efficiencies in LONGi's solar cells. • Industry-leading margins, especially in the wafer segment.	• Supply chain bottlenecks may hinder LONGi's ability to achieve production volume targets. • Margins could compress should raw material and component prices spike; key inputs include polysilicon, solar glass, aluminium frames, and EVA plastic film. • Manufacturing is capital intensive. • Limited pricing power means LONGi is reliant on production and sales volume to drive growth.
Opportunities	**Threats**
• Long-term policy support for solar energy from China's "30-60" decarbonisation drive. • Wind capacity installations face constraints from suitable land resources. Solar capacity is more flexible than wind in terms of location. • Exploring new businesses such as electrolysers for green hydrogen production.	• Intensifying competition. • Unexpected slowdown in solar installations leading to lower demand for wafers and modules. • LONGi may face sanctions from overseas governments for its products.

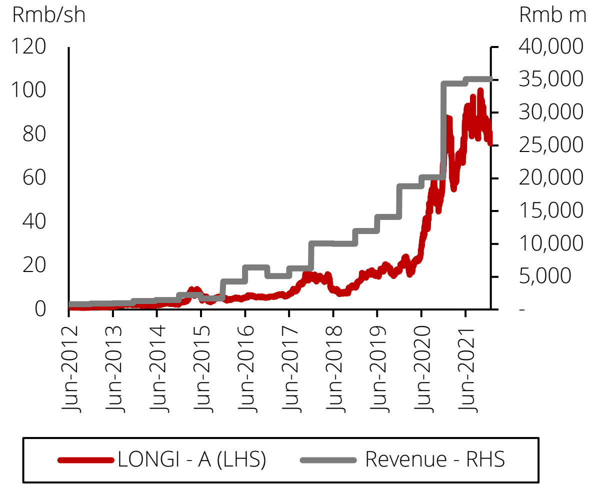
Source: DBS HK

Critical Factors

Revenue growth driven by sales volume. Since its listing in 2012, LONGi's share price has been highly correlated with its revenue growth. The company delivered revenue growth of 54% CAGR in FY12-20. At the earlier stages of LONGi's history, revenue was almost entirely dependent on silicon wafers. Revenue from silicon wafers grew at a CAGR of 35% in FY12-20. In FY14, the company entered the solar module business. Sales of solar modules rose rapidly at a CAGR of 71% in FY15-20.

Looking forward, we reckon LONGi will benefit from the robust installation growth of solar power globally and domestically. Should LONGi capture its market share targets of 40% and 30% for global wafer and module sales by 2025, we reckon revenue from modules could grow 38%/21% y-o-y in FY22/23. Revenue from wafers could grow 23%/24% y-o-y in FY22/23. This should translate into 35%/23% y-o-y of total revenue growth in FY22/23.

LONGi's share price vs. revenue

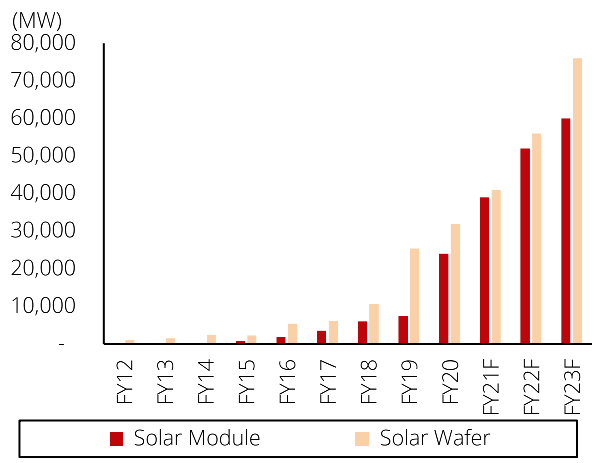


Source: LONGi, Bloomberg Finance LP

Sales volume is highly dependent on global solar installations. We estimate global new solar installations of c.171GW to 282GW per year in 2021-25 or CAGR of 13%. Given solid policy support, we expect China to account for c.36-48% of new solar installations. This should translate into c.75GW to 135GW of annual new installations in China in 2021-25, or CAGR of c.26%.

