

# Renewable Energy Sector

Refer to important disclosures at the end of this report

DBS Group Research . Equity

1 Dec 2022

## What are the catalysts in 2023?

- **Growth in wind and solar markets remain key in achieving China's dual-carbon targets**
- **Correction in polysilicon prices to benefit downstream project developers**
- **More supportive policies in terms of subsidy payment and development of green certificate**
- **Top pick: [China Longyuan Power \(916 HK\)](#) for improving project IRR**

Renewable energy remains essential to China's decarbonisation journey, despite the government's emphasis on energy security. The government's national targets for renewable energy, i.e. in terms of installation and as a percentage of total power generation, remain intact. Weak market sentiment and margin downtrend have pushed down the valuation to -2SD from the two-year historical average PE. We believe this offers good buying opportunities, as we see more catalysts in 2023.

**More catalysts in 2023.** An estimated >55% correction in polysilicon prices, which will trigger an ASP downtrend along the solar value chain, is positive to installation growth in 2023. Amid the concern on overcapacity in the supply chain, larger-sized products manufacturers are able to buck the margin downtrend. Downstream project developers are expected to benefit the most from any ASP correction. In terms of government policies, there will be further clarity in the payment of outstanding subsidies, development of green certificate market, and inclusion of renewable energy in the cross-provincial spot electricity market. These will also bring extra revenue to downstream project developers.

**China Longyuan Power (916 HK) (CLYP) as our sector top pick.** We like CLYP, as it benefits from the higher project IRR (on lower module prices), better financials from the settlement of subsidies and development of green certificate market, and it is not exposed to de-globalisation risks. Our TP is HK\$16.60. Due to increasingly keen competition from overcapacity and a rising risk of de-globalisation, we have lowered our target PE for LONGI (601012 CH) from 36x to 30x, giving new target prices of Rmb65. Target PE ratios for TCL Zhonghuang (002129 HK) and Flat Glass (6865 HK) are also fine-tuned. We maintain our BUY ratings for these counters for their trough valuations.

HSI: 18,597

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### Recommendation & valuation

Company Name		Price Local\$	Target Price Local\$	Recom	Mkt Cap US\$m
<a href="#">China Longyuan Power (916 HK)</a>	HKD	9.52	16.60	BUY	9,796
<a href="#">Flat Glass (6865 HK)</a>	HKD	20.15	28.00	BUY	9,580
<a href="#">Flat Glass-A (601865 CH)</a>	CNY	35.19	44.00	BUY	9,580
<a href="#">LONGI (601012 CH)</a>	CNY	45.78	65.00	BUY	48,914
<a href="#">TCL Zhonghuan (002129 CH)</a>	CNY	41.57	75.00	BUY	18,891
<a href="#">Xinjiang Goldwind (2208 HK)</a>	HKD	8.39	13.00	HOLD	6,432
<a href="#">Xinjiang Goldwind-A (002202 CH)</a>	CNY	11.51	15.60	HOLD	6,432

Based on closing prices as at 30 Nov 22

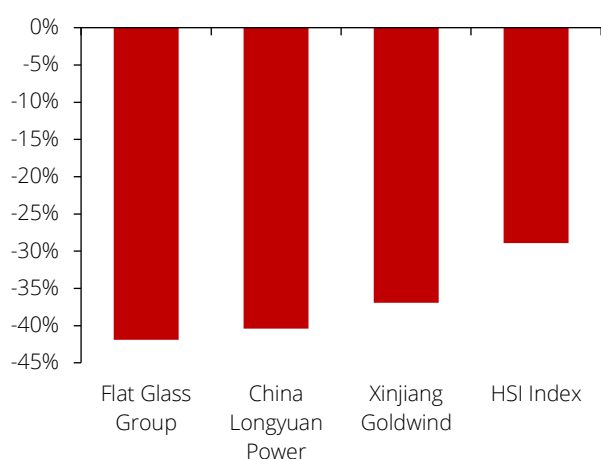
Source: Thomson Reuters, DBS Bank (Hong Kong) Limited ("DBS HK"), Bloomberg Finance L.P.

## Renewable Energy Sector

### Energy security has top priority

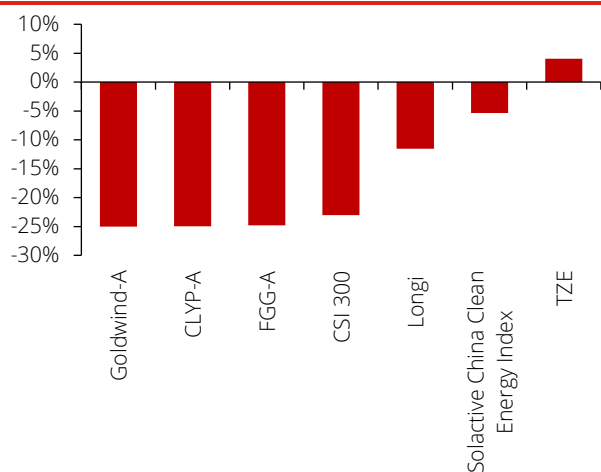
With the exception of TCL Zhonghuan (002129 CH), the renewable energy stocks under our coverage have underperformed their respective indices by 15%-20% in 10M2022. Most of them are trading at -1 to -2SD from the two-year historical average PE. Such poor share price performance and low valuation reflect **investors' concerns about margin pressure and their weak risk appetite for China-related stocks**, despite the China Government's firm stance towards its dual-carbon targets during the 20<sup>th</sup> Community Party Congress.

### Relative share price performance of renewable stocks listed on Hong Kong stock market



Source: Thomson Reuters, DBS HK

### Relative share price performance of renewable stocks listed on China stock market



Source: Thomson Reuters, DBS HK

During the congress, **greater emphasis was placed on the transition risk of climate change and the issue of energy security**. In particular, China faced widespread power outages in autumn of 2021, followed by an electricity shortage in Yunnan during the summer this year. In addition, the role of coal in peak shaving and faster development of nuclear energy were discussed. However, we believe **such a twist in the role of coal does not de-emphasise the importance of wind and solar energy in China's decarbonisation plan**. This is illustrated by the unchanged target in terms of total installations of wind and solar power capacity, which is maintained at over 1,200GW by 2030. Non-fossil energy sources should also account for 39% of total power generation by 2025 and 20% of total energy consumption should come from non-fossil energy by 2025. To achieve these, we believe installation growth of at least 7% and 17% p.a. for wind and solar power, respectively, are required in the coming three years. We expect there to be various catalysts in the coming year to support share prices.

