CTGR Group (600905 CH)

Green power giant forges ahead

BUY

Target Price	**RMB6.79**
(Up/Downside	24%)
Current Price	**RMB 5.44**

China Energy

Megan Xia, CESGA
(852) 3761 0836
meganxia@cmbi.com.hk

Jack Bai, CFA
(852) 3900 0835
jackbai@cmbi.com.hk

China Three Gorges Renewables (CTGR) is one of the pioneers among new energy power operators. The Company is a subsidiary of CTG, whose actively develops wind and solar power. CTGR plans to achieve a newly installed capacity of 5,000 MW in solar and wind power in 2023, with installation progress expected to accelerate in 2H23. We anticipate that lower upstream costs may improve CTGR's IRR of the new energy projects. CTGR is also exploring the integration of multiple new energy to develop innovative projects and looking for further growth space. Currently**, CTGR is trading at 17x FY23E PE. We assign CTGR with FY23E target PE of 20x and arrive at the target price of RMB 6.79/ share. Initiate with BUY.**

- **CTGR is one of the top players among new energy power operators.** CTGR is a subsidiary of CTG that focuses on developing new energy with great financial resilience and advanced technology, including wind power and solar power, and other new energy such as pumped storage, and hydrogen energy. CTGR aims to achieve newly-added installed capacity of 5,000 MW for solar and wind power in 2023. Even though the installation progress was slightly slower in 1H23, we expect its installation progress will speed up in 2H23 to reach its installation target in 2023.
- **CTGR has strong reserve projects that supports its rapid growth in new energy installation. Lower upstream costs of wind and solar power have led to higher IRR of the company's projects.** By 2022, CTGR's project reserve exceeds 130mn kW. The newly-added identified project achieve 54.88mn kW, including 9.85mn kW of onshore wind power and 25.93mn kW of solar power. We believe abundant projects reserve will send great support for the further growth of CTGR's installed capacity. Additionally, based on mgmt.'s guided stable tariff assumption, CTGR's installation willingness will up in 2023 as the IRR of wind and solar power projects may up as the falling upstream cost.
- **CTGR has several competitive advantages in the comparison of the new energy power operators under the "Big Five and Small Noble 4" Power Group.** CTGR outperforms in revenue growth, net profit margin, solar power installed capacity, etc. We believe CTGR's new energy installed capacity and power generation will continue to perform well in 2023, due to upstream cost reduction and IRR increase trends, as well as the company's advanced cost control ability. As a result, we expect the company's revenue and net profit to maintain a strong growth momentum in 2023.
- **We assign CTGR with FY23E target PE of 20x and arrive at the target price of RMB 6.79/ share, initiate with BUY.** We expect CTGR's net profit to be RMB9.7bn, RMB11.79bn, and RMB14.44bn in 2023, 2024, and 2025, respectively, with EPS of RMB0.34, RMB0.41, and RMB0.50/share. Additionally, We estimate CTGR will achieve its installed capacity target of 5000MW for solar and wind power in 2023, based on the Company's cost control capabilities and rising IRR of the projects, and stable realized tariff for 2023. Currently, CTGR is trading at 17x FY23E PE. We assign CTGR with an FY23 target PE of 20x and arrive at the target price of RMB 6.79/ share. Initiate with BUY.

Earnings Summary

(YE 31 Dec)	FY21A	FY22A	FY23E	FY24E	FY25E
Revenue (RMB mn)	15,484	23,812	28,682	33,444	38,601
Net profit (RMB mn)	5,642.4	7,155.5	9,716.3	11,785.7	14,435.1
EPS (Reported) (RMB)	0.23	0.25	0.34	0.41	0.50
YoY growth (%)	26.3	9.7	35.8	21.3	22.5
Consensus EPS (RMB)	na	0.25	0.32	0.38	0.45
ROE (%)	10.1	9.7	11.9	12.9	13.9
P/E(x)	26.2	20.8	17.4	14.7	12.2
P/B(x)	2.3	2.0	1.8	1.7	1.5

Source: Company data, Bloomberg, CMBIGM estimates

Stock Data

Mkt Cap (RMB mn)	155,713
Avg 3 mths t/o (RMB mn)	457.54
52w High/Low (RMB)	6.47/ 5.17
Total Issued Shares (mn)	28,624

Source: FactSet

Shareholding Structure

China Three Gorges Group	48.9%
Ducheng Weiye Group	3.5%

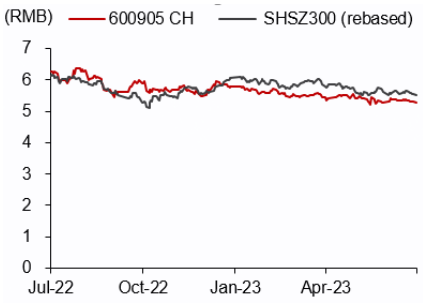
Source: HKEx

Share Performance

	Absolute	Relative
1-mth	0.4%	1.5%
3-mth	-2.9%	2.4%
6-mth	-8.6%	0.0%

Source: FactSet

12-mth Price Performance



Source: FactSet

CTGR Group's company background

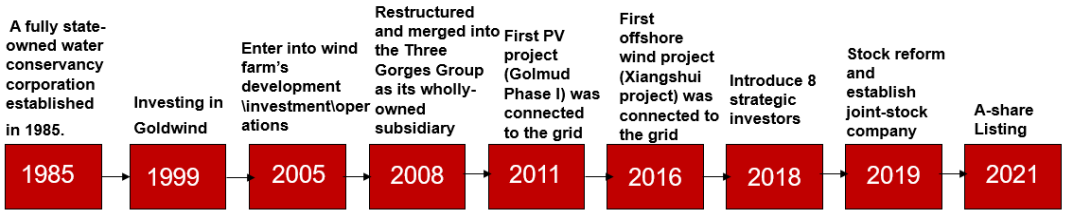
CTGR Group specializes in the development, investment, and operation of wind and solar energy. Its strategic goals are centered on developing into the pioneer of wind and solar power of China Three Gorges Group ("CTG") and leader in offshore wind power, and it is committed to achieving both outstanding scale and great efficiency. Additionally, CTGR implements a differentiated competition and cost-leading strategy, with the aim of becoming a world-class new energy power operator.