To ride on the above robust installation growth, LONGi has been expanding its production capacity aggressively. The company's silicon wafer production reached 85GW in FY20, representing FY12-20 CAGR of 74%. Wafer sales volume reached 31.8GW in FY20, representing FY12-20 CAGR of 72%. Solar module production capacity reached 50GW in FY20, representing FY15-20 CAGR of 151%. Sales of solar modules reached 26.6GW in FY20, representing FY15-20 CAGR of 80%. Looking ahead, we reckon LONGi could add c.20-44GW of wafer production capacity and 15-19GW of module capacity per year in FY21-23. We expect sales volume of wafers to grow at an FY21-23 CAGR of 29% to reach c.74GW. For modules, we expect sales volume to grow at an FY21-23 CAGR of 30% to reach 60GW.

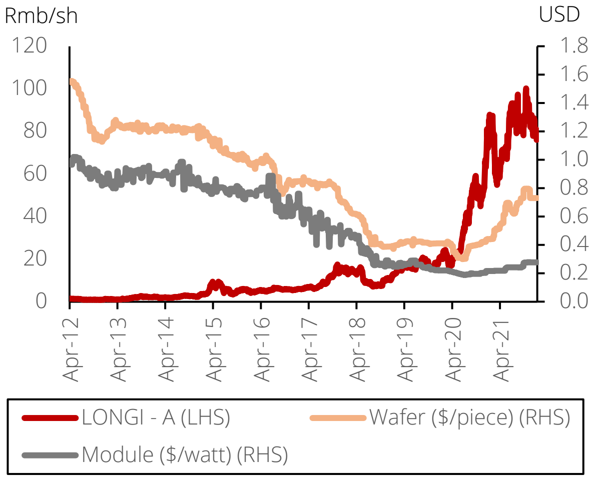
LONGi's sales volume projection



Source: LONGi, DBS HK calculations

Solar component ASP. In the short term, **LONGi may benefit from a temporary increase in average selling prices** (ASP) of silicon wafers and solar modules. However, in the long term, solar component prices have been declining thanks to accumulated improvement in production efficiencies and technological innovations. As a result, **sales volume remains the long-term driver for LONGi's revenue and earnings.** We expect LONGi's wafer ASP to stay relatively steady at around Rmb3 per piece and module ASP of Rmb1.8 per watt in FY22-23.

LONGi's share price vs. ASP of wafers and modules



Source: Bloomberg Finance L.P.

Polysilicon price – solar grade

Source: BNEF

Margin fluctuations depend on input costs, particularly polysilicon price. Polysilicon accounts for c.26% of the cost of goods sold for modules and c.86% for wafers. The impact of polysilicon price fluctuations is twofold. Firstly, higher polysilicon prices would result in lower gross margins for LONGi. Secondly, polysilicon prices also affect the pace of downstream solar installations. In Dec-21, polysilicon prices were as high as US$37 per kg, up 30% from Sep-21 and near the highest levels since Nov-11. According to BNEF estimates, polysilicon supply is expected to grow 36% y-o-y to 800,000 tons in 2022. With additional supply coming on stream, lower polysilicon prices could result in faster installations which could bode well for LONGi's revenues.

Gross profit margin steady at 23% for module and 19% for wafer. LONGi's R&D efforts should also drive product mix improvements and maintain gross margins. Lower polysilicon prices should also help offset wafer ASP cuts. We forecast 23% and 19% FY22-23 gross margins for wafers and modules respectively.

Financials

Expect revenue growth of 24% supported by market share gains

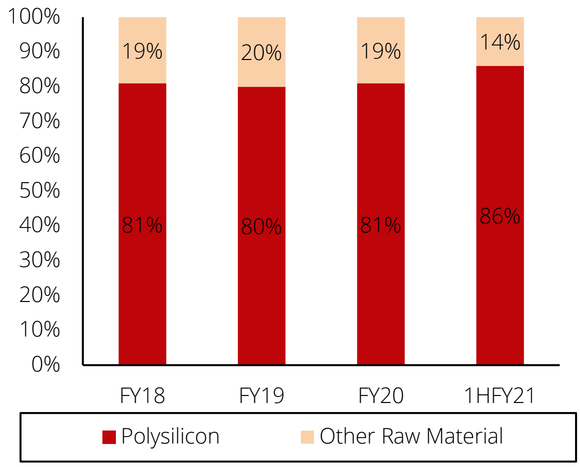
LONGi has set long-term targets to achieve global market share of >30% in modules and >40% in silicon wafers. The company is aggressively expanding its wafer and module production capacity to 105GW and 65GW in FY21, up 24% and 30% y-o-y. We expect LONGi to add c.15-19GW and 20-44GW of module and wafer capacity by FY23. We reckon the market share targets are achievable given LONGi's sustained R&D efforts which should translate into better demand for its products compared to its competitors. Should LONGi capture its market share targets of 40% and 30% for global wafer and module sales by 2025, we reckon revenue from modules could grow 38%/21% y-o-y in FY22/23. Revenue from wafers could grow 23%/24% y-o-y in FY22/23. This should translate into 35%/23% y-o-y of total revenue growth in FY22/23.