### Catalyst #1: Growth in installations

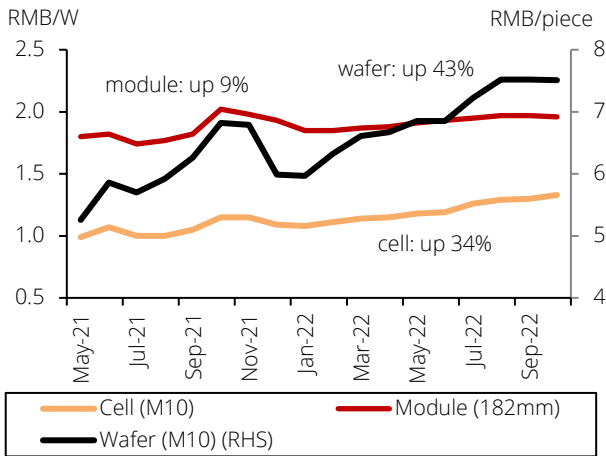
For the solar sector, the limited supply of polysilicon and its skyrocketed selling prices have caused a ripple effect on selling prices along the value chain, resulting in delays in the installation of solar power. Although we have seen significant growth in solar module exports so far in 2022, many downstream operators in China, particularly utility scale developers, have delayed their capacity expansion plans.

### Average selling prices of polysilicon



Source: BloombergNEF, DBS HK

**Average selling prices of solar components**

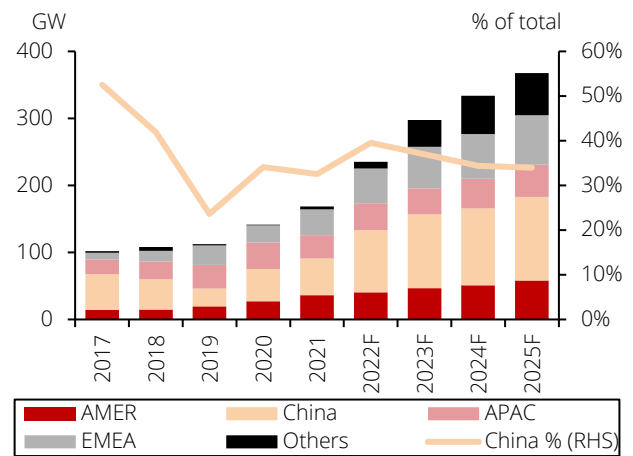


Source: CEIC, DBS HK

However, as new capacity of polysilicon has been coming on stream in 4Q2022, we observe that polysilicon price hikes have slowed down significantly. While ASP is likely to stay elevated in 1H2023, a more aggressive price correction is expected in 2H2023. BloombergNEF expects up to c.1.37m tons of potential polysilicon supply in 2023, up 53% from c.0.9m tons in 2022. Against the backdrop of sharply increasing supply, BNEF expects polysilicon prices to correct >55% in 2023.

A similar trend is also shown in wafer segment where ASP jumped >40% in the past 18 months on the back of rising polysilicon prices. However, with the anticipation of more new wafer capacity, we have seen the first price reduction for wafers in 2022, in late October/early November, and more price correction in wafer, cells and modules in late November. Thus, new capacity will trigger a correction in ASP along the supply chain. A faster ASP correction will be a positive for installations, which will be a catalyst for downstream developers, such as China Longyuan Power (916 HK) (CLYP). Higher sales volume growth will also be positive for component manufacturers. We have raised our estimation of global new installations of solar power by 6% to 298GW in 2023, up 26% from 2022.

**Global new installations of solar power**



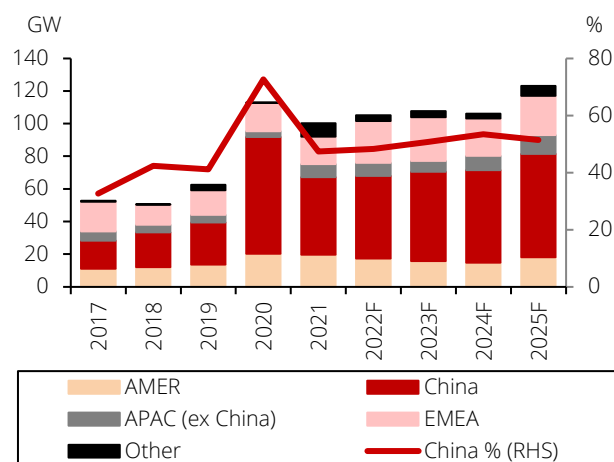
Source: BloombergNEF, CPIA, NEA, DBS HK

For China's wind sector, we remain optimistic about the installations because of the **China Government's commitment to establishing gigantic wind and solar energy bases in deserted and barren land**. These projects have an aggregate capacity of >550GW, of which 97GW is expected to be completed between 2022 and 2023. In addition, we see good growth in bidding volume in 2022, particularly for offshore wind. Bidding volume of offshore wind amounted to 19.5GW in 9M2022, compared with 3GW in 2021, implying strong installations in 2023.

We expect the **stable growth of new global wind installations in 2023** to be underpinned by the offshore wind market with new technologies (such as floating wind and hydrogen electrolyzers) unleashing more demand. In terms of geography, growth is stronger in China and Europe, the latter of which has set aggressive offshore wind installation targets to ensure energy security and reduce its reliance on energy imports from Russia. Wind turbine manufacturers, such as Xinjiang Goldwind (2208 HK) and Mingyang Smart Energy (601615 CH), are well positioned to gain more market share in the overseas market.

Renewable Energy Sector

Global new installations of wind power



Source: BloombergNEF, NEA, DBS HK

Notwithstanding the growing renewable energy installations in China, **grid connection is a potential bottleneck with a rising risk of curtailment**. Although the overall curtailment rate was only 3.5% and 1.8% for wind and solar, respectively, in 9M2022 in China, it was quite significant in some provinces, such as Eastern Mongolia (wind: 10.5%), Qinghai (solar: 10.1%), and Tibet (solar: 19.5%). Such a mismatch in demand and supply is mainly due to two reasons.

