

2018年5月15日

买入
首次覆盖

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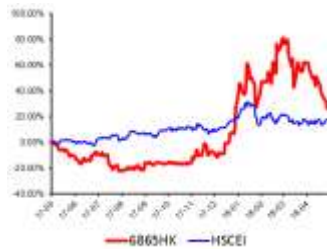
Flat Glass (6865 HK)

Financial summary and valuation

Market Data: May 14, 2018

Closing Price (HK\$)	2.09
Price Target (HK\$)	2.74
HSCEI	12,545
HSCCI	4,668
52-week High/Low (HK\$)	3.16/ 1.28
Market Cap (USD Mn)	479
Market Cap (HK\$ Mn)	3,762
Shares Outstanding (Mn)	1,800
Exchange Rate (RMB-HK\$)	1.24

Price Performance Chart:



Source: Bloomberg

Analyst

Vincent Yu

A0230513070005 BAM599

yujw@swsresearch.com

	2016	2017	2018E	2019E	2020E
Revenue (Rmbm)	2,951	2,975	3,976	5,209	6,297
YOY (%)	1.28	0.79	33.66	31.02	20.88
Net income (Rmbm)	606.0	429.5	495.4	678.0	800.2
YOY (%)	39.7	(29.1)	15.3	36.9	18.0
EPS (Rmb)	0.34	0.24	0.28	0.38	0.44
Diluted EPS (Rmb)	0.34	0.24	0.28	0.38	0.44
ROE (%)	21.9	13.8	14.2	16.6	16.6
Debt/asset (%)	(8.6)	3.3	9.1	5.0	3.5
Dividend Yield (%)	2.1	0.0	0.0	0.0	0.0
P/E (x)	5.4	7.6	6.6	4.8	4.1
P/B (x)	1.1	1.0	0.9	0.7	0.6
EV/EBITDA (x)	3.6	5.9	4.5	3.3	2.7

福莱特玻璃从事玻璃产品的开发、制造和销售。作为世界最大光伏玻璃制造商之一，2017年公司光伏玻璃板块收入占其总收入的68.1%。在技术升级以及持续的政策支持下，我们认为我国光伏有望在2020年实现平价上网，进一步刺激光伏玻璃需求。我们的EPS预测如下：18年0.28元（同比增长16.7%），19年0.38元（同比增长35.7%）以及20年0.44元（同比增长15.8%）。我们目标价为2.74港币，对应8倍18年PE和1.1倍18年PB。现行价距目标价仍有31%上行空间，首次覆盖给予“买入”评级。

光伏玻璃领军者。目前公司总产能约为4490吨/日，其中光伏玻璃为3290吨/日，浮法玻璃1200吨/日。近期有600吨/日的浮法玻璃产能正在进行大修，并将在6月份恢复运行。在光伏玻璃产能方面，福莱特玻璃排名全球第二，仅次于信义光能（968HK-未评级）的6800吨/日。两家公司合计占中国光伏玻璃产能的50%。由于光伏玻璃行业在资金需求、技术和成本控制方面都存在较高的进入门槛，我们预计福莱特玻璃将在未来几年保持其在光伏玻璃产业中的优势地位。

长期需求增长。我们预测2018年中国新装机容量将达到45-50GW，全球100GW（同比均持平）。得益于高效率和技术优势，我们认为未来几年双玻组件需求将会迅速增长。2017年，双玻组件产量在中国达到2GW，全球达到3GW。此外，我们预计到2020年，太阳能发电站的建造成本将下降至5.5元/瓦，有望实现平价上网。因此，尽管政府补贴下降，我们预计中国太阳能产业从2020年开始将进入新的增长周期。我们预测在实现平价上网以后，光伏电力市场有望扩大2-3倍。

产能扩张。随着中国光伏行业逐渐向平价上网靠拢，光伏玻璃需求上升，为争取市场份额，公司计划未来三年在安徽省和越南建造新产能。安徽福莱特位于安徽省凤阳县，计划投产3座拥有12条原玻璃的自动生产线和16条深加工生产线，窑炉总产能为3000吨/日。第一座窑炉已在去年12月投入使用，第二座将于今年6-7月份投入运行，最后一座将于2019年2月或3月投产。该公司在越南的产能将达到2000吨/日，其中第一期1000吨/日的产能将会在19年年中上线。

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The company does not hold any equities or derivatives of the listed company mentioned in this report ("target"), but then we shall provide financial advisory services subject to the relevant laws and regulations. Any affiliates of the company may hold equities of the target, which may exceed 1 percent of issued shares subject to the relevant laws and regulations. The company may also provide investment banking services to the target. The Company fulfills its duty of disclosure within its sphere of knowledge. The clients may contact compliance@swsresearch.com for relevant disclosure materials or log into www.swsresearch.com under disclosure column for further information. The clients shall have a comprehensive understanding of the disclosure and disclaimer upon the last page.

Flat Glass is engaged in the development, manufacturing, and sale of glass products. The company is one of the world's largest photovoltaic (PV) glass manufacturers, with PV glass representing 68.1% of its total revenue in 2017. We expect China's PV power industry to achieve on-grid parity by 2020, on the back of technological upgrades and continued policy support, thus stimulating demand for PV glass. As such, we are positive on the firm's earnings growth prospects, underpinned by expanding capacity. We forecast EPS of Rmb0.28 in 18E (+16.7% YoY), Rmb0.38 in 19E (+35.7% YoY), and Rmb0.44 in 20E (+15.8% YoY). We derive a target price of HK\$2.74, representing 8x 18E PE and 1.1x 18E PB, or 5.9x 19E PE and 0.9x 19E PB. With 31% upside, we initiate coverage of the company with a BUY rating.

PV glass expert. The company boasts a total capacity of 4,490t/day, including 3,290t/day of PV glass and 1,200t/day of float glass. 600t/day of float glass capacity is currently undergoing overhaul and will resume operations in June. Flat Glass ranks second in terms of PV glass capacity, behind Xinyi Solar (968:HK – N-R), which operates a total capacity of 6,800t/day. Combined, the two companies account for c.50% of China's total PV glass capacity. Given high barriers to entry in terms of capital requirement, technologies, and cost control, we expect Flat Glass to maintain its strong position in the PV glass industry in coming years.

Long-term demand growth. We forecast newly installed solar power capacity in 2018E will reach 45-50GW in China and 100GW worldwide (both flat YoY). However, we believe the demand for double-glass modules will experience rapid growth in following years, given their high efficiency and technological advantages. In 2017, the production of double-glass modules amounted to 2GW in China and 3GW worldwide. In addition, we expect construction costs for solar power stations to decline to Rmb5.5/W by 2020E, leading to on-grid parity. As such, we expect China's solar power industry to enter a new growth cycle from 2020 onwards, despite declining government subsidies. We forecast the PV power market to expand two- to three-fold after reaching on-grid parity.

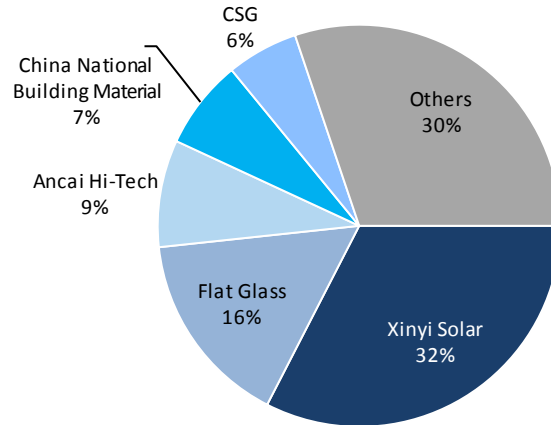
Expanding capacity. The company plans to construct additional capacity in Anhui Province and Vietnam over the next three years, in anticipation of growing demand for PV glass as China's PV power sector approaches on-grid parity, and in a bid to gain market share. Located in Fengyang County (Anhui Province), Anhui Flat plans to operate three 1,000t/day furnaces with 12 automatic production lines for raw glass and 16 deep processing production lines. The first furnace has been operating since last December, while the second one will be put into operation in June or July this year, and the last one will come on stream in February or March 2019. The firm's capacity in Vietnam will reach 2,000t/day, with the first phase of 1,000t/day to come online in 1H19.

Initiate with a BUY. We forecast EPS of Rmb0.28 in 18E (+16.7% YoY), Rmb0.38 in 19E (+35.7% YoY), and Rmb0.44 in 20E (+15.8% YoY). We derive a target price of HK\$2.74, representing 8x 18E PE and 1.1x 18E PB, or 5.9x 19E PE and 0.9x 19E PB. With 31% upside, we initiate coverage of the company with a BUY rating.