Currently, CTGR's operation covers 30 provinces, autonomous regions, and municipalities in China, and it ranks among the top tier of domestic new energy operators in terms of installed capacity and profitability.

CTGR has experienced rapid growth in wind and solar power installed capacity these years. Its total installed capacity for power generation projects has increased from 143,000kW in 2008 to 26,521,400kW in 2022, with a CAGR of 45.22%. In particular, wind power recorded accumulated installed capacity of 15,922,200 kW, solar power achieved 10,284,000kW, and hydropower recorded 215,200kW in 2022. CTGR's power generation has also increased significantly, with wind power generation increasing by 48.97% YoY to 33.95bn kWh and solar power increasing by 41.5% YoY to 13.44bn kWh. With the commissioning of projects under construction, the Company's installed capacity is expected to increase further.

- **CTGR's development history**

Figure 1: China Three Gorges New Energy's development process



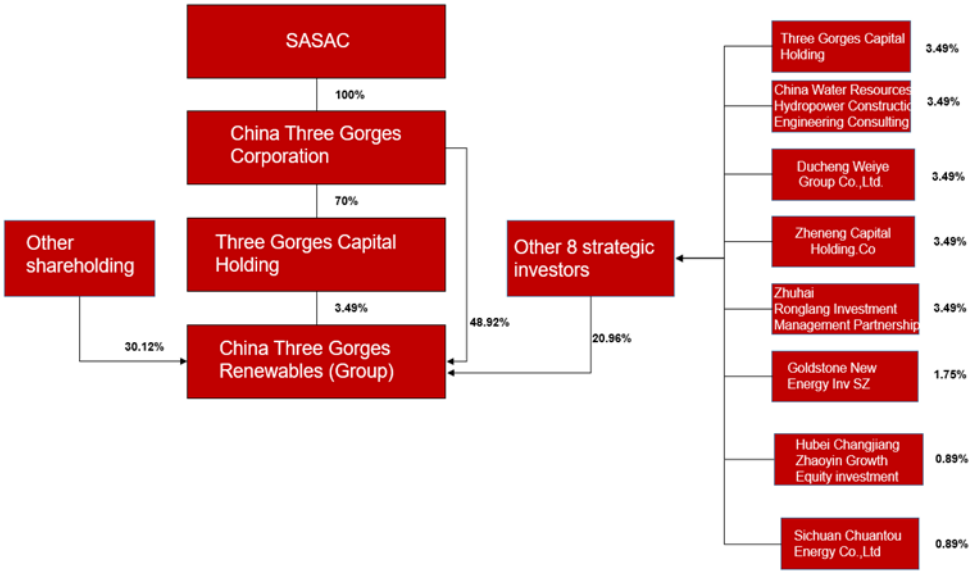
Source: Company data, CMBIGM estimates

CTGR's predecessor was the China Water Resources Development Corporation(中国水利实业开发总公司) , which was established in 1985 and focused on the development of water conservancy and hydropower projects as well as urban water supply projects.

In 1999, CTGR entered the business of new energy by participating in the shareholding of Goldwind (a wind turbine manufacturer), and in 2005, it entered the development, investment, and operation of wind farms. In 2008, CTGR was restructured and merged into CTG as its wholly-owned subsidiary, responsible for the development and operation of the Three Gorges Group's new energy business. Since then, the Company has continued to explore the field of new energy, with the commissioning of its first solar project in 2011 and first offshore wind project in 2016. In 2018-2021, CTGR completed the three-step strategy of "introducing strategic investors, stock reform, and listing," entering a new stage of development.

In 2021, CTGR was listed on the SSE main board with one of the largest IPO in China's power industry in history.

Figure 2: China Three Gorges New Energy's shareholding structure



Source: Company data, CMBIGM estimates

CTGR's shareholding structure

By 2022, China Three Gorges Group (CTG) holds a controlling stake of over 49% in CTGR, with the actual controlling shareholder being the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). In 2016, the Company set a vision to become a leading new energy operator. To realize this goal, the Company formulated a three-step strategy of "introducing strategic investors, stock reform, and listing."

CTGR's equity structure has undergone two significant changes. In 2018, the Company introduced eight strategic investors through capital increase and share expansion, which altered the equity structure from being wholly-owned by CTG to the strategic investor holding 30% shares. In 2021, the Company was listed on the SSE main board with 30% of the total shares issued. After the issuance, the CTG directly held 49% of the shares, while the eight strategic investors held 21% of the shares.

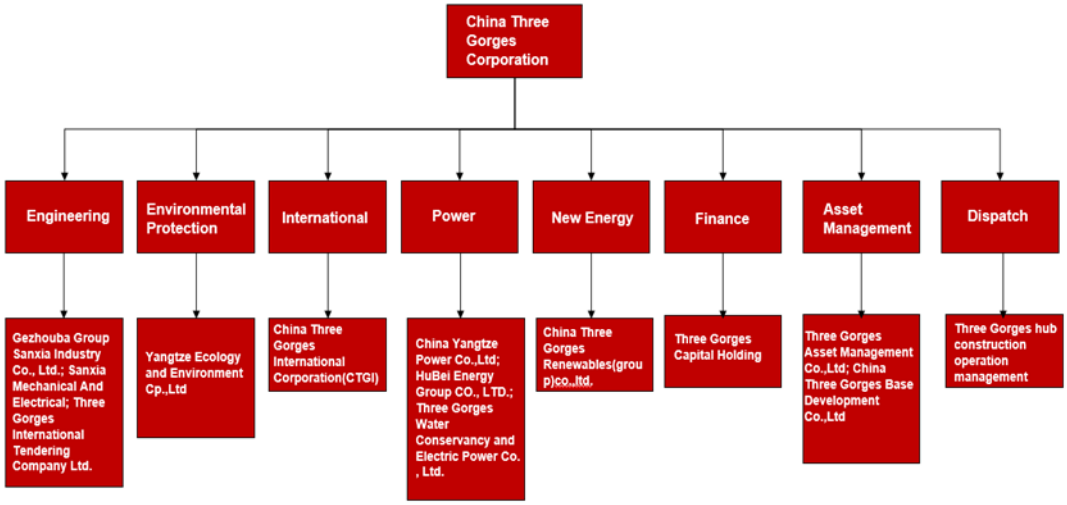
CTGR is the strategic implementation arm of CTG's new energy business.