First, the stability of the local grid network must be ensured before the integration of a large capacity of renewable energy that has potential intermittence issues. Second, a cross-provincial electricity transmission programme can ensure that local supply can be supplemented by power from other regions when there are shortfalls. However, the timeframe of most of the contracts under the programme are currently monthly and semi-annually, which are a poor match for variable wind or solar power. This has resulted in the low transmission volume of renewable energy in some cross-provincial transmission lines (see table). The good news is that the **policy for the development of the inter-provincial spot power market is already in place**. Such a spot market allows electricity to be traded in shorter time periods, such as one hour. We believe that will fix the above issue of inflexibility, paving the way to form a nationally integrated electricity market.

Cross-provincial lines and their transmission volumes

Origin	Destination	% of renewable in transmission volume (%)
Xiangjiaba	Shanghai	100.0
Jinping, Sichuan	South Jiangsu	100.0
Xiluodu, Sichuan	Jinhua, Zhejiang	99.9
Hami, Xinjiang	Zhengzhou, Henan	35.8
Lingzhou, Ningxia	Shaoxing, Zhejiang	23.1
Gansu	Hunan	26.1
Shanxi	Jiangsu	17.6
Xilingol, Inner Mongolia	Taizhou, Jiangsu	22.4
Tongliao, Inner Mongolia	Qingzhou, Shandong	38.0
Shanghai, Inner Mongolia	Linyi, Shandong	33.7
Changji, Xinjiang	Guquan, Anhui	31.4
Qinghai	Henan	98.3
Yazhong, Sichuan	Poyanghu, Jiangxi	97.0
Chuxiong, Yunnan	Zengcheng, Guangdong	100.0
Puer, Yunnan	Jiangmen, Guangdong	100.0
Dali, Yunnan	Shenzhen, Guangdong	100.0
Kunming, Yunnan	Longmen, Guangdong	100.0

Source: National Energy Administration of China, DBS HK

Catalyst #2: Margin trend

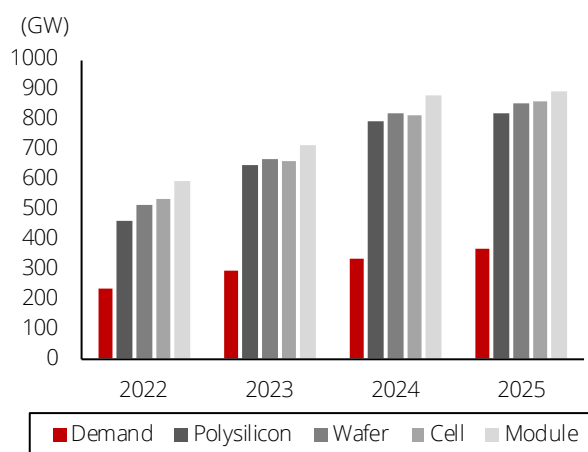
**Gross margins for solar wafers are likely to see some downward pressure in aggregate**. This is on the back of overcapacity. According to BNEF surveys wafer nameplate production capacity could increase to 561GW, up c.19% y-o-y from c.470GW in 2022. This exceeds the projected demand of 298GW in 2023. However, we expect margin pressure to be bifurcated. The brunt of the margin compression should be borne by manufacturers of smaller wafers (156.75mm-166mm). Smaller wafer formats are facing increasing risk of obsolescence. The market share of large wafer formats (182mm-210mm) should continue to increase. The CPIA expects large-format wafers to account for >80% of market share in 2023, up from c.75% in 2022. Manufacturers of large wafers should continue to see solid demand. TCL Zhonghuan (TZE) should be the main beneficiary, with 210mm products accounting for c.90% of its wafer manufacturing capacity. Furthermore, wafer makers continue to pour resources into R&D. Key areas of innovation include improving the production yield of ingots and slicing thinner wafers. These initiatives should also help drive incremental gross margin improvements. We expect

**Renewable Energy Sector**

TCL Zhonghuan's wafer segment margin to rebound to c.20% in 2023, up from c.18% in 9M22.

**Solar modules are likely to see margin pressure persist going into 2023.** Along the solar value chain, the module segment has the lowest pricing power. This is due to relatively low technical barriers to entry. The rivalry among incumbent module makers should remain intense, given aggressive capacity expansion plans. Total module nameplate capacity is expected to exceed c.700GW in 2023, compared with estimated global installations of c.300GW. Furthermore, new players such as Tongwei have entered the module segment as well. Therefore, we expect module segment gross margins to stay at relatively suppressed levels of c.12%-13% in 2023 (2022E: 13%) for industry-leading players such as LONGi. We reckon LONGi's blended gross margin could stay steady around c.15-16% in 2023, thanks to contribution from wafers.

**Overcapacity in solar value chain**



Source: BloombergNEF, DBS HK

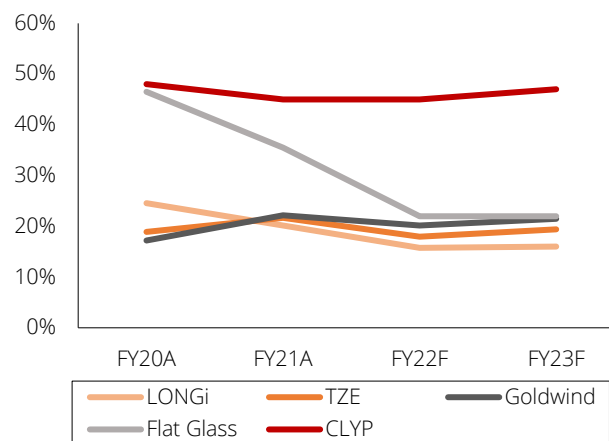
In 11M22, solar glass production capacity rose c.64% y-o-y to 70,810 tonnes/day. Furthermore, industry leaders Xinyi Solar (968 HK) and Flat Glass (6865 HK) both have additional production lines to ignite should demand in 2023 prove to be stronger than expected. As a result, we do not anticipate a significant spike in solar glass prices. We expect solar glass ASP to remain steady at c.Rmb27-28/sm (for 3.2mm product) in 2023. We expect fuel prices to stay relatively elevated in 2023, given the impact from the ongoing Ukraine-Russia conflict. As a result, **we anticipate 2023 solar glass gross margins to stay relatively suppressed at c.21%-22%, compared with an estimated 22% in 2022.**