Flat Glass at a glance

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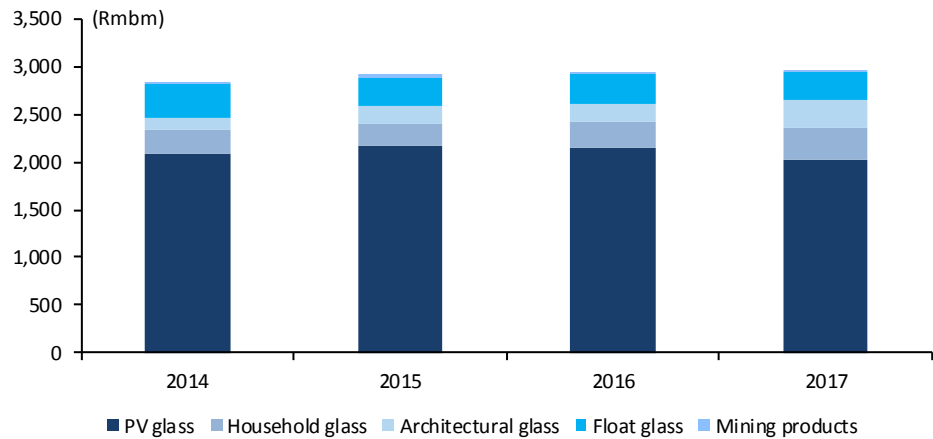
Fig 1: China's PV glass capacity breakdown



Source: Company data, SWS Research

Flat Glass' major products include PV glass (68.1% of 17A revenue), household glass (10.8%), architectural glass (10.0%), and float glass (9.9%).

Fig 2: Flat Glass' revenue breakdown



Source: Company data, SWS Research

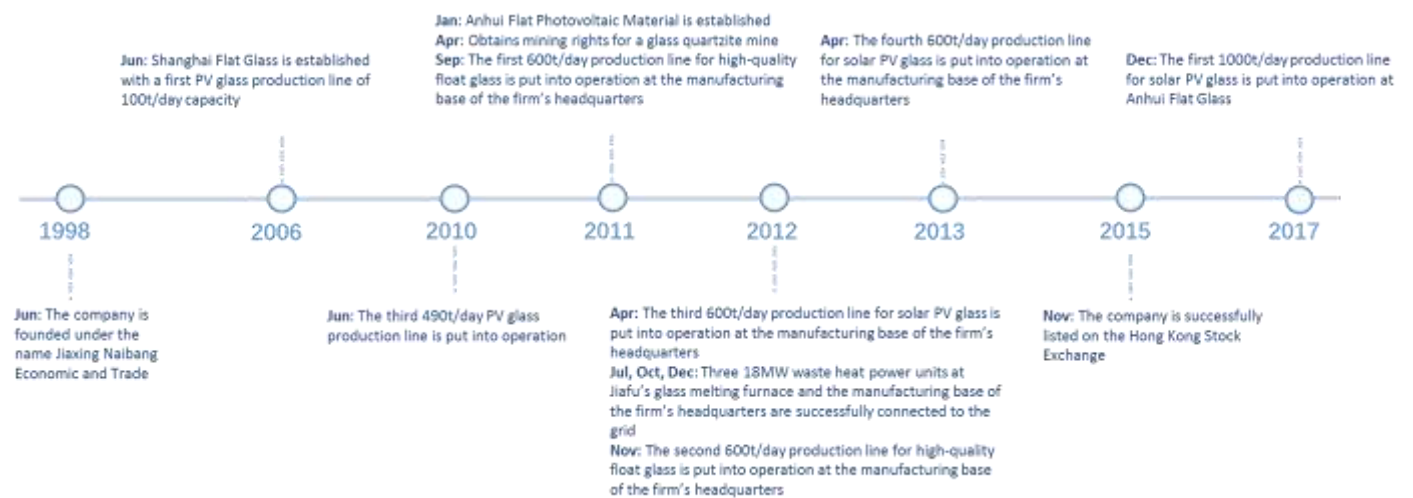
Fig 3: Flat Glass' major products



Source: Company global offering documents, SWS Research

The company was founded in 1998 under the name Naibang Trading. It gradually expanded its glass business and entered the PV glass industry in June 2006, with the establishment of Shanghai Flat, with a manufacturing capacity of 100t/day. The company continued to expand its capacity and opened a number of subsidiaries, in Zhejiang Province (2007), Anhui Province (2011), Hong Kong (2013), and Zhejiang Province (2014). Flat Glass was listed on the Hong Kong Stock Exchange in November 2015, and plans to get listed on the A-share market in the foreseeable future.

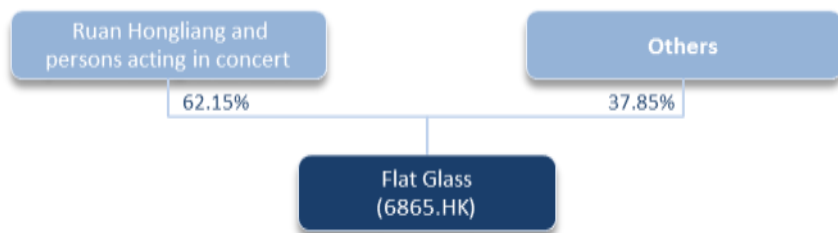
Fig 4: Company history



Source: Company global offering documents, SWS Research

As of end-2017, chairman Ruan Hongliang and persons acting in concert (including Jiang Jinhua, Ruan Zeyun, and Zhao Xiaofei) held 62.2% of company shares. More specifically, Ruan Hongliang owned a 24.4% stake, vs 18.0% for Jiang Jinhua, 19.5% for Ruan Zeyun, and 0.3% for Zhao Xiaofei. In addition, we note Tianfeng and Paragon Resort Fund held 4.3% and 5.0% of shares, respectively.

Fig 5: Shareholders structure



Source: Wind, Company data, SWS Research

Industry overview

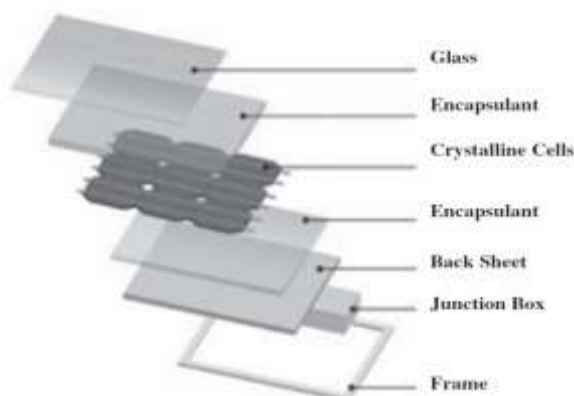
PV glass is used as a cover for solar cells, protecting solar modules from outside damage, such as wind, rain, and erosion. PV glass enjoys higher light transmission capability and lighter weight than ordinary float glass, allowing solar modules to perform efficiently. PV glass can be classified into three categories: ultra-clear patterned glass, ultra-clear processed float glass, and transparent conductive oxide (TCO) glass. The first two types of glasses are always applied on crystalline silicon (c-Si) PV modules, while TCO glass is widely used for thin-film PV modules. By lowering the iron content, the light transmission capability of PV glass can be improved. The iron content of PV glass is generally one tenth of that contained in ordinary float glass.