China Three Gorges Group (CTG) is the controlling shareholder of CTGR and is the world's largest operator of hydropower, and it is one of the largest clean energy groups of China as well. The Company's operation covers eight major areas and it has also facilitated the listing of its power subsidiaries, including Three Gorges Hydro Power, Hubei Energy, Yangtze Power, and Three Gorges Renewables, on the A-share markets.

By 2022, the attributable installed capacity of CTG has reached 124.71mn kW. This includes 78.25mn kW of domestic hydropower, which accounts for 62.74% of the total capacity. CTG generated power of a total of 3837.76bn kWh in 2022, up by 5.62% YoY.

Backed by the resources and technological advantages of China Three Gorges Group, CTGR is poised to become a leading player in the new energy industry.

Figure 3: China Three Gorge's business



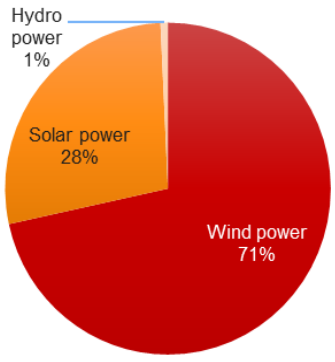
Source: Company data, CMBIGM estimates

CTG strongly supports the continuous development of its subsidiary, CTGR, which is expected to drive most of the CTG's new energy installation capacity growth. With a professional team experienced in offshore wind power, CTG has been able to develop domestic offshore wind power, and promotes collaborative innovation throughout the industry chain, leading to innovative achievements such as the world's first typhoon-resistant floating offshore wind turbine. CTGR's financial leverage is well-controlled, benefiting from CTG's improving capital strength and financing channels.

CTGR's business brief

CTGR's main business is developing and operating wind and solar power generation. CTGR mainly aims to develop onshore wind power, solar power, and offshore wind power. As of 2022, CTGR's accumulated installed capacity is 26,421.4 MW, with wind and solar power accounting for 99%. CTGR's revenue mainly comes from wind and solar power, which accounted for 99% of the company's total revenue in 2022.

Figure 4: CTGR's revenue composition (2022)

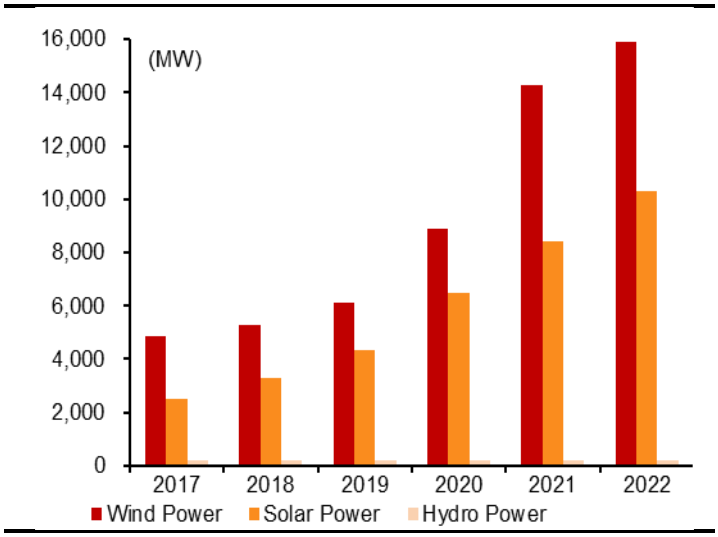


Source: Company data, CMBIGM estimates

- **Rapid growth of new energy business**

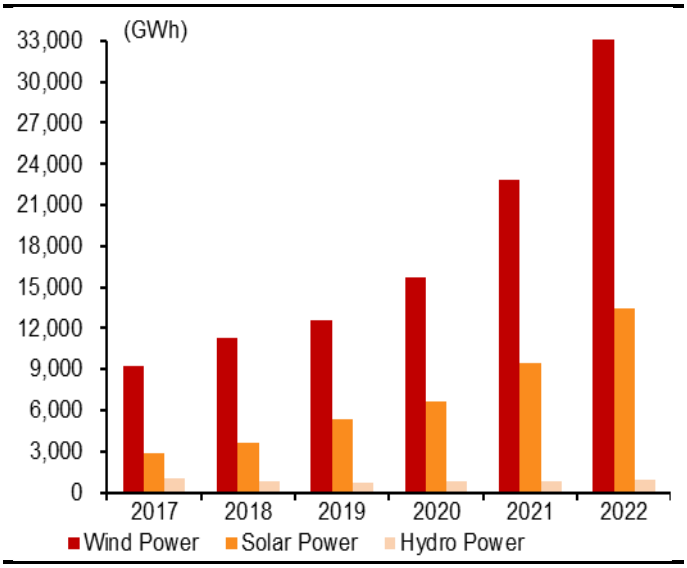
In 2022, CTGR's total installed capacity reached 26,521.4MW, including 15,922.22MW of wind power and 10,284.40MW of solar power. The Company's power generation reached 48.35bn kWh, up by 46.21% YoY, with wind power generating 33.95bn kWh and solar power generating 13.44bn kWh. Among them, the electricity traded in the power market was 19.09bn kWh, accounting for 40.58% of the total on-grid electricity.