Wind turbine generator (WTG) prices (onshore, excluding towers) have remained at suppressed levels in 2022. In Nov 22, average bidding prices of wind projects saw WTG ASP

come below c.Rmb2,000/kw. We do not anticipate an installation rush to occur in 2023. Xinjiang Goldwind maintained its wind turbine segment margin guidance of c.12%-13%. Its new medium-speed permanent magnet (MSPM) turbine product is expected to account for >60% of its product mix in 2023. The scaling up of MSPM production could help drive some improvement in WTG's gross margin. We pencilled in a 50bps GPM expansion, i.e., to c.11%, for the MSPM product in FY23.

We expect China Longyuan Power's (CLYP) wind utilisation hours to revert to the historical average of c.2,200 hours in FY23. In FY21, wind utilisation hours were unusually high at >2,300 hours, thanks to favourable wind resources. This had led to an unfavourable y-o-y margin comparison base throughout 2022. We do not expect a repeat of such favourable wind resources in FY23. However, CLYP is expected to benefit from lower coal fuel costs in FY23, thanks to policy support towards easing restrictions on domestic coal production. Given steady wind power generation and lower coal fuel costs, **we have pencilled in a 2ppt improvement in CLYP's gross margin to 47% in FY23.**

**Margin trend**



Source: Companies, DBS HK

**Catalyst #3: Settlement of outstanding subsidies**

The rising amount of subsidy receivables has been a major concern for renewable operators for a few years. The total outstanding amount of subsidies in China was estimated to be Rmb400bn by 2021. This has weighed on renewable operators' cash flow and balance sheet, threatening the survival of many smaller operators. However, **there are signs that the government is going to resolve this longstanding issue soon.**

First, with the exception of distributive solar power projects, all new wind and solar energy projects must have grid parity. Hence, without the addition of new subsidised projects, the **government has a rough idea about the amount of subsidies to be paid each year.**

Second, the government has almost completed an audit inspection on all operating wind and solar power projects to evaluate their legitimacy in having subscribed to a subsidy. Any non-compliant projects (such as those without legal approval/proper documentation, installed capacity exceeding the approved limit, change of investment entity, etc.) will be disqualified from subsidy entitlement. We reckon this exercise will **help the government to accurately ascertain the amount of outstanding subsidies.**

Third, two special purpose companies, i.e., Beijing Renewable Energy Development and Clearing Services Corporation and Guangzhou Renewable Energy Development and Clearing Services Corporation, will be set up to settle unpaid subsidies to renewable power generators. With operations being independent from two power grid companies, these **two special purpose vehicles will raise external debt, which will be financed by the renewable energy development fund.**

In addition, the government accelerated subsidy payments to renewable power generators in the first half of this year after an 98% increase in the budget of central government funds in 2022.

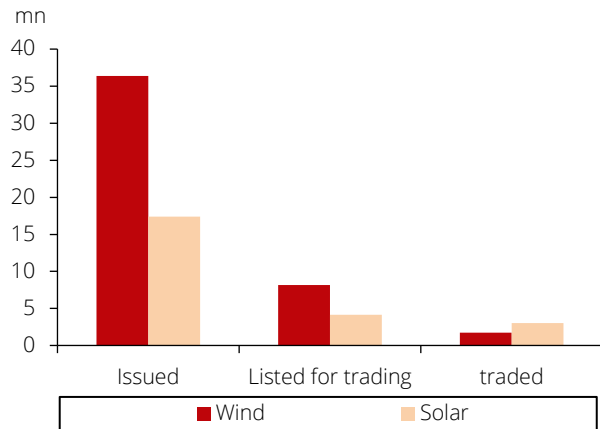
**Should the government settle the outstanding subsidies, renewable developers, including CLYP, will be direct beneficiaries.** CLYP had slightly under Rmb30bn of subsidy receivables on its balance sheet in 1HFY22. This represented c.13.8% of total assets. Assuming all historical subsidies are to be settled in 2023, we expect CLYP's net debt-to-equity ratio to improve 25ppts. With improved financials, project developers can speed up their installation, and component manufacturers along the value chain will also benefit indirectly.

**Catalyst #4: Development of green certificate market**

Apart from the provision of electricity, "green electricity" generated via renewable energy also has an embedded "green value" for environmental protection. Green certificates, each of which represents the generation of 1MWh of green electricity, is the only means of proof of green consumption for energy users. On the back of green development, such "green value" can be recognised through the trading of green certificates. Enhanced "green value" can accelerate the development of the renewable sector and

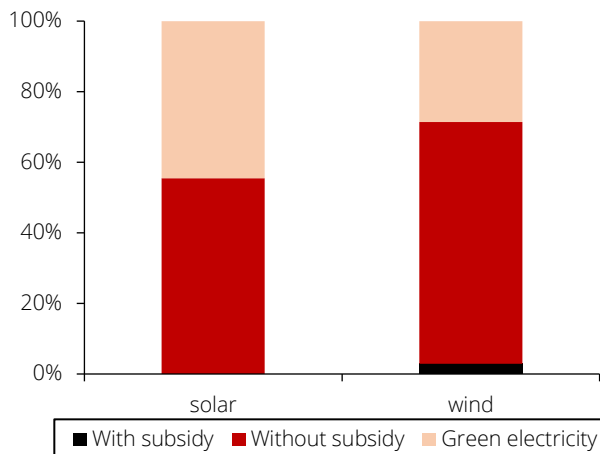
help achieve the dual-carbon targets. In fact, the **government has stepped up its efforts in enhancing the trading system of green certificates.**

**Accumulated amount of green certificates issued and traded**



Source: Information Management Centre of National Renewable Energy, DBS HK

**Breakdown of traded green certificates**



Source: Information Management Centre of National Renewable Energy, DBS HK

Under the current system, corporations can comply with the quota of renewable energy consumption through the purchase of three products: 1) Green electricity; 2) excess quota from other corporations; or 3) green certificates. **Not a mandatory requirement, the trading of green certificates is done only on a voluntary basis and there is no strong incentive to purchase; thus, trading volume is very thin.**

Most buyers are multinational corporations with a commitment to carbon neutrality. According to data from the Information Management Centre of National Renewable Energy, the accumulated amount of green certificates issued reached 53.8m, of which >65% are for wind projects. But only 12.3m were listed on the trading platform and only 4.8m were purchased since launch. Solar projects as well as grid-parity projects accounted for over 60% of transacted volume. During November 2022, the grid-parity green certificates of wind and solar projects were sold at Rmb30.0-50.0/MWh and Rmb22.4-50.0/MWh, respectively.