Fig 6: Comparison between ordinary float glass and PV glass

Differences	Ordinary float glass	Photovoltaic glass
Raw materials	Mostly common marine sand, quartz siltstone, soda ash, and dolomite	High-purity quartz sand, alumina, calcium oxide, and silicon, all with low iron content requirements
Manufacturing process	Relatively lower hot spot temperature; substantial temperature difference between the port and the hot spot	Higher hot spot temperature; the hot spot is located slightly in front of the port.
Barriers to entry	Low barriers to entry: high product utilisation; easy to realise full-line mechanisation and automation; low technical barriers; competitive sector	High barriers to entry: substantial investment needed; technological barriers; high industry concentration
Downstream industry	Mainly construction industry, household industry, automobile industry, and decoration industry	Solar power industry (photovoltaic modules)
Domestic capacity	156,750t/day as of 19 April 2018	20,890t/day as of 19 April 2018

Source: Wind, SWS Research

Fig 7: PV module lamination process

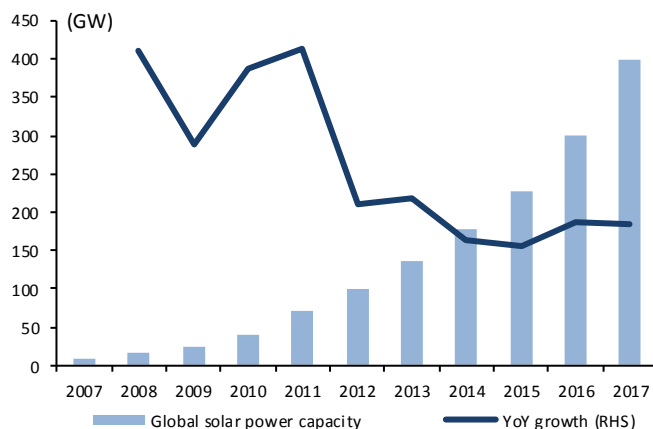


Source: Company global offering documents, SWS Research

Strong downstream demand in the long term

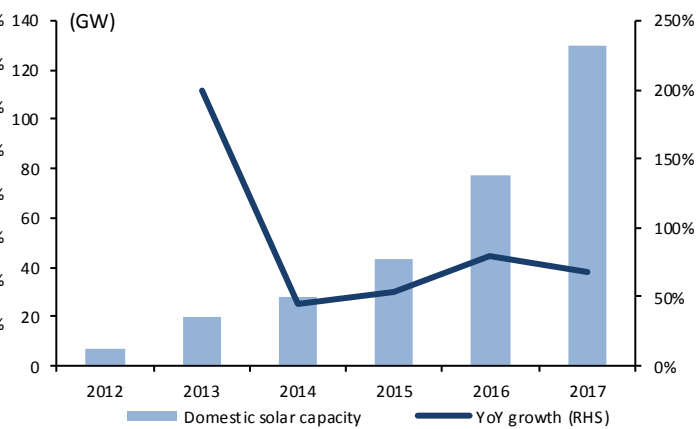
The solar power industry experienced a booming period over the past ten years, especially in China. Global solar power capacity surged from 9GW in end-2007 to 400GW in end-2017, representing a 46.1% Cagr. In China, solar capacity increased from 6GW in 2012 to 130GW in 2017 (85% Cagr). In 2017 alone, newly installed solar power capacity in China amounted to 53GW.

Fig 8: Global solar power capacity



Source: Company data, SWS Research

Fig 9: China's solar power capacity



Source: Company data, SWS Research

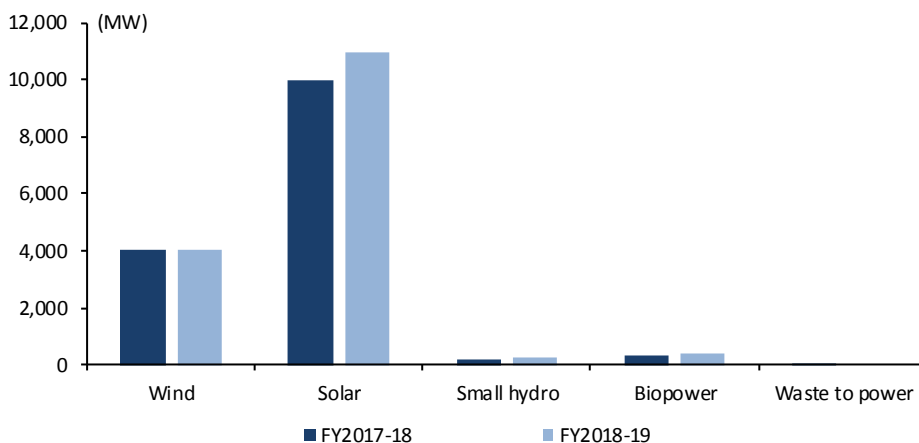
Newly installed PV capacity reached 10.9GW in 1Q18 (+22% YoY), while solar power curtailment rate declined to 4.3% (vs 9.7% in 1Q17). More specifically, newly installed capacity from PV power stations amounted to c.2GW (-64% YoY), while new distributed capacity reached 7.7GW (+217% YoY). We believe the strong capacity growth in 1Q18 was mainly due to last year's projects getting on-grid in early 2018. Moreover, we note prices of upstream products, including polysilicon, wafer, and cells, gradually declined in 1Q18. As such, we expect capacity growth to moderate throughout the year.

We forecast 2018E newly installed solar power capacity to reach 45-50GW in China and 100GW worldwide. We believe countries like the US, Japan, and China are likely to record declining newly installed capacity compared with last year, while we expect developing regions, such as India and the Middle East, to increase their newly installed capacity contribution, leading global newly installed capacity to remain flattish YoY.

Developing Indian market

According to Arun Jaitley, India's Finance Minister, the government will allocate Rs50.2bn to the Ministry of New and Renewable Energy (MNRE) for the installation of 15.6GW of renewable energy capacity between 1 April 2018 and 31 March 2019 (7.3% higher than the previous year's target). Of the 15.6GW, 11GW will be dedicated to solar power capacity, including 10GW of ground-mounted capacity and 1GW of roof-mounted capacity. In 2017, newly installed capacity in India reached 9.1GW. We expect this amount to increase to 11GW in 2018E.

Fig 10: India's renewable energy capacity addition targets



Source: MNRE, SWS Research

Expanding Middle East market

In end-March, Softbank (9984:JP) announced it will invest US\$200bn to construct the largest photovoltaic power station in Saudi Arabia by end-2030, with 200GW total capacity. In the primary stage, Softbank will inject US\$5bn and start building two solar power stations within the year, which will be put into operation in 2019, with total capacity of 7.2GW.

Shrinking US market

In 2017, newly installed capacity in the US amounted to 10.6GW, declining YoY for the first time. We expect newly installed capacity to decline further in 2018E, as a result of Trump's tax reform and rising import duties under Section 201 of the US Trade Act of 1974.

In 22 January 2018, the US government released the results of its investigation under Section 201, imposing import tariffs on PV cells and modules for the next four years. The tariff rate is set at 30% for the first year, 25% for the second year, 20% for the third year, and 15% for the fourth year. The first imported PV cells every year (up to 2.5GW) will be exempted from the import tariff.

Fig 11: US import tariffs on solar cells and modules

	Year 1	Year 2	Year 3	Year 4
Tariff rate	30%	25%	20%	15%

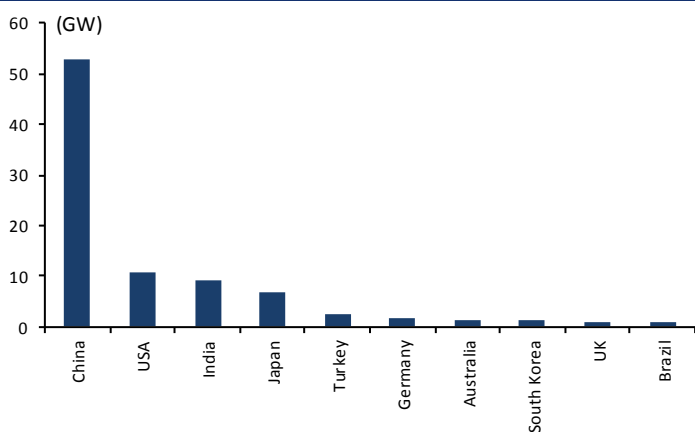
Source: US ITC, Solarzoom, SWS Research

Despite a better-than-expected outcome from the Section 201 investigation, we believe US buyers hoarded enough modules during the nine-month investigation to avoid paying the 30% import tariff, which will negatively impact demand in 2018. We forecast newly installed capacity to reach c.9GW in the US in 2018E.

Potential decline in Japan

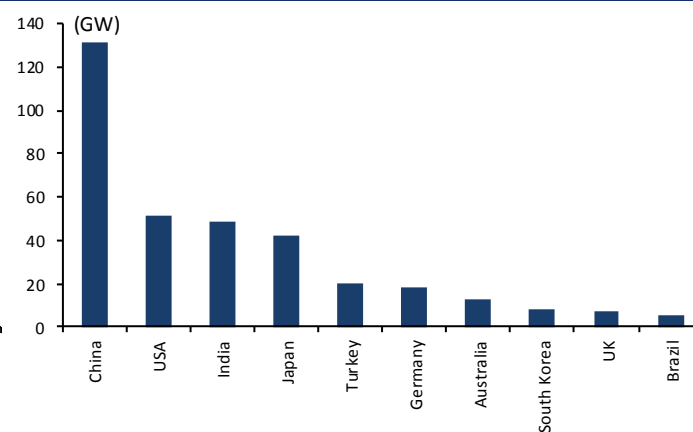
Newly installed PV capacity in Japan amounted to 7GW in 2017, with total PV capacity of 49GW. As one of the earliest country to adopt PV power in its energy mix, PV-related preferential policies have gradually weakened, including declining feed-in tariffs and the introduction of a bidding system for ground-mounted PV power stations. In addition, given curtailment issues in a number of areas across Japan, the government has become more reluctant to support the installation of new PV capacity. As a result, we expect newly installed capacity in Japan to reach 5-6GW in 2018E.