Figure 5: CTGR's on grid installed/attributable capacity(2017-2022)



Source: Company data, CMBIGM estimates

Figure 6: CTGR's power generation (2017-2022)

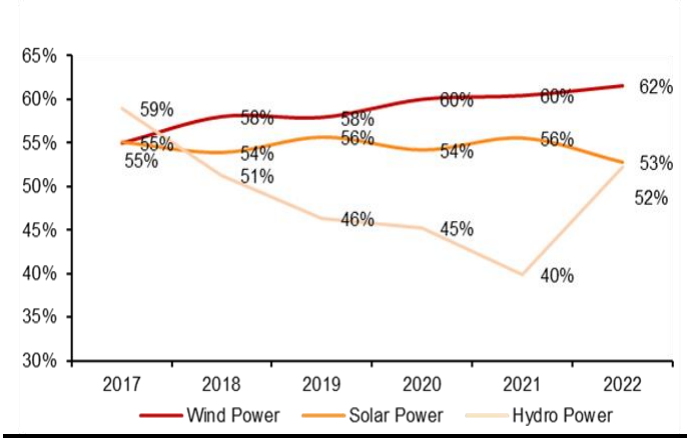


Source: Company data, CMBIGM estimates

During 2017-2022, CTGR' revenue lifted from RMB6.78bn to RMB23.81bn, and the growth CAGR was 29%. The gross profit remained stable with an improving trend. The decrease in construction costs under the influence of declining subsidies for wind and solar projects was the main driving force behind the Company's gross margin improvement.

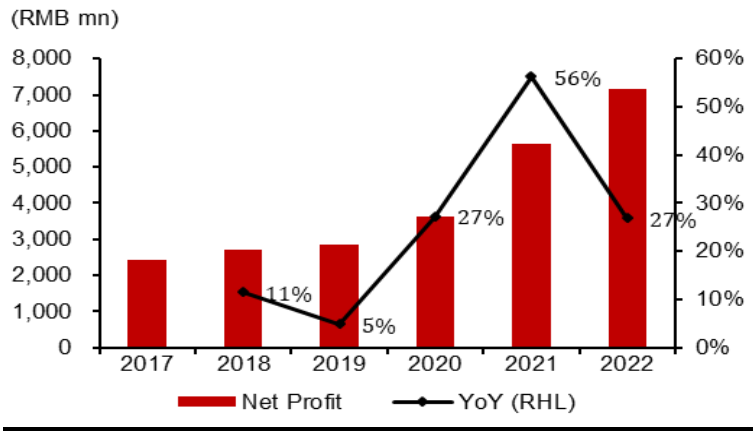
For net profit in 2017-2022, the amount boosted from RMB2.43bn to RMB7.16bn, with a CAGR of 24%. In 2022, CTGR's revenue was RMB23.81bn, up by 45.04% YoY. Operating costs were up by 51.39% YoY to RMB9.91bn. The total net profit recorded RMB7.16bn, up by 26.8% YoY.

Figure 7: CTGR's gross profit



Source: Company data, CMBIGM estimates

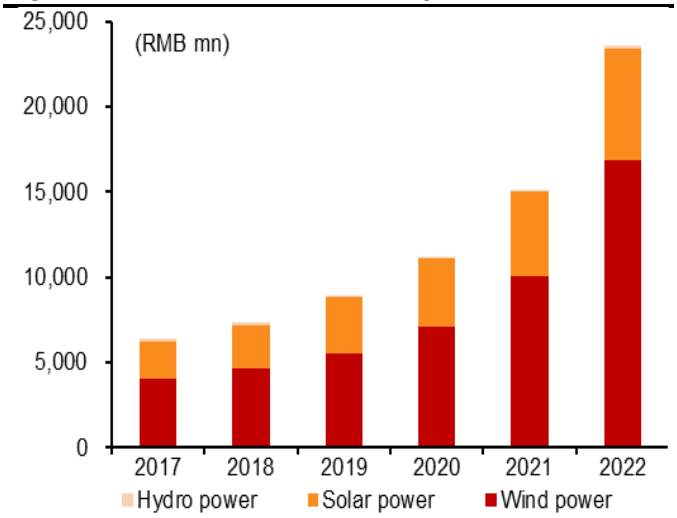
Figure 8: CTGR's net profit (2017-2022)



Source: Company data, CMBIGM estimates

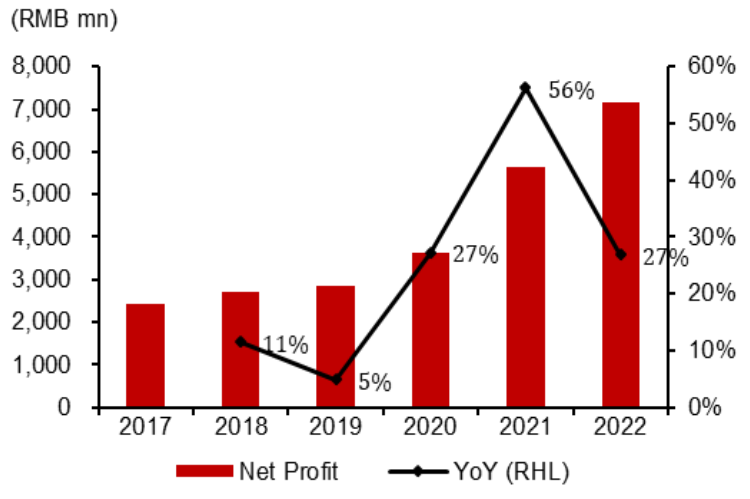
By 2022, CTGR's total assets reached RMB262.13bn, up by 19.77% YoY. Total liabilities were RMB174.17bn, raised by 23.71% YoY. The total equity was RMB87.96bn, up by 12.59% YoY.

Figure 9: CTGR's wind and solar power revenue



Source: Company data, CMBIGM estimates

Figure 10: CTGR's net profit (2017-2022)



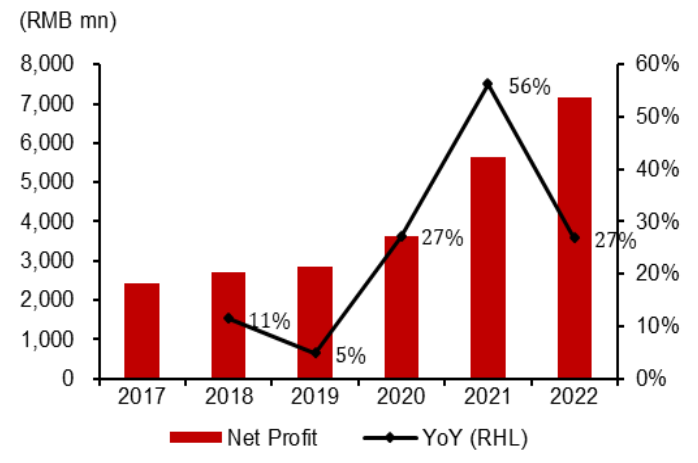
Source: Company data, CMBIGM estimates

Despite stable profits, CTGR's ROE has been diluted by previous capital increases. From 2017 to 2022, the Company's ROE fluctuated between around 7% to 10%. The drop in ROE from 2018-2019 was mainly due to the expansion of equity funds through the introduction of strategic investors. However, the ROE rebounded to 10.2% in 2021 after the economic benefits of investment projects were realized. In 2022, CTGR's ROE slightly dropped back to 9.8%, down 0.4% YoY due to a decrease in net profit margin.