As per the latest government notification, "Notice on Further Improving New Renewable Energy Consumption Not Included in the Total Energy Consumption Control" <关于进一步做好新增可再生能源消费不纳入能源消费总量控制有关工作的通知>, green certificates are now transferrable. Sources of renewable energy consumption are extended to hydropower, biomass energy, and geothermal energy, in addition to wind and solar power. The importance of the accuracy and completeness of all related data (including renewable energy consumption, green certificate trading volume, etc.) were also emphasised. We reckon **this will pave the way to extend to a mandatory system** with a more

comprehensive market mechanism which allows trade between provinces. If materialised, the thin trading volume of the green certificate market, which has significantly underrated the underlying green value, can also be rectified. In the long run, the trading of more products, including carbon credits, renewable electricity, quota of renewable energy consumption responsibility, etc., between provinces will also be encouraged.

Downstream operators, such as CLYP, Xinyi Energy (3868 HK), CR Power (836 HK), and Huaneng Power (902 HK), will be able to benefit from increased trading volume and the higher "green value" of green certificates. Gains from the sale of green certificates will bring in extra income of 4-10% for grid-parity projects.

Nevertheless, we see uncertainty for non-grid parity projects, where its green certificate selling prices are less price competitive. To increase participation from these projects, we see **the possibility of a tightened quota system for renewable energy consumption responsibility and its integration with the green certificate<sup>1</sup>**, which could result in lower subsidy payments for non-grid parity projects, thereby reducing the financial burden on the government.

Trading of green certificates



Source: DBS HK

<sup>1</sup> Under the current system, subsidised wind/solar and biomass projects that have been in operation for 20 years and 15 years, respectively, or reached the required operation hours, will not be entitled to a subsidy. These projects can participate in the green certificate market due to the loss in subsidy revenue. Otherwise, all

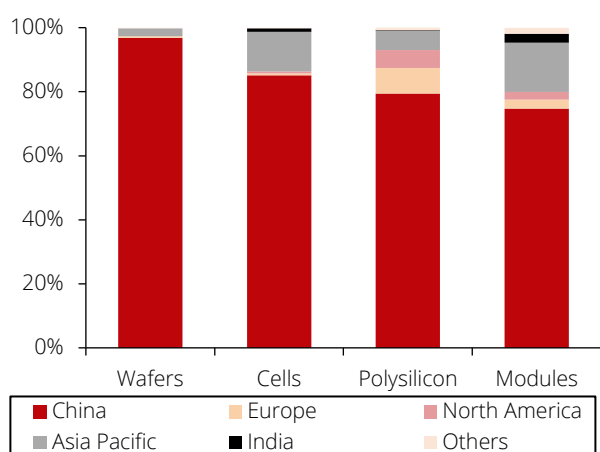
other subsidised projects will forgo the entitlement to a subsidy after the sale of green certificates for its electricity generation.

Renewable Energy Sector

**Catalyst #5: De-globalisation of solar supply chain**

Data from the International Energy Agency suggests that China has dominated the supply chain of solar power production, with the country accounting for as high as >96% of total wafer production capacity in 2021. Although China's dominance in wind power is less significant, it is still one of the major manufacturers of wind turbines and is the leading producer and processor of the rare earth minerals essential for the magnets that power turbine generators. The disruption in the supply chain during COVID has made such a concentration risk more prominent.

**Solar power production capacity by region**



Source: International Energy Agency, DBS HK

Against this backdrop, the Inflation Reduction Act (IRA) in the US, which will provide financial incentives for domestic manufacturing and the deployment of solar technologies, is likely to spark the set-up of a solar supply chain in the domestic market. According to estimates from Wood Mackenzie, the IRA should help the solar market grow by 40%, or 62GW of additional solar capacity, between 2023 and 2027. Moreover, four major solar project developments in the US have committed to buying 7GW of domestic solar panels each year starting in 2024.

India is also focusing on increasing domestic manufacturing capacity of solar cells and modules to meet its domestic demand. It has launched a performance-linked incentive programme to support vertically integrated, large-scale manufacturing of high-efficiency solar modules. This has attracted investment interest from several module manufacturers, such as First Solar.

Apart from the US and India, the International Solar Alliance has launched the SolarX Grand Challenge to catalyse

investments in solar energy in Africa. Enel Green Power also secured funding from the EU Innovation Fund to set up Europe's largest factory producing high-performance bifacial PV modules. There are examples of **increasing efforts to establish a more diversified supply chain in the solar space globally.**

It takes many years to set up a comprehensive supply chain to compete with China, which will still dominate the market, at least in the short term. Despite this, we cannot ignore the potential change in the demand-supply ecosystem in the overseas market. This could lead to **the possibility of some top solar manufacturers losing market share in the long run, implying a de-rating risk.** Given the module industry has the lowest entry barriers along the supply chain, we see higher de-rating risks for leading module producers, such as LONGi (601012 CH), JinkoSolar (JKS US), JA Solar (002459 CH), etc. We also expect more Chinese manufacturers to expand overseas, particularly in countries with strong domestic demand. LONGi has already proposed issuance of GDRs in Switzerland to fund overseas expansion.