Expect overall gross margin of 21-22%, should lower polysilicon prices offset ASP cuts.

In early Dec-21, LONGi's announced price cuts on its wafers by 7.2-9.8%. The company clarified that such a move is to establish a more rational pricing for the entire solar supply chain. More recently in Jan-22, PV-Info reported LONGi had hiked ASP on its wafers by 2.4-5.1%. We are not too concerned about these ASP fluctuations given polysilicon supply is expected to grow 36% y-o-y in 2022, according to BNEF estimates. We reckon the release of polysilicon supply should help partially offset the cost pressure on the wafer segment's gross margin arising from a top-line ASP cut. In the longer term, LONGi's R&D efforts should also drive product mix improvements and maintain gross margins. LONGi continues to maintain its gross margin guidance of 20-25% for its wafers and 15-20% for modules. We have conservatively estimated overall gross margins of c.21-22% for FY22-23.

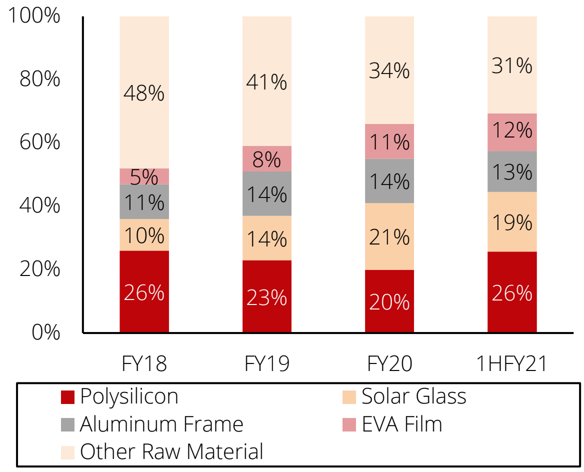
Cost structure. Raw materials and parts account for c.70% of cost of goods sold (COGS). Energy accounts for c.10%-15%, and labour accounts for mid-single-digit percentage of COGS. Polysilicon accounts for >80% of the raw material and component cost for silicon wafers. For solar modules, polysilicon accounted for 20-26% of the total raw material cost, depending on price fluctuations. Solar glass is the next largest item, accounting for 10-20% of raw material cost. This is followed by aluminium frames and ethylene-vinyl acetate (EVA) plastic film. Selling expense and administrative expense are each around c.2-4% of revenue. LONGi capitalises its R&D expenses which are not fully recognised in the income statement. The company's R&D budget has stayed steady at around c.5% of revenue historically.

COGS breakdown for silicon wafers



Source: LONGi

COGS breakdown for solar modules



Source: LONGi

Net profit outlook . Given revenue growth of 35%/23% in FY22/23, overall gross margins of 21%-22%. We reckon net profit could grow 26% to 33 % p.a. in FY22-23.

Balance sheet.. LONGi had net cash of Rmb18.1bn in Sep-21, sitting on Rmb24bn of cash and Rmb6.2bn of interest-bearing debt. The liability-to-asset ratio was 55.5% in Sep-21, down slightly from 59.38% in Dec-20. This was largely due to shareholder's equity being increased by retained profits and the conversion of LONGi's convertible bonds. In Jan-22, LONGi completed the issuance of Rmb7bn of convertible bonds with a term of six years. The conversion price is determined at Rmb82.65/sh. LONGi plans to utilise most of the proceeds to develop two new solar cell production lines of 3GW and 15GW respectively.

Environment, Social & Governance (ESG)

ESG ambitions

LONGi has made ambitious ESG commitments. In 2020, LONGi joined the RE100, EV100, EP100 and the Science Based Target initiative (SBTi), the first Chinese company to do so. RE100 members pledge to power 100% of their operations with renewable electricity. EV100 members commit to drive the transitioning of transportation towards electric vehicles. EP100 members commit to lower global energy demand. LONGi's ESG disclosures in 2020 had improved granularity compared to 2019 and presents many quantifiable targets. The company's sustainability efforts are led by the Chairman and the sustainability committee is established as a separate management division.