Fig 12: Newly installed solar power capacity in 2017



Source: IEA PVPS, SWS Research

Fig 13: Total installed solar power capacity in 2017



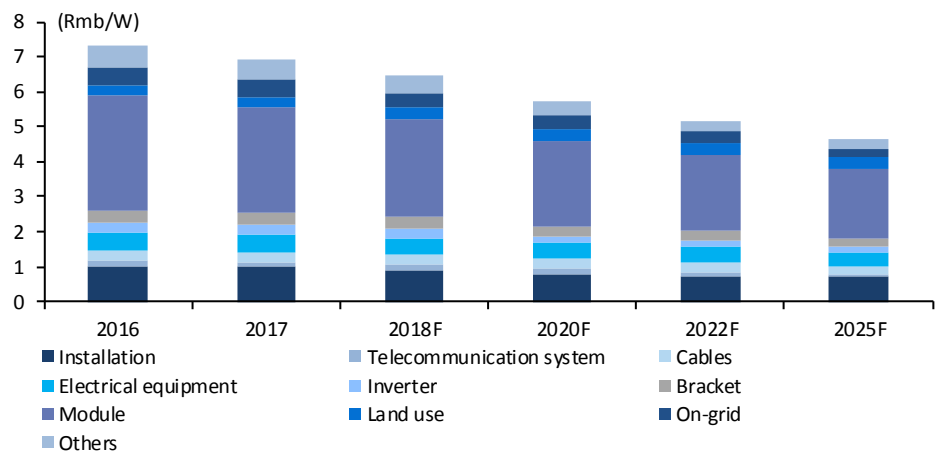
Source: IEA PVPS, SWS Research

Global PV glass capacity currently amounts to c.22,000t/day, more than 85% of which being located in China. As for mainstream single-glass modules with 280MW capacity, we estimate that 100GW of newly installed capacity would require a PV glass capacity of c.22,400t/day, which is already achieved by the current production capacity.

Towards on-grid parity

Thanks to policy support and technological development, the levelised cost of energy (LCOE) of solar power has decreased by 90% since 2007, and we still see room for further decline. According to the China Photovoltaic Industry Association (CPIA), the construction cost of domestic PV stations will decrease to Rmb6.49/W in 2018F, with modules accounting for 43% of the total cost. However, considering that module prices have declined to Rmb2.45/W for polysilicon and Rmb2.6/W for monocrystalline, we believe this number is likely to be lower. We highlight a number of technological advances in recent years, such as passivated emitter rear contact (PERC) cells, double-glass modules, metal wrap through (MWT) technology, and black silicon. As these technologies mature, we expect solar power efficiency to improve and its associated LCOE to decline further. We forecast construction costs to drop to Rmb5.5/W by 2020E, thus leading to on-grid parity. As such, we expect China's solar power industry to enter a new growth cycle from 2020 onwards, despite declining government subsidies. We forecast the PV power market to expand two- to three-fold after reaching on-grid parity, which will greatly stimulate demand for PV glass.

Fig 14: Construction cost breakdown of solar power stations

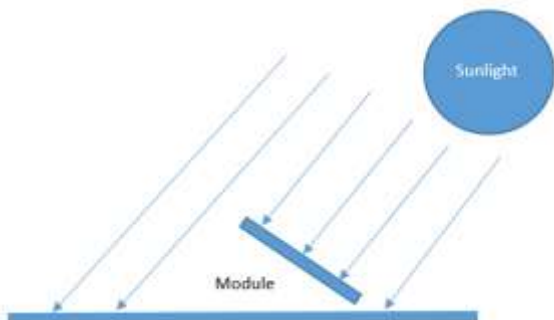


Source: CPIA, SWS Research

Double-glass modules & PERC technology

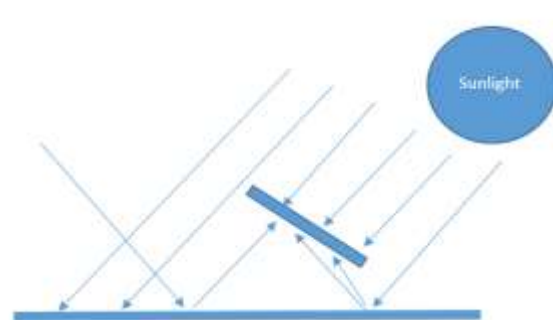
Double-glass modules can generate electricity from both sides, contrary to ordinary single-glass modules, which can only absorb direct light from the front side. Power generated by double-glass modules is usually 10-30% higher than the electricity produced by similar single-glass PV modules, thus leading to growing demand for double-glass modules.

Fig 15: Single-glass module



Source: SWS Research

Fig 16: Double-glass module



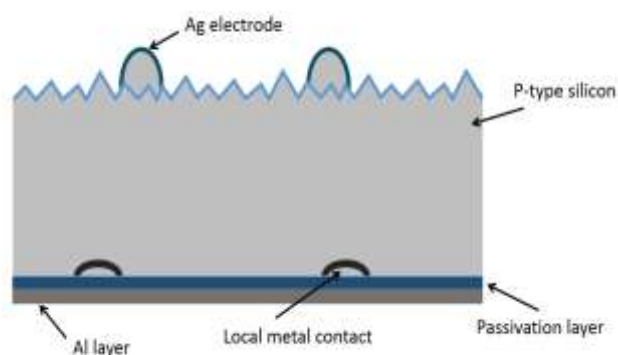
Source: SWS Research

An increasing number of manufacturers in the PV industry have adopted the PERC technology over the past two years. PERC cells differ from ordinary solar cells by the addition of a dielectric passive layer to the rear side of the cells to reflect unabsorbed light back to them, thus improving solar cell efficiency. According to Solarzoom, domestic PERC capacity amounted to c.42GW as of end-2017, including 75% of monocrystalline silicon capacity. At present, PERC cells achieve an efficiency rate of 21-21.5% for monocrystalline silicon modules and 20-20.5% for polysilicon modules. Given the

gradually maturing technology and its high efficiency rate, we expect PERC to become a mainstream technology in the next few years.

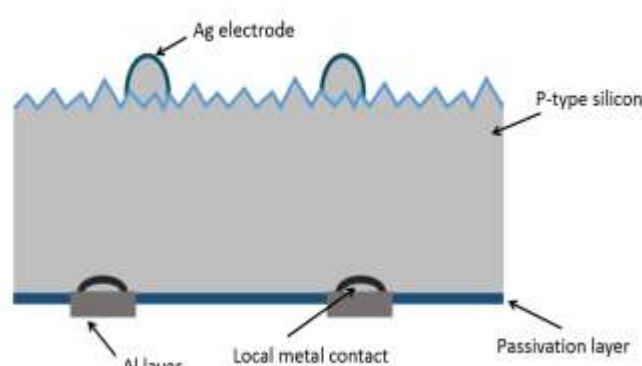
We note double-glass and PERC technologies can be combined with little cost increment. When transforming a PERC-based module production line from single-glass to double-glass, only the cell processing step needs to be adjusted. The combined double-glass PERC technology enjoys a number of advantages, including enhanced electricity generation efficiency, low aluminum paste content, and high compatibility with the heterojunction with intrinsic thin layer (HIT) technology.

Fig 17: Single-glass PERC



Source: CPVS, SWS Research

Fig 18: Double-glass PERC



Source: CPVS, SWS Research

Policy support

The Chinese government has emphasised the importance of efficiency improvement in the PV power industry over the past few years. With the release of “front-runner” projects since 2015, the market size for monocrystalline silicon cells has gradually increased, thanks to their high conversion efficiency. In 2017, the National Development and Reform Commission (NDRC) issued its Notice on Promoting Implementation of Photovoltaic Power Front-runner Plan and Construction of Bases, requiring that the conversion efficiency of PV cells adopted by front-runner projects reach at least 18.9% for monocrystalline silicon cells and at least 18% for polysilicon cells.

As of April 2018, seven out of ten projects comprised in the third batch of front-runner projects had declared their bid results. We note double-glass modules accounted for 72.7% of all modules, representing a total capacity of c.2.5GW. In 2017, the production of double-glass modules reached 2GW in China and 3GW worldwide. We expect double-glass modules to experience rapid growth in coming years.