**Sector top pick and revision in TP**

Our sector top pick is China Longyuan Power (CLYP). As a downstream operator, CLYP should enjoy CAPEX savings arising from the shift of profit allocation in both the wind and solar value chains. CLYP could also directly benefit from policy support to resolve unpaid renewable subsidies. Medium to long-term earnings growth should continue to be driven by CLYP's 30GW capacity expansion plan in the 14th Five Year Period. Should this plan materialise, generation capacity is set to grow at a c.20% CAGR in FY22-25.

CLYP's requirement of >6% project IRR should become easier to achieve in FY23. The average bidding prices of wind turbines have declined to between c.Rmb1,800-1,900/kw (onshore excluding tower). This represents a y-o-y decline of c.16% and YTD decline of c.6%. While CLYP is known as the largest wind farm operator in China, the company is also adding significant solar capacity. In fact, of the c.3GW planned capacity expansion in FY22, CLYP expects to add c.1GW of wind and c.2GW of solar. The easing of the polysilicon supply bottleneck should bring down prices throughout the solar value chain in 2023. This should translate to lower module costs. In addition, we reckon CLYP has at least 10% of wind capacity, which has small-scale wind turbines and can be upgraded. CLYP stands to benefit from higher IRR for both its newly installed wind and solar capacity.

### Renewable Energy Sector

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Among our renewable picks, **CLYP stands out with the best combination of valuation and stability**. Power generation is relatively less cyclical compared to component manufacturing. CLYP's H-shares currently trade at an undemanding valuation of c.9-10x FY23F PE. This is -1SD below the historical average PE of 15x since Sep 2020. We expect CLYP to register earnings growth of 16-17% p.a. in FY23-24, driven by increase in power generation. Government policy to resolve unpaid subsidies could improve CLYP's financial position and act as a positive catalyst. We recommend BUY with TP of HK\$16.6. Our target price is pegged to target PE of 18x, 0.5SD above the historical average since Sep 2020.

Module production is currently overcapacity and we observe the situation could worsen given its relatively low entry barrier. In addition, the risk of de-globalization is also high. Hence, **we have revised down our target PE for LONGi from 36x to 30x, lowering TP from Rmb91.0 to Rmb65.0**. The new targeted PE is equivalent to the two-year average PE. We maintain our BUY rating on the counter given strong

installation will drive its earnings growth by 19% and 23% in FY23/24 respectively. Upside on earnings could come from better profitability in cells with record high efficiency.

We reckon **TCL Zhonghuan is subject to relatively lower overcapacity risk** because of its leading market position in large size (210mm) wafer amid robust demand. In addition, with record high efficiency in solar cells, quality requirement in wafer will climb and TCL Zhonghuan's competitive edge will be even more prominent. Hence, we also set our target PE at two-year historical average of 28x (lowered from 29x), despite of its relatively smaller scale than LONGi in wafer. Our new TP is Rmb75.00. We maintain our BUY rating on the counter due to its strong market presence in large-size wafer and strong earnings growth of 27% and 10% in FY23/24 respectively.