Environmental

LONGi has committed to reducing greenhouse gas (GHG) emissions by transitioning to greener sources of electricity. The company proposed the" solar for solar" initiative, which refers to using solar energy to power its factories. In the long term, LONGi aims to achieve zero-carbon or even carbon-negative at its production lines. Overall, LONGi's GHG emissions were 2.57m tons of CO2 equivalent (tCO2e) in 2020, up 16% y-o-y. As at end-2020, c.41.83% of LONGi's production lines were powered by renewable energy. The company already had five factories completely powered by renewable energy in 2020. As a member of the RE100 initiative, LONGi targets to power 100% of its production lines with renewable energy by 2028. Besides raising the proportion of renewable energy used in the production process, LONGi is also committed to improve energy efficiency. In 2020, LONGi's electricity consumption per unit of production fell 3.39% y-o-y. The company strives to reduce electricity consumption by 10-15% by 2025 from 2020 levels. In Nov-20, LONGi joined the EP100 initiative and targets to increase energy efficiency by 35% from the base year of 2015. Water resources per unit of production also fell 2.45% y-o-y in 2020. For pollution management, LONGi improved its disclosures in 2020 by adding items tracked such as chemical oxygen demand, ammonia nitrogen, and suspended solids. LONGi's factories have sewage treatment facilities to ensure that wastewater meets the required standards before being discharged. The company has a dedicated waste material management department and a resource reuse research lab. LONGi also promotes the recycling of photovoltaic modules to make its products greener in their full lifecycle. Over 90% of LONGi's module products are recycled and reused.

Most of LONGi's goals for the environmental pillars are centred around energy transition and energy saving. The company has yet to provide targets for reducing GHG, pollutants, and water consumption. Furthermore, environmental indicators can be improved by reporting the intensity of each item per unit of production. In terms of compliance, the reporting can also be improved by providing details of audit and/or monitoring by third parties.

Social

LONGi Group had 46,631 regular employees as at Dec-20. Within mainland China, 97.59% of LONGi's employees were covered by social insurance. The company invested Rmb76.65m in occupational health and safe production in 2020. LONGi conducted 370,869 hours of occupational health and safety training, 532 emergency drills, and identified >2,000 potential safety hazards in 2020. On the customer side, LONGi is committed to providing the highest quality products. The performance of the company's modules has been recognised by authoritative third parties. LONGi also aims to deliver high quality services with its "121" commitment. The company promises to respond in one day, provide solutions within two working days, and complete return of unsatisfactory products within one week.

For employee-specific indicators, LONGi has yet to disclose metrics on work injuries/accidents and staff turnover rate. On the customer side, reduction targets on complaints and/or products returned would help improve disclosures.

Governance.

LONGi strictly complies with all applicable laws and regulations. The company has formalised its ethical standards in employee handbooks/documents. LONGi's audit and risk control department provides anti-bribery and compliance functions. The company has also provided easy online channels for whistle-blowers to speak up against fraud, corruption and other unethical behaviour. LONGi had no fraud or corruption cases in 2020.

Members of LONGi's Board of Directors have diversified experience from banking, insurance, higher education, human resources, and automobiles. LONGi's board has nine directors, out of which four are external directors (including three independent directors). Only three out of the nine board directors are female. External Directors account for 1/5, 2/3, 2/3, and 2/3 of the Strategy, Remuneration, Nomination, and Audit Committees under the Board of Directors respectively.

LONGi should aim to include more independent non-executive directors in its board committees. Female representation on LONGi's board remains low. There is no further mention of increasing female representation in the board. LONGi has also yet to establish a board-level ESG working group. We have also yet to see a link between ESG outcomes and the remuneration of senior executives.

Company Background

Corporate History. Established in 2000, LONGi Green Energy Technology Co., Ltd (LONGi) is the top manufacturer of solar modules and silicon wafers globally. Solar modules and silicon wafers account for 68% and 28% of its FY20 revenue respectively. Other segments include operations of solar power stations and distributed power plants. The company derives c.60% of its revenue from mainland China and c.40% from overseas markets. LONGi listed its A-shares (601012.CH) in Shanghai in April 2012. As at end-2020, LONGi had an annual production capacity of 85GW for monocrystalline wafer, 30GW for monocrystalline cell, and 50GW for solar modules. LONGi is headquartered in Xian and has production bases around China, Vietnam, and Malaysia.