Fig 19: Technologies adopted by front-runner projects (third batch)

(Rmb/W)	Monocrystalline					Polysilicon	
	PERC	P-type double-glass	N-type double-glass	Half-cut double-glass	Imbrication	MWT	Black silicon
Weinan	200	300				200	
Shouyang	400	200					
Baicheng	500	300	200			200	
Dalate	300	400					
Haixing		390	245			110	145
Baoying		200	100	200	100		
Sihong	100		500				
Total	1,500	1,790	1,045	200	100	510	145

Source: Solarzoom, SWS Research

Capacity expansion

Flat Glass currently runs six PV glass furnaces with capacity of 3,290t/day. The company plans to construct additional capacity in Anhui Province and Vietnam over the next three years, in anticipation of growing demand for PV glass as China's PV power sector approaches on-grid parity, and in a bid to gain market share. Located in Fengyang County (Anhui Province), Anhui Flat plans to operate three 1,000t/day furnaces with 12 automatic production lines for raw glass and 16 deep processing production lines. The first furnace has been operating since last December, while the second one will be put into operation in June or July this year, and the last one will come on stream in February or March 2019. The firm's capacity in Vietnam will reach 2,000t/day, with the first phase of 1,000t/day to come online in 1H19.

Fig 20: Flat Glass' operating capacity

Furnaces	Capacity (t/day)	Operation time
Jiafu No. 1	300	Nov 2008
Jiafu No. 2	300	Jun 2009
Jiafu No. 3	490	Jun 2010
Headquarters No. 3	600	Apr 2012
Headquarters No. 4	600	Apr 2013
Anhui No. 1	1,000	Dec 2017

Source: Company data, SWS Research

Fig 21: Flat Glass' planned capacity

Furnaces	Capacity (t/day)	Operation time
Anhui No. 1	1,000	Dec 2017
Anhui No. 2	1,000	Jul 2018
Anhui No. 3	1,000	Mar 2019
Vietnam No. 1	1,000	Jun 2019
Vietnam No. 2	1,000	2020

Source: Company data, SWS Research

Industry leader Xinyi Solar is also expanding capacity. Xinyi added three ultra-clear raw glass production lines, with total capacity of 2,900t/day, in 4Q16 and 1Q17. In addition, the company plans to put three new 1,000t/day PV glass production lines into operation in Malaysia in 4Q18, 1H19, and end-2019.

Fig 22: Xinyi Solar's operating capacity

Location	Capacity (t/day)
Wuhu	5,400
Tianjin	500
Malaysia	900
Total	6,800

Source: Company data, SWS Research

Fig 23: Xinyi Solar's planned capacity

Location	Capacity (t/day)	Operating time
Malaysia	1,000	4Q18
Malaysia	1,000	1H19
Malaysia	1,000	End-2019

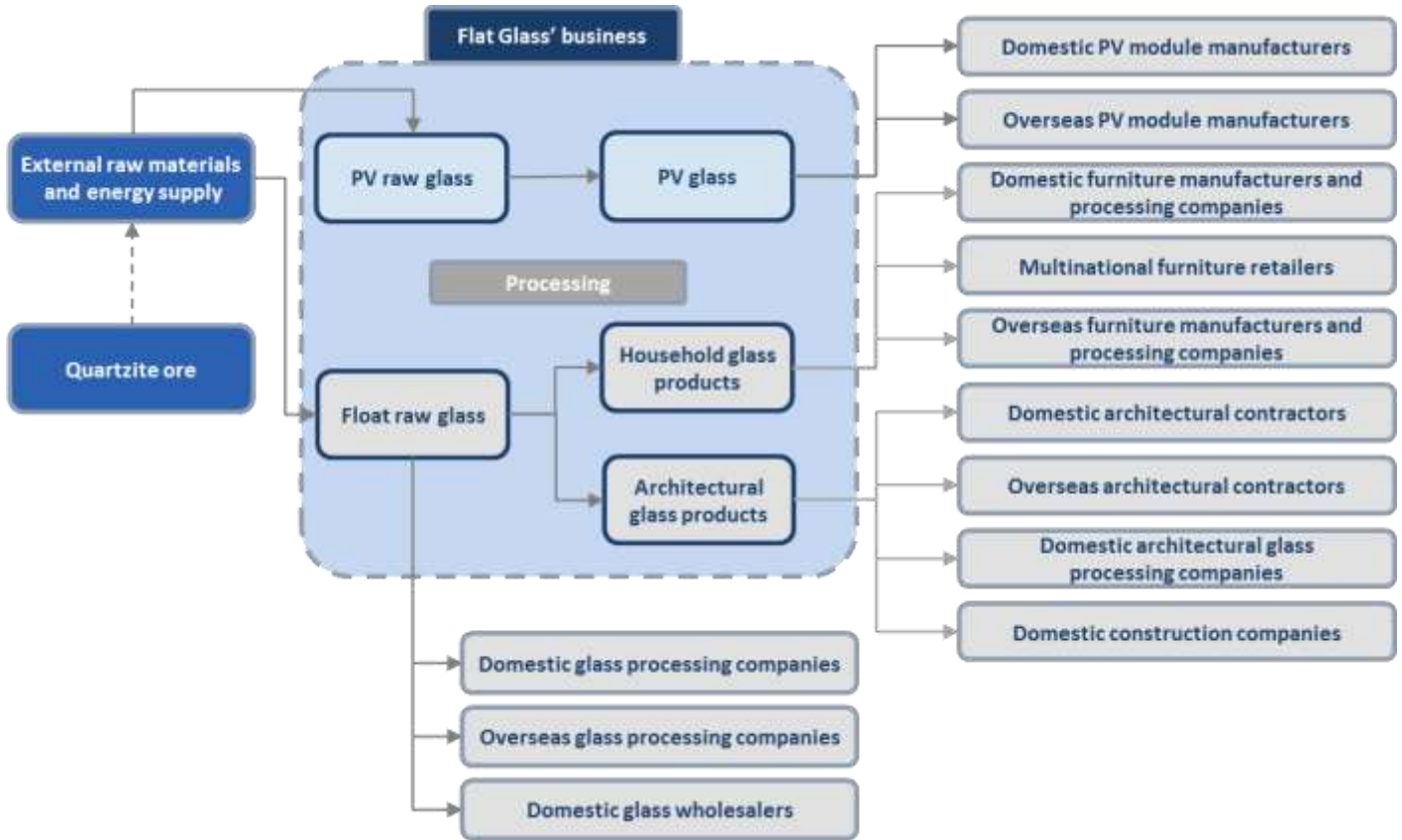
Source: Company data, SWS Research

According to data from SCI99, the total number of ultra-clear glass producers amounted to 25 in end-April, with 40 furnaces and 131 production lines in operation. The current domestic total capacity is 20,890t/day (-2.3% MoM; +2.6% YoY). One of Flat Glass' 500t/day furnaces is undergoing overhaul since early April. China's ultra-clear glass production reaches 16,294t/day, implying an industry utilisation rate of 78%. In 2018E, we forecast c.1,500t/day of ultra-clear glass capacity will gradually stop operating for overhaul, which usually takes c.6 months to complete. Given our expectations for capacity overhaul and capacity expansion, we believe newly added capacity will be limited this year.

Vertical integration

All of the company's PV glass products are manufactured using self-produced PV raw glass, while c.90% of the firm's other glass products, including household glass and architectural glass, are made from float glass manufactured by the company itself. This gives Flat Glass better control over its supply chain and associated costs.