Figure 11: CTGR's ROE (2017-2022)

Source: Company data, BBG,CMBIGM estimates

Figure 12: CTGR's net profit (2017-2022)



Source: Company data, CMBIGM estimates

At the end of 2022, the Company's net debt recorded RMB93.23bn, up by 23% YoY. Debt-asset ratio slightly dropped from 41% to 40%. Additionally, CTGR achieved 414 net account receivable days in 2022, which improved 36 days compared to last year.

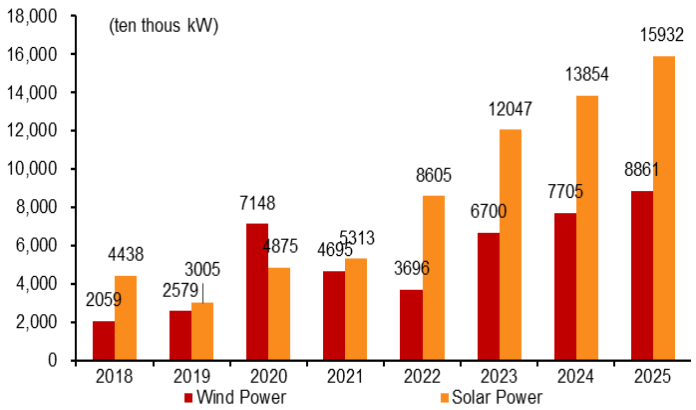
Operating cash flow increased by 91.05% to RMB16.87bn, mainly due to higher subsidy return for new energy projects. Net cash outflow from investing activities decreased to RMB29.79bn, mainly due to reduced investment in offshore wind power and increased investment in onshore wind power and photovoltaic projects.

Industry Analysis

- **National energy policy targets to support the future high-speed growth of the wind power and solar power generation industry**

In 2022, China's cumulative installed wind power capacity reached 37GW, with a CAGR of 16.17% from 2016 to 2022. The wind and solar power installation plans for different regions in China during the 14th Five-Year Plan period are clear. We estimate China's wind power installed capacity to reach 620mn kW by 2025, with a CAGR of 17% from 2021 to 2025.

Figure 13: Newly-added wind power and solar power installed capacity in China (2018-25E)

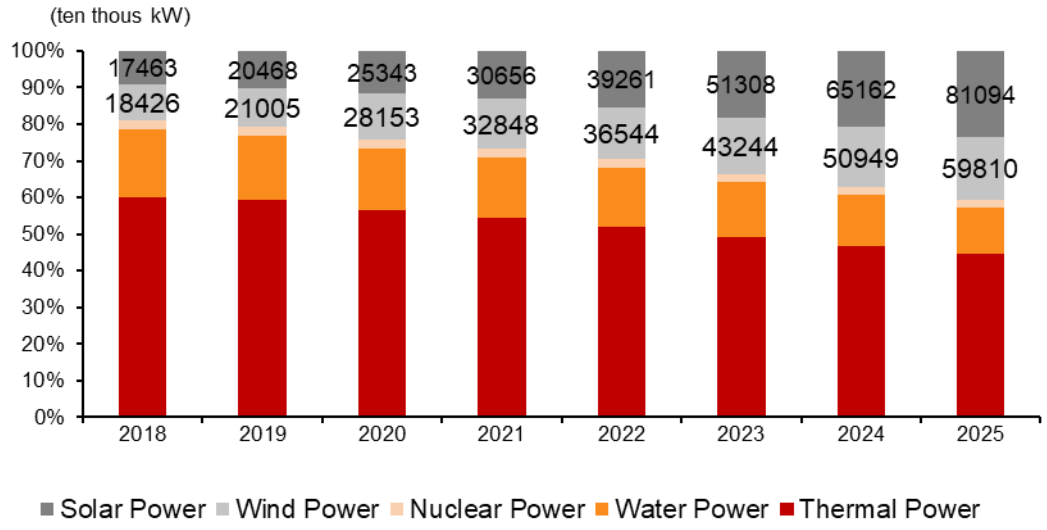


Source: NBS, NEA, CMBIGM estimates

According to the data of Wind Daily and NEA, in 2022, wind power bidding exceeded 103.27 GW in China, and newly-added installed capacity of wind power achieved 37 GW.

Most of the bidding capacity are expected to be grid-connected in 2023, resulting in an estimated 67 GW of newly-added installed capacity and an increase of around 81% YoY. Thus, in 2023, we predict the cumulative installed wind power capacity to be around 432 GW in China. Additionally, the newly-added installed wind power capacity in 2024 and 2025 will be up by 15% YoY and reach 77 GW and 89 GW respectively, with a predicted cumulative installed wind power capacity of 509 GW and 598 GW, maintaining around 20% YoY growth each year.