Management & Strategy

Led by owner operator. Mr. Li Zhenguo founded LONGi in 2000. He is an expert in various solar-related technologies. Mr. Li currently serves as director and general manager. Supporting Mr. Li is Mr. Zhong Baoshen, who is also a technical expert and has risen through the ranks since 2006. Mr. Zhong currently serves as chairman of the company.

Captured top place in market share by capacity expansion and passing on cost savings. Since 2006, LONGi has been pursuing its strategy to pass on savings to customers to capture market share. The company has focused its resources on monocrystalline technology, which it believes has the best potential for rapid cost reduction. LONGi continues to allocate capex to expand its production capacity. The company plans to invest Rmb3.63bn to develop monocrystalline wafer production capacity of 30GW. LONGi is also planning to invest Rmb7bn to develop solar cell manufacturing capacity of 18GW to drive the next phase of its module capacity growth. As a result of this strategy, LONGi is ranked number one in market share for both modules and wafers. According to data from Bloomberg New Energy Finance (BNEF), LONGi accounts of 13% and 26% of 2021 worldwide commissioned production capacity for modules and wafers respectively.

Vertical integration and geographic expansion via acquisitions. Longi has made acquisitions along the solar value chain. In Oct-14, LONGi offered to acquire an 85% stake in Zhejiang Leye Photovoltaic, a module producer, for Rmb46.1m. This acquisition marked the company's earnest entry into the module market. In Mar-21, LONGi offered Rmb1.635bn to acquire a 27.25% equity stake in Center International Group (603098.CH), which sells building-integrated photovoltaics (BIPV) solutions.

LONGi has also acquired companies overseas to establish production bases outside of China. In Feb-16, LONGi offered to buy SunEdison Kuching Sdn Bhd, for US$63m. SunEdison Kuching is a wafer producer based in Malaysia. In Feb-20, LONGi offered to acquire a 100% stake in Ningbo Yize, which owns Vina Solar, for Rmb1.78bn. Vina Solar operates plants to produce photovoltaic cells and modules in Vietnam.

Continuous investments in R&D to improve product mix and margin. LONGi historically directed around 5% of its revenue towards its R&D budget. Areas of interest include improving production quality, efficiency of wafer cutting, solar cell power efficiency, and smart manufacturing, among others. LONGi's R&D efforts have resulted in >1,000 patents and have broken world records in solar cell efficiency. LONGi is making substantial investments in developing more efficient N-type solar cells to replace p-PERC (P-type) cells which the company believes has reached technical limits. In Jun-21, LONGi's latest TOPCon solar cell broke the world record with an efficiency ratio of 25.21%. In Oct-21, LONGi went one up with its own HJT solar cell setting the world record with an efficiency ratio of 25.82%. Founder Mr. Li Zhenguo is also positive on the combination of solar and energy storage solutions, according to media reports. Continued accumulated innovations from investments in R&D should help LONGi improve its product mix and maintain its gross margins.

Developing new business. Growing demand for green hydrogen has led LONGi to venture into electrolyser production. These devices use electricity to break water into hydrogen and oxygen. In Apr-21, the media reported that LONGi had registered a hydrogen company in China. The company plans to commission a 500MW alkaline electrolyser production facility by 2021 and add another 1GW in 2022.

Key Management Team

Name	Capacity	Experience
Mr. Li Zhenguo	Founder, President，Director and General Manager	Mr. Li Zhenguo founded LONGi in 2000. He began his career in a state-owned enterprise which manufactured mono-crystalline silicon rods. Mr. Li studied physics and graduated from Lanzhou University. He is the controlling shareholder of the company. As at Jun-21, he held a c.14.08% equity stake in LONGi. Together with his wife Li Xiyan's c.5.02% stake, Mr. Li's family held a c.19.10% stake in LONGi.
Mr. Zhong Baoshen	Chairman of LONGi Group, President of LONGi Solar	Mr. Zhong has taken increasingly senior leadership roles in LONGi's various subsidiaries since 2006. He has extensive experience in management and previously served as director of a company specialising in magnetoelectric materials, investments, PVs, semi-conductors, and CNC equipment. Mr. Zhong graduated with a BS in Physics from Lanzhou University.
Ms. Liu Xuewen	Director, Supervisor of Financial Management Center	Ms. Liu is primarily responsible for LONGi's accounting and financial matters. Prior to her attachment with LONGi, she held financial management positions in the hotel, investment, and conglomerate industries. She has an undergraduate degree and is qualified as an accountant and economist in China.