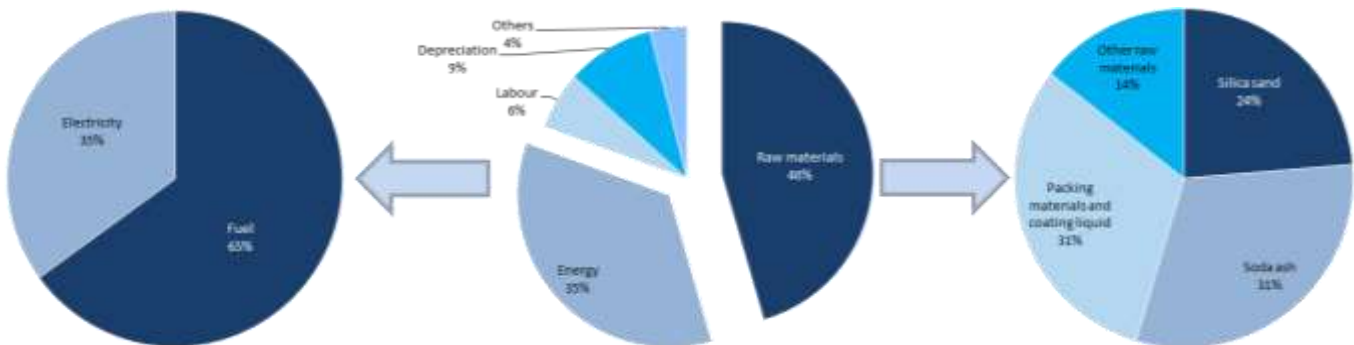
Fig 24: Business structure



Source: Company global offering documents

The main raw materials used by the company are silica sand and soda ash, accounting for c.25% of total cost of goods sold (COGS). Suppliers of the company's silica sand are diversified, mostly based in Hainan Province, Guangdong Province, Anhui Province, and foreign countries such as Cambodia and Australia. Located in Fengyang County (Anhui Province), where silica sand is abundant, Anhui Flat benefits from easy access to raw materials. If we take other raw materials, such as packing materials and coating liquid, into account, we estimate raw materials account for 45-50% of the firm's total COGS. In addition, energy costs (ie, fuel and electricity) represent 35-40% of COGS, while the remaining c.15% mostly cover labour and depreciation.

Fig 25: COGS structure in 2014

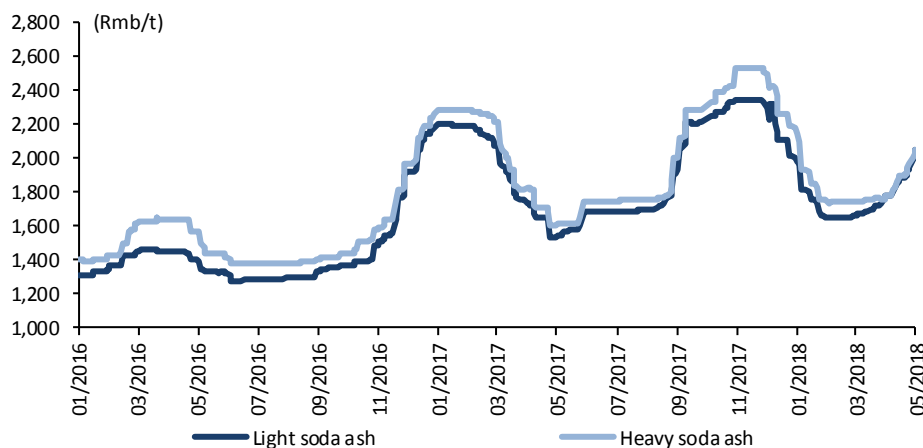


Source: Company global offering documents, SWS Research

The abundant supply of silica sand and diversified supplier mix allow the company to benefit from stable prices. To further strengthen its control over the supply of silica sand, Anhui Flat has entered into a mining rights agreement with local authorities in Anhui Chuzhou. As a result, the company has obtained extraction rights for a portion of a quartzite mine located in Fengyang County. As of end-2017, the company had not started the extraction as it considered silica sand supply and prices as sufficiently stable and reasonable.

The other major primary raw material, soda ash, experienced a price increase of c.30% QoQ to c.Rmb2,500/t in December 2017, due to environmental protection measures, which led to a supply shortage. However, prices in 1Q18 declined back to their level in 3Q17, as demand from downstream glass manufacturers gradually decreased due to capacity overhaul. We note prices started to rise again from end-March 2018. We believe prices will continue to increase throughout 2Q18E, as we expect the impact from overhauls on production to last until June. Domestic monthly soda ash production reaches 2.3mt. We forecast overhauls to reduce production by c.0.2mt in April.

Fig 26: Soda ash prices



Source: Wind, SWS Research

Fig 27: Domestic soda ash capacity overhauls

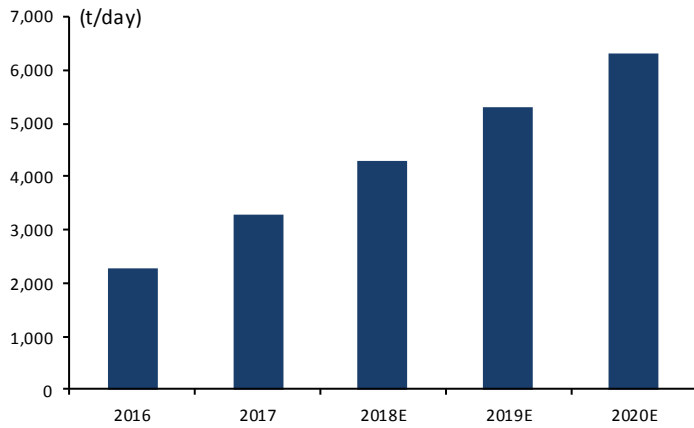
Company	Capacity (kt)	Manufacturing technique	Maintenance period
Nanfang Soda	600	Ammonia method	1-week overhaul since 10 April
Yongli Chemical	800	Alkali method	20-day overhaul since 10 April
Fengchengyan Chemical	600	Alkali method	10-day overhaul since 8 April
CNSG Hong sifang	350	Alkali method	40-day overhaul since 10 April
Qinghai Soda	1,200	Ammonia method	7- to 10-day overhaul since mid-April
Jinshan Chemicals	2,000	Alkali method	Overhaul in mid-April
Sunite Soda	200	Natural alkali method	Overhaul in mid-April
Jiangsu Jingshen	600	Ammonia method	Repairs in April
Guangyu Chemicals	250	Alkali method	3-day overhaul since 23 April
Chongqing Yihua	800	Alkali method	15-day overhaul since end-April
CNSG Kunshan	600	Alkali method	10- to 15-day overhaul in May
Fujian Yaolong	400	Alkali method	20-day overhaul in end-May
Shandong Haitian	1,350	Ammonia method	1-week overhaul in June
Haihua Xinxian	1,600	Ammonia method	1-week overhaul in June

Source: SCI99, SWS Research

Financial analysis

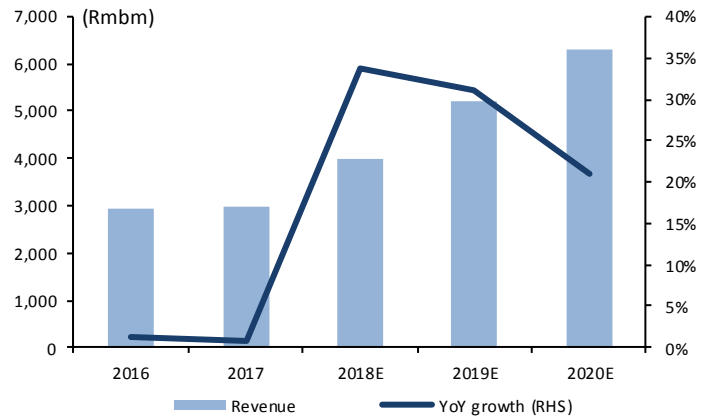
Flat Glass plans to expand its capacity over the next three years in anticipation of growing demand for PV glass. The company's first 1,000t/day furnace in Anhui Province was put into operation in December 2017. We expect the second 1,000t/day furnace in Anhui to come on stream in 3Q18 and the third 1,000t/day furnace to start operating in early 2019. The firm's capacity in Vietnam is expecting to reach 2,000t/day, with the first phase of 1,000t/day to come online in 1H19. As a result, we forecast revenue to reach Rmb4bn in 18E (+33.7% YoY), Rmb5.2bn in 19E (+31% YoY), and Rmb6.3bn in 20E (+20.9% YoY).