Figure 14: Accumulated power installed capacity in China (2018-25E)

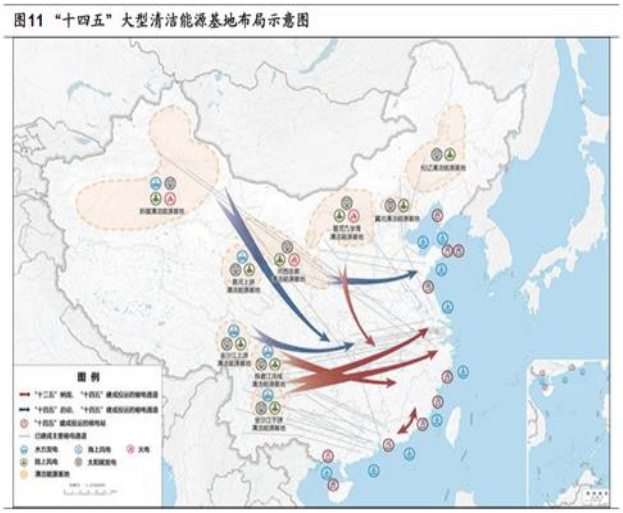


Source: NBS, NEA, CMBIGM estimates

For solar power, China's solar power installed capacity was 392 GW in 2022, and the solar bidding capacity for 2022 was about 155 GW. Based on the views of CPIA, China's conservative prediction for newly-added installed capacity of solar power in 2023 will be 95GW, and the optimistic prediction will be 120 GW. Meanwhile, according to data from the NEA, the newly-added installed capacity of solar power in 1Q23 was 33.66 GW, up by 154.81% YoY. As of Apr 2023, domestic PV component bids have exceeded approximately 82 GW.

Thus, we are positive that the newly-added installed capacity of solar power in 2023 may reach 120 GW, with a total accumulative installed capacity of 513 GW for the year.
Additionally, solar power will continue to maintain high growth in 2024 and 2025, and we estimate cumulative solar power installed capacity will reach 652 GW and 811 GW.
By 2025, the cumulative installed capacity of wind and solar power will reach 1,409 GW, exceeding the national 14th Five-Year Plan target of 1,200 GW.

Figure 15: Layout of large-scale clean energy bases during the "14th Five-Year Plan"(2018-25E)



Source: NBS, NEA

- **Technological innovation in the wind power industry will further reduce the cost of wind power operation**

China's wind power industry is undergoing technological innovation during these years, and new technologies will further reduce the cost of wind power. Currently, technological innovation in the wind power industry is mainly focused on three areas: first, advances in wind turbine technology, including large-scale, high-efficiency, intelligent, and modular turbines. Additionally, improvements in wind farm operation and maintenance management technology, including digitization, intelligence, autonomy, and integration; and third, optimization of wind farm layout and design, including site selection, wind farm layout, wind farm integration, and multi-energy complementarity.

- **Policy support for the solar power industry and energy storage**

The solar power industry has also received policy support, and policy dividends will drive rapid development of the solar market. In recent years, the National Energy Administration issued a notice on solar power generation development, proposing a series of policy measures, including increasing support for photovoltaic poverty alleviation, promoting the construction of solar power+ energy storage projects, and accelerating the construction of photovoltaic poverty alleviation demonstration power stations, providing strong policy guarantees for the development of the solar power industry.

Overall, the new energy power generation industry in China is in a phase of rapid development, with abundant resource reserves, strong policy support, continuous technological improvement, and broad market prospects.

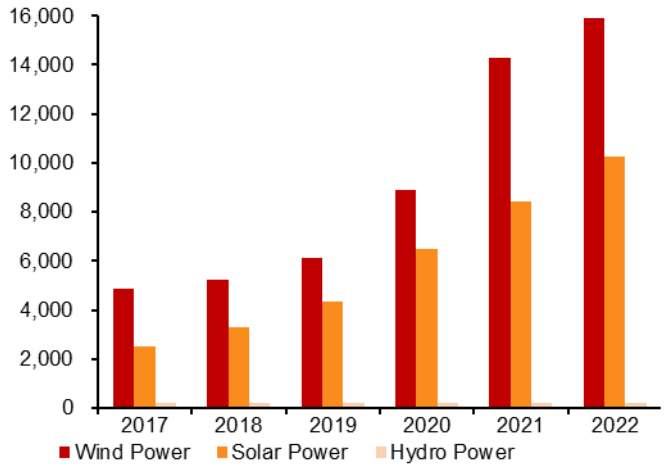
In the future, wind power generation and photovoltaic power generation will continue to be the main forms of new energy power generation. At the same time, to better promote the development of new energy power generation, it is also necessary to strengthen grid construction and research on energy storage technologies, and improve the consumption capacity and stability of new energy power generation.

Abundant project reserves to support continue growth in CTGR's electricity generation

CTGR has a large projects reserve and plans to increase wind and solar power by at least 5mn kW annually during the "14th Five-Year Plan" period. The Company aims to achieve

a total installed capacity of 50mn kW with a CAGR of 26%. In 2022, the Company added over 54mn kW of resources and have abundant project resource reserves. CTGR's mature development and operation experience, high-quality projects, and wide distribution of resources give CTGR strong potential for expansion.

Figure 16: CTGR's installed capacity (2017-2022)



Source: Company data, CMBIGM estimates

Peers comparision and CTGR's competitive advantages

Figure 17: Comparison table of the new energy operators under the new "Big Five and Small Noble 4" power generation groups (2022)

Power generation group	Ticker	Company name	Wind Power	Solar Power	Thermal Power	Others	Accumulated installed capacity	YoY	Power generation-2022(MWh)	YoY	Wind Power	Solar Power	Thermal Power	Revenue(RMB0.1bn)	YoY	Net profit attributable to parent conpany(RMB 0.1bn)	YoY
China Three Gorges Corporation	600905 CH	China Three Gorges Renewables	15,922	10,284		315	26,521	16.0%	48,350,000	46.2%	2262	1410		238.12	45.0%	71.55	11.1%
CHN Energy	916 HK 001289 CH	China Longyuan Power Group	23,138		858	2,850	26,846	17.0%	70,633,024	11.6%	2286		5639	398.62	-0.025%	49.03	-32.0%
State Power Investment Corporation	2380 HK	China Power International Development	5,684	6,074	13,085	4,546	29,334	17.5%	112,942,437	7.6%	2098	1622	4683	436.89	23.1%	26.48	NA
China Huaneng Group	902HK 600011 CH	Huaneng Power International	33,168		94,060		127,228	7.2%	451,070,000	-1.4%			4228	2,467.00	20.3%	(-80.26)	NA
China Huadian Corporation	1071 HK 600027 CH	Huadian Power International			43,700	11,054	54,754	0.5%	220,932,000	0.5%			4508	1,070.59	2.3%	1.00	Turnaround
China Datang Corporation	1798 HK	China Datang Corp	12,688	1,500			14,193	8.5%	28,787,000	10.0%	2262	1414		124.99	5.3%	34.85	71.6%
	601991 CH	Datang Intl Power	5,417	2,789	47,514		71,024		246,930,000	-4.4%				1,168.28	14.9%	-4.10	-95.5%
State Development & Investment Corp., Ltd.	600886 CH	SDIC Power	1,654	2,949	11,881	21,280	37,764	4.0%	50,591,000	-14.3%	2070	1353	4262	504.89	15.4%	40.70	65.7%
China Resources	836 HK	CR Power	17,004		35,577		52,581	10.0%	231,877,000	4.2%	2398	1510	4731	1033(HKD)	14.3%	70.42(HKD)	229.0%
China General Nuclear Power Group	1811 HK	CGN New Energ	4,419	1,187		1,821	8,987	6.9%	19,189,700	5.7%	2284	1414	5018	24.3(USD)	37.0%	1.95(USD)	-20.0%