## Valuation comparison

Company Name	Code	Price		Fiscal Yr	EPS		PE	PE	PE	PEG	PEG	P/Bk	P/Bk	EV/EBITDA		ROE	ROE
		Local\$	US\$m		22F	23F	22F	23F	24F	23F	24F	22F	23F	22F	23F	22F	23F
<b>Solar Glass</b>																	
Changzhou Almaden Stk. 'A'	002623 CH	28.95	813	Dec	0.67	1.36	43.4	21.3	16.0	0.2	0.5	1.7	1.6	n.a.	n.a.	4.9	7.7
Flat Glass Group 'H'*	6865 HK	20.15	9,580	Dec	1.03	1.33	19.6	15.1	11.1	0.5	0.3	2.9	2.5	12.7	9.9	15.9	18.0
Flat Glass Group 'A'*	601865 CH	35.19	9,580	Dec	0.93	1.21	37.7	29.0	21.4	1.0	0.6	5.6	4.9	23.1	17.2	15.9	18.0
Csg Holding 'A'	000012 CH	7.25	3,139	Dec	0.68	0.85	10.6	8.5	7.3	0.3	0.4	1.7	1.5	6.9	4.4	16.2	17.7
Xinyi Solar Holdings	968 HK	9.01	10,263	Dec	0.52	0.69	17.5	13.1	10.3	0.4	0.4	2.4	2.2	13.4	10.7	14.0	17.0
Irico Group New Energy 'H'	438 HK	8.79	198	Dec	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Luoyang Glass 'H'	1108 HK	9.42	779	Dec	0.60	0.97	15.8	9.7	5.4	0.2	0.1	1.3	1.2	16.0	9.1	8.4	12.1
Luoyang Glass 'A'	600876 CH	21.77	1,982	Dec	0.52	0.87	42.2	24.9	13.9	0.4	0.2	3.3	2.9	18.1	10.2	8.0	11.9
<b>Average</b>							<b>23.9</b>	<b>16.7</b>	<b>11.6</b>	<b>0.5</b>	<b>0.3</b>	<b>2.9</b>	<b>2.5</b>	<b>15.0</b>	<b>10.3</b>	<b>13.0</b>	<b>15.8</b>
<b>Solar - Polysilicon</b>																	
		S															
Daqo New Energy ADR 1:5	DQ US	56.91	4,240	Dec	26.27	21.59	2.2	2.6	3.3	(0.1)	(0.2)	0.8	0.6	1.5	0.6	58.5	29.0
Gd Technology Holdings	3800 HK	2.44	8,469	Dec	0.63	0.61	3.9	4.0	5.4	(0.9)	(0.2)	1.4	1.1	5.0	1.7	40.4	27.8
Tongwei 'A'	600438 CH	43.32	27,496	Dec	6.23	4.91	7.0	8.8	9.1	(0.4)	(2.6)	3.2	2.6	16.1	6.2	49.3	29.6
Xinte Energy Co.'H'	1799 HK	18.22	3,336	Dec	10.08	9.60	1.8	1.9	2.6	(0.4)	(0.1)	0.8	0.6	3.9	1.8	46.3	31.1
<b>Other solar component</b>																	
Sungrow Power Supply 'A'	300274 CH	115.00	24,082	Dec	2.03	3.53	56.8	32.6	24.8	0.4	0.8	9.2	7.3	81.2	29.3	17.3	23.3
Suzhou Maxwell Technologies 'A'	300751 CH	430.00	10,489	Dec	5.44	8.88	79.1	48.4	30.1	0.8	0.5	10.3	8.6	97.1	41.5	14.3	20.5
<b>Module and wafer</b>																	
Longi Green En.Tech.'A'*	601012 CH	45.78	48,914	Dec	1.81	2.15	25.3	21.3	17.2	1.1	0.7	5.7	4.5	18.8	15.2	25.2	23.5
Risen Energy 'A'	300118 CH	25.80	3,244	Dec	1.20	1.78	21.5	14.5	10.5	0.3	0.3	2.4	2.1	n.a.	n.a.	10.9	13.9
Trina Solar 'A'	688599 CH	64.50	19,728	Dec	1.66	3.05	38.9	21.1	16.1	0.3	0.5	6.3	5.0	36.6	14.6	16.7	24.4
Jinkosolar Holding ADR 1:4	JKS US	51.28	2,608	Dec	3.83	5.83	13.4	8.8	9.4	0.2	(1.4)	1.2	1.0	9.5	5.9	7.9	14.0
Ja Solar Technology 'A'	002459 CH	58.20	19,328	Dec	1.97	2.99	29.5	19.5	15.5	0.4	0.6	5.7	4.5	24.3	11.5	20.7	24.2
Canadian Solar	CSIQ US	35.85	2,304	Dec	2.60	4.36	13.8	8.2	7.4	0.1	0.6	1.0	0.9	7.8	4.2	10.6	13.8
Tcl Zhonghuan Renwen. Tech.'A'	002129 CH	41.57	18,891	Dec	2.12	2.70	19.6	15.4	14.0	0.6	1.4	3.5	2.8	12.2	9.9	19.5	20.4
							<b>23.2</b>	<b>15.5</b>	<b>12.9</b>	<b>0.4</b>	<b>0.4</b>	<b>3.7</b>	<b>3.0</b>	<b>18.2</b>	<b>10.2</b>	<b>15.9</b>	<b>19.2</b>
<b>Wind upstream manufacturer</b>																	
Ming Yang Smart Energy Group '1	601615 CH	26.77	8,576	Dec	1.83	2.07	14.6	12.9	10.8	1.0	0.6	2.3	2.0	10.3	8.2	17.7	17.4
Concord New Energy Group	182 HK	0.69	793	Dec	0.12	0.14	5.6	5.1	4.7	0.4	0.6	0.7	0.6	n.a.	n.a.	11.2	11.5
Xjg.Goldwind Sctc. 'H'*	2208 HK	8.39	6,432	Dec	0.83	1.01	10.0	8.3	6.9	0.4	0.4	0.9	0.8	8.0	7.3	8.7	10.0
Xinjiang Goldwind Sctc. 'A'*	002202 CH	11.51	6,432	Dec	0.76	0.92	15.2	12.5	10.5	0.6	0.5	1.3	1.2	10.4	9.3	8.7	10.0
							<b>11.4</b>	<b>9.7</b>	<b>8.2</b>	<b>0.6</b>	<b>0.5</b>	<b>1.3</b>	<b>1.2</b>	<b>9.6</b>	<b>8.3</b>	<b>11.6</b>	<b>12.2</b>
<b>Renewable Downstream Operators</b>																	
China Datang Corp.Rnp. 'H'	1798 HK	2.23	2,077	Dec	0.29	0.34	7.7	6.5	5.5	0.3	0.3	0.8	0.7	7.6	6.8	11.9	13.1
Chin.Longyuan Pwr.Gp.'H'*	916 HK	9.52	9,796	Dec	0.82	0.95	11.6	10.0	8.6	0.6	0.5	1.0	0.9	7.6	7.9	9.2	9.6
Xinyi Energy Holdings	3868 HK	2.39	2,277	Dec	0.18	0.21	13.4	11.5	10.0	0.7	0.6	1.3	1.3	12.3	8.8	10.2	11.4
Beijingneng Cn.En.Co. 'H'	579 HK	1.71	1,805	Dec	0.37	0.44	4.7	3.9	3.3	0.2	0.2	0.4	0.9	6.0	5.8	9.4	10.3
China Suntien Grn.En.'H'	956 HK	3.23	1,732	Dec	0.59	0.69	5.5	4.7	4.2	0.3	0.3	0.6	0.5	9.6	8.9	11.1	11.6
Gd New Energy Holdings	451 HK	1.160	173	Dec	(0.59)	(0.18)	n.a.	n.a.	n.a.	n.a.	n.a.	0.3	0.3	n.a.	n.a.	(9.0)	(3.0)
Shandong Hi-Speed New Energy	1250 HK	0.06	892	Dec	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
							<b>8.6</b>	<b>7.3</b>	<b>6.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.7</b>	<b>0.8</b>	<b>8.6</b>	<b>7.6</b>	<b>7.1</b>	<b>8.8</b>