Fig 28: PV glass capacity



Source: Company data, SWS Research

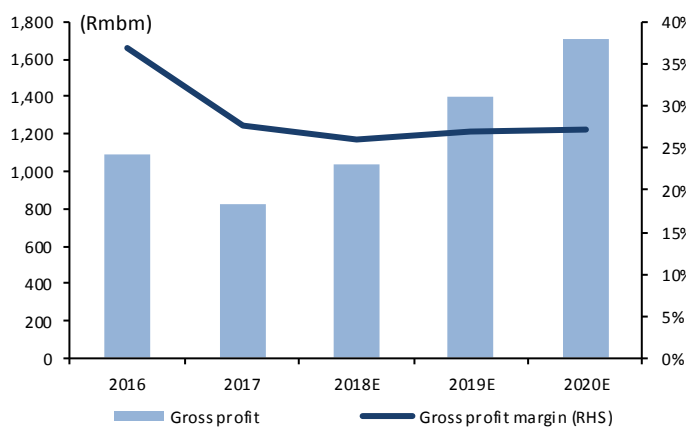
Fig 29: Revenue



Source: Company data, SWS Research

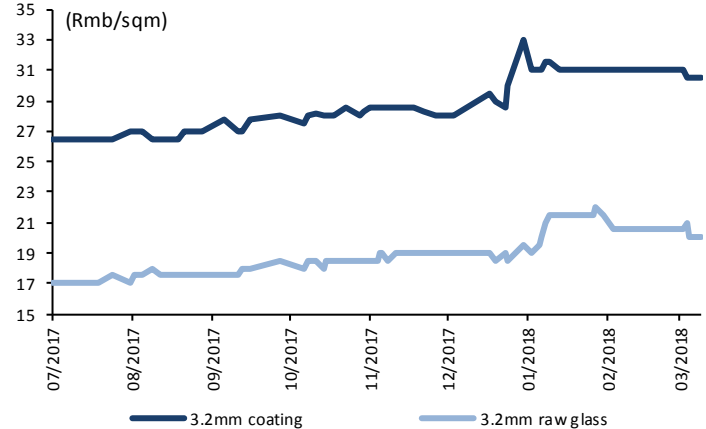
We expect the company's gross profit margin to decline to 26% in 2018E, due to relatively high soda ash prices and stable PV glass prices. From 2019E onwards, we believe the prospects of on-grid parity will stimulate downstream PV demand and lift PV glass prices, thus gradually expanding the firm's gross profit margin.

Fig 30: Gross profit and gross profit margin



Source: Company data, SWS Research

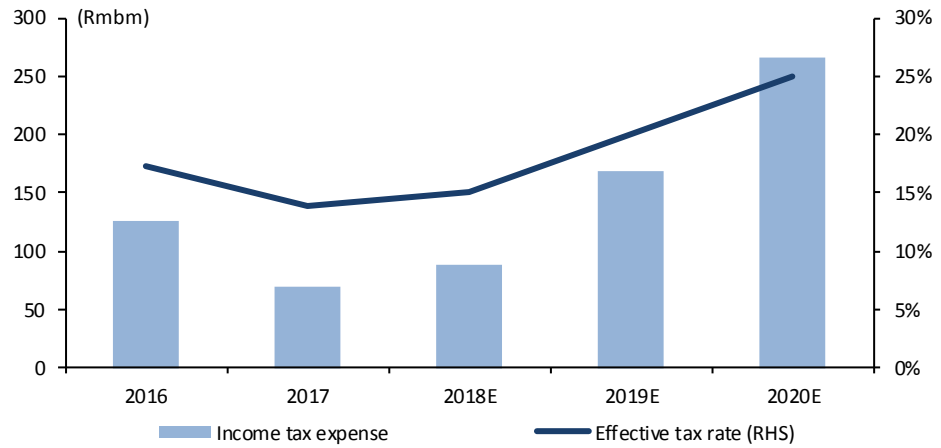
Fig 31: PV glass prices



Source: Company data, SWS Research

We expect the firm's effective tax rate to gradually increase from 2018E on. We note both Flat Glass and Zhejiang Jiafu, recognised as high-tech companies, benefit from a preferential tax rate of 15% from 2016 to 2018. In addition, Jiaxing Flat New Energy, which enjoyed a tax exemption for its first three years of operation, from 2014 to 2016, now benefits from a 50% tax reduction until 2019, with a tax rate of 12.5%.

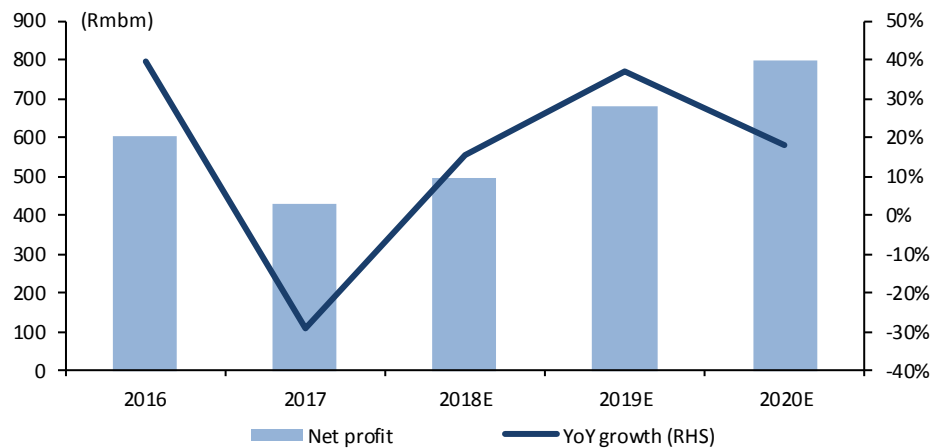
Fig 32: Income tax expense and effective tax rate



Source: Company data, SWS Research

We expect the company’s net profit to reach Rmb495m in 2018E, Rmb678m in 2019E, and Rmb800m in 2020E.

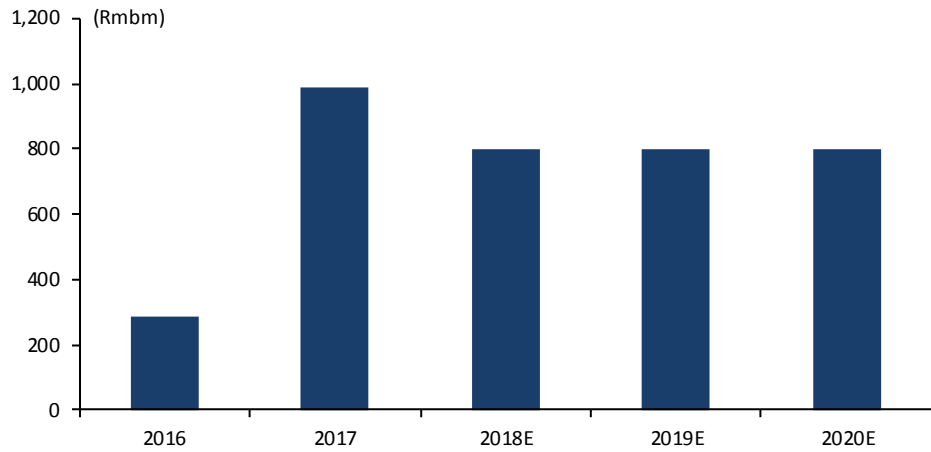
Fig 33: Net profit



Source: Company data, SWS Research

Given the company’s plan to expand capacity in the coming two to three years, we expect Capex to remain high. According to our estimation, every 1,000t/day capacity addition requires Capex of Rmb800m. As such, we forecast Capex to reach c.Rmb800m per annum in 2018-20E. We note scale effects can be substantial in the glass industry, with small furnaces (c.100t/day capacity) requiring Capex of c.Rmb100m and large furnaces (1,000t/day capacity) only requiring Capex of Rmb800m. Besides substantial capital, large furnaces require strong technical capability. As a result, only leading domestic manufacturers, such as Flat Glass and Xinyin Solar, are able to build large furnaces.

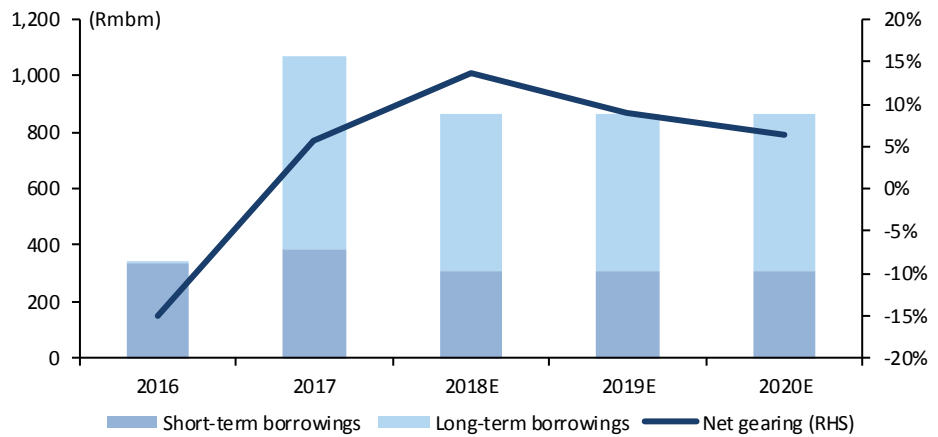
Fig 34: Capex



Source: Company data, SWS Research

We note the firm’s total borrowings sharply rose from Rmb335.5m in 2016 to Rmb1.1bn in 2017, mainly due to the increase in long-term borrowings for the construction of PV glass production bases in Anhui Province. The company plans to get listed on the A-share market in 2018. However, as it has not yet published the detailed listing schedule, we did not consider the A-share listing in our model. As such, we expect total borrowings to amount to Rmb867m in 2018E.