Source: Company data, CMBIGM estimates

Figure 18: Comparison table of the new energy operators under the new "Big Five and Small Noble 4" power generation groups (2022)

Power generation group	Ticker	Company name	Marketcap(mn)-latest	PE-2022	PB-2022	ROE%-2022	EPS-2022	BPS-2022	Asset to debt ratio%-2022	Gross profit %-2022	Net margin %-2022
China Three Gorges Corporation	600905 CH	China Three Gorges Renewables	155,713	22.0	2.1	9.81	0.25	2.69	66.44	58.40	35.2
CHN Energy	916 HK	China Longyuan Power Group	135,542	22.6	1.1	7.81	0.59	7.56	64.28	34.43	15.29
	001289 CH		124,647	14.4	1.1	7.74	0.58	7.61	64.07		
State Power Investment Corporation	2380 HK	China Power International Development	36,616	14.4	0.8	6.40	0.22	3.80	67.56	45.11	6.15
China Huaneng Group	902HK	Huaneng Power International	127,715	13.3	0.4	-7.02	-0.65	7.37	73.58	3.04	-4.09
	600011 CH		117,449	NA	0.4	-6.91	-0.61	2.96	74.82		
China Huadian Corporation	1071 HK	Huadian Power International	60,107	NA	0.8	-0.05	-0.09	3.84	67.80	0.43	-0.6
	600027 CH		55,275	NA	0.8	0.16	-0.08	3.64	68.45		
China Datang Corporation	1798 HK	China Datang Corp	18,548	NA	1.9	12.14	0.40	2.18	64.87	99.51	31.13
	601991 CH	Datang Intl Power	47,703	5.1	0.7	-0.66	-0.10	1.50	74.98	7.12	-0.75
State Development & Investment Corp., Ltd. (SDIC)Group	600886 CH	SDIC Power	97,575	NA	1.7	7.70	0.52	6.55	63.75	32.04	15.21
China Resources Holdings	836 HK	CR Power	82,259	20.8	0.9	8.25	1.46	17.10	64.52	-1.15	7.31
China General Nuclear Power Group	1811 HK	CGN New Energ	9,697	10.9	1.1	14.58	0.05	0.32	82.02	47.44	8.82

Source: Company data, CMBIGM estimates

We compared the main layouts of electricity operators in the new energy sector under the latest "Big Five and Small Noble 4" power generation groups. Based on the data of 2022, we found that CTGR has several outstanding advantages as follows:

1) **In 2022, CTGR's photovoltaic installed capacity was the highest among the listed peers of "Big Five and Small Noble 4" power generation groups. In the future, CTGR will continue to focus on developing photovoltaic installations.**

The target for the newly-added photovoltaic and wind power installed capacity of CTGR in 2023 is 5,000 MW. Photovoltaic installed capacity will make up the majority of this target, with a planned ratio of around 6:4 between photovoltaic and wind power. Additionally, the upstream cost of the photovoltaic industry chain has decreased, which has partially reduced construction costs and helped to improve the overall IRR of photovoltaic projects. Therefore, the company's willingness to invest in photovoltaic installations will up, enabling it to achieve or even exceed the photovoltaic installed capacity targets.

Due to longer procurement cycles, the installations in 1H23 were delayed. It is expected that new energy installation will accelerate in the 2H23.

2) **In 2022, CTGR's power generation increased significantly, which was due to the increase in wind and solar power installations and higher-than-national-average utilization hours.**

In 2022, CTGR's power generation increased by 46.2% YoY to 48.35mn MWh, which was the highest among the peers we listed. The company's power generation in 1H23 is relatively optimistic. In Jun 2023, CTGR's power generation had increased by 14.71% to 28.09bn kWh. From Jan to May, power generation and utilization hours were slightly higher than the national average. With the improvement of wind resources, it is expected that wind power generation will continue to improve.

3) **In 2022, CTGR's revenue increased by 45%YoY, and its net profit attributable to shareholders ranked among the top listed peers of the new energy electricity operators.**

CTGR's revenue increased by 45% YoY in 2022, and its net profit attributable to parent company was up by 11.07% to RMB 7.155bn. The company's results growth was mainly due to the commissioning of new projects, an increase in total installed capacity, and an upward in power generation and grid-connected electricity.

In particular, CTGR's revenue growth rate was among the highest of comparable companies. Although CTGR's gross profit margin and net margin decreased slightly in 2022, but the data maintained a leading position among comparable companies. The net profit attributable to shareholders was also among the highest among listed peers, which was mainly attributed to the company's good cost control capabilities, technological progress, and excellent resource acquisition capabilities.