# FY22: FY23; FY23: FY24; FY24: FY25

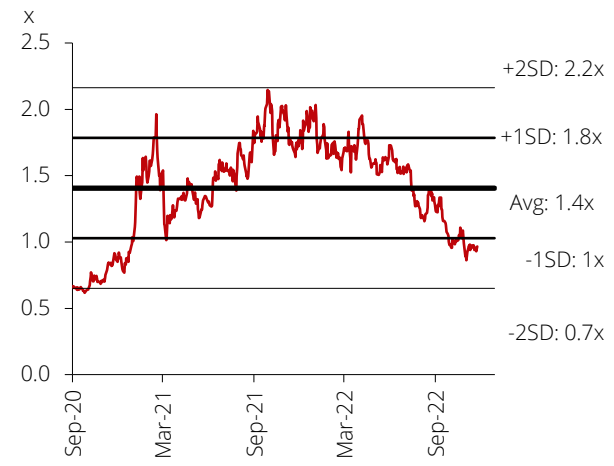
Source: Thomson Reuters, \*DBS HK

Renewable Energy Sector

China Longyuan (916 HK) PE chart



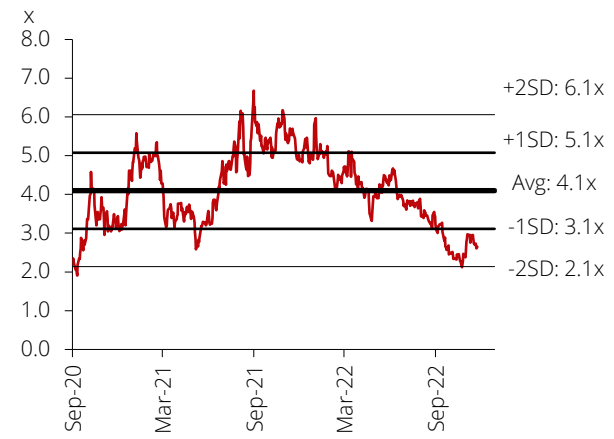
China Longyuan (916 HK) PB chart



Flat Glass Group (6865 HK) PE chart



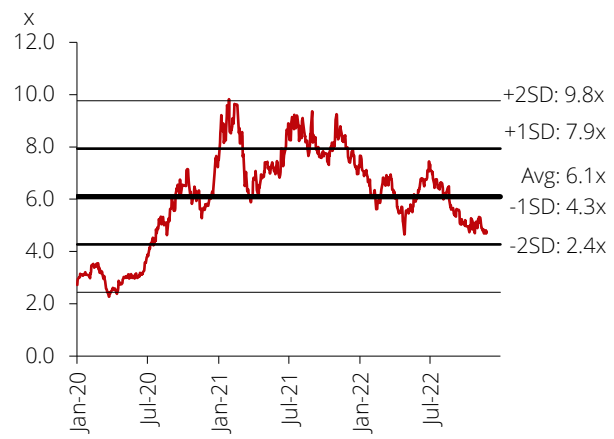
Flat Glass Group (6865 HK) PB chart



LONGi (601012 CH) PE chart



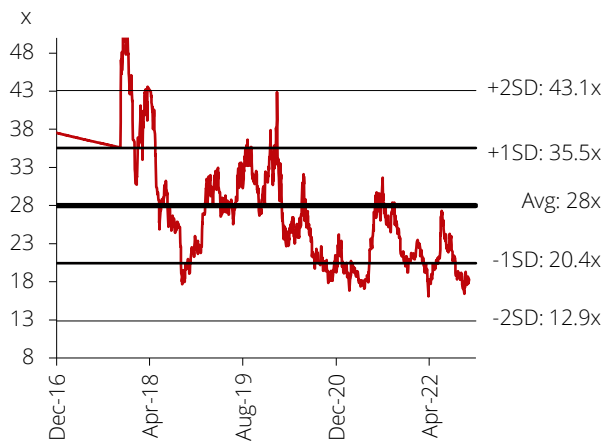
LONGi (601012 CH) PB chart



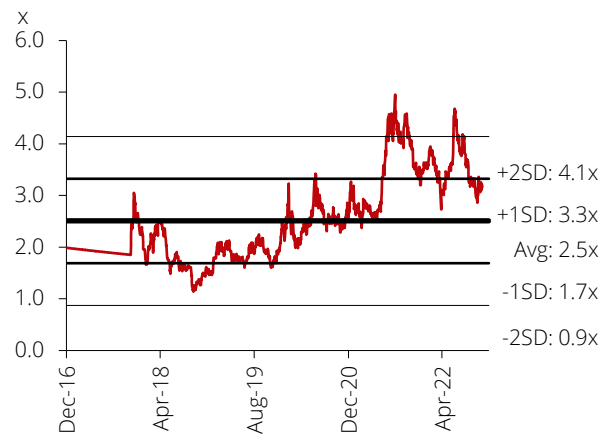
Source: Tomson Reuters, DBS HK

Renewable Energy Sector

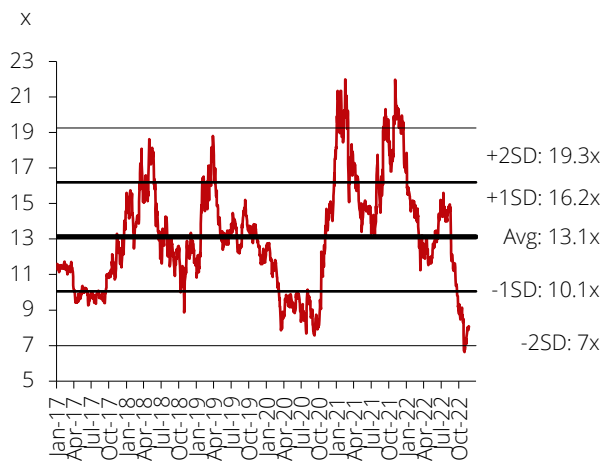
TCL zhonghuan (002129 CH) PE chart



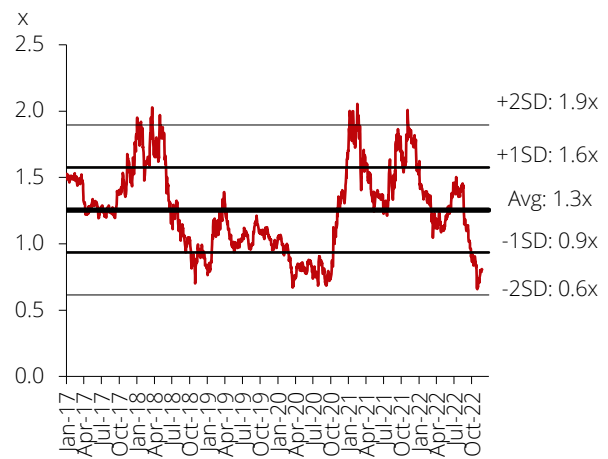
TCL zhonghuan (002129 CH) PB chart



Xinjiang Goldwind (2208 HK) PE chart



Xinjiang Goldwind (2208 HK) PB chart



Source: Tomson Reuters, DBS HK

### Renewable Energy Sector

DBS HK recommendations are based on an Absolute Total Return\* Rating system, defined as follows:

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**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

Completed Date: 1 Dec 2022 11:29:38 (HKT)

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### Renewable Energy Sector

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Renewable Energy Sector

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