Fig 35: Borrowings and net gearing



Source: Company data, SWS Research

Valuation

Using a discounted cash flow (DCF) methodology, we derive a target price of HK\$2.74, representing 8x 18E PE and 1.1x 18E PB, or 5.9x 19E PE and 0.9x 19E PB. With 31% upside, we initiate coverage of the company with a BUY rating.

Fig 36: DCF valuation

(Rmbm)	2018E	2019E	2020E	2021E
Revenue	3,976	5,209	6,297	6,759
Ebit	635	900	1,119	1,153
Tax paid	-87	-170	-267	-275
NOPAT	547	730	852	878
Changes in working capital	-378	-14	-319	-207
Cash NOPAT	170	716	533	671
Plus: D&A	281	340	399	458
Less: Capex	800	800	800	800
FCFF	-349	256	132	329
TV				4,187
Total	-349	256	132	4,516
2017 PV	3,490			
2018 PV	4,182			

Source: SWS Research

In our model, we use 10-year Chinese government bond rate as risk free rate and adopted 6% as equity risk premium. We use 70% of long-term debt to equity ratio and derive WACC of 10.1%. In addition, we conservatively estimate that the perpetual growth rate is 1% by assuming no further capacity expansion after 2021E.

Fig 37: WACC calculation

Item	Value	Source/methodology
Risk-free rate	3.65%	10-year Chinese government bond
Equity risk premium	6.00%	Macro team assumptions
Beta	1.30	Bloomberg
Cost of equity (Ke)	11.45%	CAPM
Nominal cost of debt (Kd)	6.50%	Historical average data
Debt-to-equity ratio	70%	Analyst view on long-term capital structure
Effective tax rate	25.00%	Long-term value combined with current tax rate
WACC	10.08%	

Source: Company data, SWS Research

Fig 38: Key data

	2018E	2019E
EV (Rmbm)	2,856	3,528
Cash (Rmbm)	268	472
Debt (Rmbm)	867	867
Minority interest (Rmbm)	0	0
Equity value (Rmbm)	3,991	4,867
Outstanding shares (m)	1,800	1,800
Share price (Rmb)	2.22	2.70
Share price (HK\$)	2.74	3.34

Source: SWS Research

We selected several glass manufacturers listed on the Hong Kong Stock Exchange, Xinyi Solar being the closest company to Flat Glass in terms of business. Among all the names, we expect Flat Glass to record the fastest earning growth in coming years, while both its PE and PB valuations are relatively low.

Fig 39: Peer comparison

Code	Company	Market cap (HK\$m)	EPS growth (YoY)			PE			PB			Dividend yield		
			17A	18E	19E	17A	18E	19E	17A	18E	19E	17A	18E	19E
6865:HK	Flat Glass	4,140	-29%	15%	37%	7.6	6.6	4.8	1.0	0.9	0.7	-	-	-
968:HK	Xinyi Solar	25,251	14%	12%	16%	9.6	9.2	7.9	2.2	1.7	1.5	5%	6%	7%
3323:HK-Buy	CNBM	74,901	200%	-7%	0%	9.8	12.8	12.8	0.6	0.7	0.7	2%	2%	2%
3606:HK	Fuyao Glass	71,714	0%	33%	12%	22.0	13.0	11.5	2.9	2.6	2.4	3%	5%	5%
1108:HK	Luoyang Glass	7,433	79%			86.9			3.1					

Source: Wind, SWS Research

Risk

Price rally of raw materials including soda ash and natural gas; Downstream demands miss our expectations

Appendix

Table 1: Consolidated Income Statement

Rmbm	2016	2017	2018E	2019E	2020E
Revenue	2,951	2,975	3,976	5,209	6,297
Cost of Sales	-1,864	-2,148	-2,942	-3,810	-4,589
Gross Profit	1,087	826	1,034	1,399	1,708
Other Income	48	41	41	41	41
Distribution expenses	-108	-138	-184	-241	-291
Administrative expenses	-113	-107	-142	-187	-226
EBITDA	994	737	916	1,240	1,518
EBIT	761	510	635	900	1,119
Finance Costs	-28	-11	-52	-52	-52
Profit Before Tax	733	499	583	848	1,067
Income Tax Expense	-127	-69	-87	-170	-267
Minority Interests	0	0	0	0	0
Profit for the Year	606	430	495	678	800

Source : SWS Research

Table 2: Consolidated Cash Flow Statement

Rmbm	2016	2017	2018E	2019E	2020E
Profit before taxation	733	499	583	848	1,067
Plus: Depr. and amortisation	214	205	259	318	376
Finance cost	(6)	(9)	0	0	0
Losses from investments	(12)	8	0	0	0
Change in working capital	108	(374)	(378)	(14)	(319)
Others	5	(28)	(13)	(95)	(192)
CF from operating activities	1,042	300	451	1,056	932
CAPEX	(189)	(418)	(800)	(800)	(800)
Other CF from investing activities	(186)	(176)	0	0	0
CF from investing activities	(375)	(594)	(800)	(800)	(800)
Equity financing	0	0	0	0	0
Net change in liabilities	608	1,367	(205)	0	0
Dividend and interest paid	(38)	(36)	(52)	(52)	(52)
Other CF from financing activities	(1,451)	(777)	0	0	0
CF from financing activities	(881)	554	(257)	(52)	(52)
Net cash flow	(213)	259	(606)	204	80

Source : SWS Research

Table 3: Consolidated Balance Sheet

Rmbm	2016	2017	2018E	2019E	2020E
------	------	------	-------	-------	-------

Current Assets	2,237	2,950	3,060	3,911	4,549
Bank balances and cash	721	874	268	472	552
Trade and other receivables	1,174	1,589	2,104	2,735	3,115
Inventories	258	268	468	484	663
Other current assets	84	220	220	220	220
Long-term investment	400	657	657	657	657
PP&E	1,634	2,171	2,712	3,194	3,618
Intangible and other assets	196	178	156	133	111
Total Assets	4,467	5,956	6,584	7,895	8,935
Current Liabilities	1,390	1,969	2,233	2,866	3,105
Borrowings	335	384	311	311	311
Trade and other payables	927	1,478	1,816	2,449	2,688
Other current liabilities	127	106	106	106	106
Long-term liabilities	119	737	605	605	605
Total Liabilities	1,509	2,705	2,839	3,472	3,711
Minority Interests	0	0	0	0	0
Shareholder Equity	2,958	3,250	3,746	4,424	5,224
Share Capital	450	450	450	450	450
Reserves	2,508	2,800	3,296	3,974	4,774
Equity attributable	2,958	3,250	3,746	4,424	5,224
Total Liabilities and equity	4,467	5,956	6,584	7,895	8,935

Source : SWS Research

Table 4: Key Financial Ratios

	2016	2017	2018E	2019E	2020E
Ratios per share (Rmb)					
Earnings per share	0.34	0.24	0.28	0.38	0.44
Diluted earnings per share	0.34	0.24	0.28	0.38	0.44
Operating CF per share	0.58	0.17	0.25	0.59	0.52
Dividend per share	0.04	0.00	0.00	0.00	0.00
Net assets per share	1.64	1.81	2.08	2.46	2.90
Key Operating Ratios(%)					
ROIC	18.7	11.6	12.3	14.7	15.0
ROE	21.9	13.8	14.2	16.6	16.6
Gross profit margin	36.8	27.8	26.0	26.9	27.1
EBITDA Margin	33.7	24.8	23.0	23.8	24.1
EBIT Margin	25.8	17.1	16.0	17.3	17.8
Growth rate of Revenue(YoY)	1.3	0.8	33.7	31.0	20.9
Growth rate of Profit(YoY)	39.7	(29.1)	15.3	36.9	18.0
Debt-to-asset ratio	(8.6)	3.3	9.1	5.0	3.5
Turnover rate of net assets	1.07	0.96	1.14	1.28	1.31
Turnover rate of total assets	0.64	0.57	0.63	0.72	0.75
Effective tax rate (%)	(17.3)	(13.9)	(15.0)	(20.0)	(25.0)
Dividend yield (%)	2.3	0.0	0.0	0.0	0.0
Valuation Ratios (X)					
P/E	5.0	7.1	6.2	4.5	3.8
P/B	1.0	0.9	0.8	0.7	0.6
EV/Sale	1.1	1.4	1.0	0.8	0.6
EV/EBITDA	3.4	5.6	4.3	3.2	2.6

Source : SWS Research

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