Source: LONGi

Key Assumptions

FY Dec	2019A	2020A	2021F	2022F	2023F
Solar module sales volume (MW)	7,394.5	23,956.7	35,400.0	48,530.0	59,500.0
Silicon wafer sales volume (MW)	25,336.8	31,835.6	44,250.0	56,970.0	73,780.0

Source: Company, DBS HK

Segmental Breakdown (RMB m)

FY Dec	2019A	2020A	2021F	2022F	2023F
Revenues (RMB m)					
Solar Module	15,617	36,982	63,720	87,354	107,100
Silicon Wafer	13,564	15,455	24,637	31,720	41,079
Centralized Power Station	3,046	1,200	1,248	1,298	1,350
Distributed Power Plant	669	943	972	1,001	1,031
Other segment	1	2	0	0	0
Total	32,897	54,583	90,577	121,373	150,560
Gross profit (RMB m)					
Solar Module	4,716	8,183	13,381	16,597	21,420
Silicon Wafer	4,807	4,653	5,174	7,296	9,859
Centralized Power Station	966	348	350	364	378
Distributed Power Plant	399	695	680	701	722
Other segment	(1,381)	(441)	350	364	378
Total	9,508	13,438	19,934	25,320	32,757
Gross profit Margins (%)					
Solar Module	30.2	22.1	21.0	19.0	20.0
Silicon Wafer	35.4	30.1	21.0	23.0	24.0
Centralized Power Station	31.7	29.0	28.0	28.0	28.0
Distributed Power Plant	59.7	73.7	70.0	70.0	70.0
Other segment	n.m.	n.m.	n.m.	n.m.	n.m.
Total	28.9	24.6	22.0	20.9	21.8

Source: Company, DBS HK

Income Statement (RMB m)

FY Dec	2019A	2020A	2021F	2022F	2023F
Revenue	32,897	54,583	90,577	121,373	150,560
Cost of Goods Sold	(23,389)	(41,146)	(70,643)	(96,052)	(117,803)
Gross Profit	9,508	13,438	19,934	25,320	32,757
Other Opng (Exp)/Inc	(2,961)	(3,088)	(6,826)	(8,946)	(11,027)
Operating Profit	6,547	10,349	13,109	16,374	21,729
Other Non Opg (Exp)/Inc	(51)	(59)	(37)	(37)	(37)
Associates & JV Inc	0	0	0	0	0
Net Interest (Exp)/Inc	(250)	(378)	(378)	(378)	(378)
Dividend Income	0	0	0	0	0
Exceptional Gain/(Loss)	0	0	0	0	0
Pre-tax Profit	6,247	9,912	12,693	15,959	21,314
Tax	(690)	(1,212)	(1,428)	(1,796)	(2,399)
Minority Interest	(278)	(147)	(113)	(142)	(189)
Preference Dividend	0	0	0	0	0
Net Profit	5,280	8,552	11,152	14,021	18,726
Net Profit before Except.	5,280	8,552	11,152	14,021	18,726
EBITDA	7,879	12,320	16,236	20,787	27,746
Growth					
Revenue Gth (%)	49.6	65.9	65.9	34.0	24.0
EBITDA Gth (%)	86.9	56.4	31.8	28.0	33.5
Opg Profit Gth (%)	108.8	58.1	26.7	24.9	32.7
Net Profit Gth (%)	106.4	62.0	30.4	25.7	33.6
Margins & Ratio					
Gross Margins (%)	28.9	24.6	22.0	20.9	21.8
Opg Profit Margin (%)	19.9	19.0	14.5	13.5	14.4
Net Profit Margin (%)	16.0	15.7	12.3	11.6	12.4
ROAE (%)	24.0	27.3	27.4	26.3	26.9
ROA (%)	10.7	11.6	11.3	11.4	12.5
ROCE (%)	18.3	20.9	19.6	18.5	19.1
Div Payout Ratio (%)	13.3	11.1	11.1	11.1	11.1
Net Interest Cover (x)	26.2	27.4	34.7	43.3	57.4

Source: Company, DBS HK

Balance Sheet (RMB m)

FY Dec	2019A	2020A	2021F	2022F	2023F
Net Fixed Assets	15,467	24,506	34,998	48,843	65,481
Invts in Associates & JVs	1,096	1,572	1,572	1,572	1,572
Other LT Assets	5,374	6,456	8,533	10,362	12,101
Cash & ST Invts	20,165	27,202	24,847	21,974	21,227
Inventory	6,356	11,452	18,049	24,185	30,001
Debtors	8,675	11,978	16,771	22,322	27,307
Other Current Assets	2,170	4,469	5,420	6,233	7,004
Total Assets	59,304	87,635	110,189	135,491	164,694
ST Debt	2,426	5,202	6,202	7,202	8,202
Creditors	13,714	22,144	25,372	30,551	34,984
Other Current Liab	8,480	15,746	16,032	16,278	16,510
LT Debt	2,509	1,125	8,125	13,125	18,125
Other LT Liabilities	3,881	7,819	7,819	7,819	7,819
Shareholder's Equity	27,629	35,106	46,257	60,278	79,004
Minority Interests	666	492	380	238	49
Total Cap. & Liab.	59,304	87,635	110,189	135,4921	164,694
Non-Cash Wkg. Capital	(4,992)	(9,991)	(1,165)	5,912	12,819
Net Cash/(Debt)	15,230	20,875	10,519	1,646	(5,101)
Debtors Turn (avg days)	99.0	69.1	57.9	58.8	60.2
Creditors Turn (avg days)	184.3	167.3	128.5	111.4	107.0
Inventory Turn (avg days)	88.2	83.1	79.8	84.1	88.5
Asset Turnover (x)	0.7	0.7	0.9	1.0	1.0
Current Ratio (x)	1.5	1.3	1.4	1.4	1.4
Quick Ratio (x)	1.2	0.9	0.9	0.8	0.8
Net Debt/Equity (X)	CASH	CASH	CASH	CASH	0.1
Net Debt/Equity ex MI (X)	CASH	CASH	CASH	CASH	0.1
Capex to Debt (%)	51.1	71.5	98.8	92.3	87.9
Z-Score (X)	NA	NA	NA	NA	NA

Source: Company, DBS HK

Cash Flow Statement (RMB m)

FY Dec	2019A	2020A	2021F	2022F	2023F
Pre-Tax Profit	5,557	8,700	12,693	15,959	21,314
Dep. & Amort.	1,488	2,221	3,165	4,450	6,054
Tax Paid	0	0	(1,428)	(1,796)	(2,399)
Assoc. & JV Inc/(loss)	0	0	0	0	0
(Pft)/ Loss on disposal of FAs	393	60	113	142	189
Chg in Wkg.Cap.	540	(351)	(8,826)	(7,077)	(6,907)
Other Operating CF	181	385	0	0	0
Net Operating CF	8,158	11,015	5,715	11,677	18,252
Capital Exp.(net)	(2,523)	(4,527)	(14,151)	(18,770)	(23,148)
Other Invts.(net)	231	540	(225)	(284)	(378)
Invts in Assoc. & JV	0	0	0	0	0
Div from Assoc & JV	0	0	0	0	0
Other Investing CF	(461)	(1,184)	(1,583)	(1,354)	(1,283)
Net Investing CF	(2,753)	(5,171)	(15,958)	(20,408)	(24,809)
Div Paid	(721)	(2,051)	0	0	0
Chg in Gross Debt	(198)	4,923	8,000	6,000	6,000
Capital Issues	4,594	136	0	0	0
Other Financing CF	885	(199)	(113)	(142)	(189)
Net Financing CF	4,560	2,810	7,887	5,858	5,811
Currency Adjustments	(70)	(309)	0	0	0
Chg in Cash	9,895	8,345	(2,356)	(2,873)	(747)
Opg CFPS (RMB)	1.52	2.15	2.75	3.55	4.76
Free CFPS (RMB)	1.12	1.23	(1.60)	(1.34)	(0.93)

Source: Company, DBS HK

DBS HK recommendations are based on an Absolute Total Return* Rating system, defined as follows:
STRONG BUY (>20% total return over the next 3 months, with identifiable share price catalysts within this time frame)
BUY (>15% total return over the next 12 months for small caps, >10% for large caps)
HOLD (-10% to +15% total return over the next 12 months for small caps, -10% to +10% for large caps)
FULLY VALUED (negative total return, i.e., > -10% over the next 12 months)
SELL (negative total return of > -20% over the next 3 months, with identifiable share price catalysts within this time frame)

**Share price appreciation + dividends*

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Sources for all charts and tables are DBS HK unless otherwise specified.

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