Additionally, we believe that the company can maintain outstanding revenue and net profit, as well as good gross profit margin and net margin. The related growth can be driven by :1) CTGR's clear target for new installations in 2023; 2)sufficient approved and reserved projects; 3) a significant decrease in upstream costs for photovoltaics and wind power; 4) a great incentive scheme;

4) **CTGR's installation progress in 1H23 was slightly slower and its stock price has been stagnant, with its valuation partially falling. We expect its new energy installations to accelerate in 2H23, and the stock price to rebound.**

In 2022, CTGR recorded a P/E of 21.7x and a P/B of 1.9x. Its overall valuation was slightly higher than its peers, and its EPS were lower than those of leading new energy companies such as China Longyuan and Huaneng Renewables. Therefore, we regard CTGR's profit and valuation attractiveness as still need to be improved. According to the company's announcement of Jun 2023, CTGR's progress in 1H23 is slightly slower, and its stock price has been stagnant, with its valuation partially falling. We expect installations to accelerate in 2H23, and the stock price to rebound.

5) **CTGR is a leader in offshore wind power generation, with advanced technology and stable future development.**

As one of the earliest central enterprises to develop offshore wind power in China, the CTGR has nearly 5mn kW of offshore wind power capacity that is already connected to the grid, ranking first in China. The large-scale development of offshore wind power is a strategic focus for the company, with advanced technology and experience in this field.

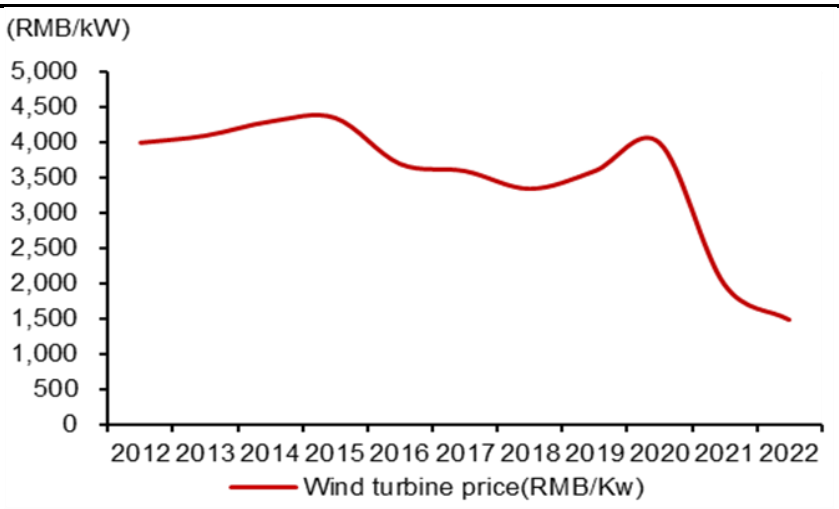
In addition, CTGR has a number of offshore wind power projects in the pipeline and has received support from the government for the development of offshore wind power. We believe that CTGR's leadership in offshore wind power generation will be beneficial to its long-term development.

Lower upstream costs lead to higher IRR of the wind farm project and solar power project, prompting CTGR's investment willingness

The wind power industry in China has entered the Grid Parity Era since 2021, leading to a reduction in upstream costs and a decline in wind turbine prices. According to Wind Power Headlines, the highest price for onshore wind turbines reached RMB4,200/kW in mid-2020 and fell to the lowest at RMB1,150/kW in Feb 2023, dropping by -73%. Therefore, lower upstream costs have resulted in an increase in the IRR of wind power projects, making more projects suitable for investment by CTGR. As a result, CTGR is expected to show a

higher willingness to invest in wind power installation in 2023.

Figure 19: Wind turbine price (2012-2022)



Source: Wind, CMBIGM estimates

Figure 20: Onshore wind power tariff policies

Date	I Resources Area	II Resources Area	III Resources Area	IV Resources Area	Embodiment
2015	0.51	0.54	0.58	0.61	Benchmark
2016	0.49	0.52	0.56	0.61	Benchmark
2017	0.47	0.50	0.54	0.60	Benchmark
2018	0.40	0.45	0.49	0.57	Benchmark
2019(after 1st Jan)	0.34	0.39	0.43	0.52	Benchmark
2019(after1st Jul)	0.34	0.39	0.43	0.52	Bid
2020	0.29	0.34	0.38	0.47	Bid
2021			Grid Parity		Grid Party

Source: NDRC, CMBIGM estimates

The optimization of the industrial chain in the wind power sector reduces cost and increases efficiency, which drives the long-term growth in IRR of the onshore wind power project. For example, if the average tariff (incl-tax) for the project is RMB0.45/kWh, the construction cost of a 100MW onshore wind power project falls from RMB4,500/kWh to RMB4,000/kWh, the IRR of the project will increase from 11% to 14.3%. Additionally, if the construction cost decreases further to RMB3,800/kWh, the IRR will increase to 15.5%.

Figure 21: Sensitivity analysis of IRR (onshore wind power project)

		capital cost (RMB/watt)				
		3.5	4.0	4.5	5.0	5.5
Tariff (RMB, Incl. VAT)	0.35	9%	7%	4%	2%	1%
	0.40	14%	11%	8%	6%	4%
	0.45	18%	14%	**11%**	9%	7%
	0.50	22%	18%	15%	12%	10%
	0.55	26%	21%	18%	15%	13%

Source: CMBIGM estimates
*Assuming utilization hours of 2000

As the IRR for wind farm projects increases thanks to lower upstream costs, more projects will meet CTGR's investment criteria IRR. Therefore, a higher IRR of the wind power project is likely to boost CTGR Power's investment willingness in newly-added wind power installations.

For solar farm, given the upstream cost continues to drop, we believe the IRR of wind farm projects will further boost. Recently, the lowest reported price for solar module components

reached a historical low of RMB1.18/W, according to the latest group procurement. In light of CTGR's focus on increasing photovoltaic installed capacity in 2023, we believe the company can easily achieve and exceed its new energy's newly-added installed capacity targets for 2023. As a result, the new project's IRR of CTGR is expected to further increase.

Figure 22: Sensitivity analysis of IRR (solar power project)

		capital cost (RMB/watt)				
		2.5	3.0	3.5	4.0	4.5
Tariff (RMB, ex. VAT)	0.50	26%	20%	16%	13%	10%
	0.45	21%	16%	12%	9%	7%
	0.40	16%	11%	**8%**	6%	3%
	0.35	10%	7%	4%	1%	-1%
	0.30	5%	1%	-2%	-4%	-7%

Assuming utilization hours of 1300

Source: Company data, CMBIGM estimates

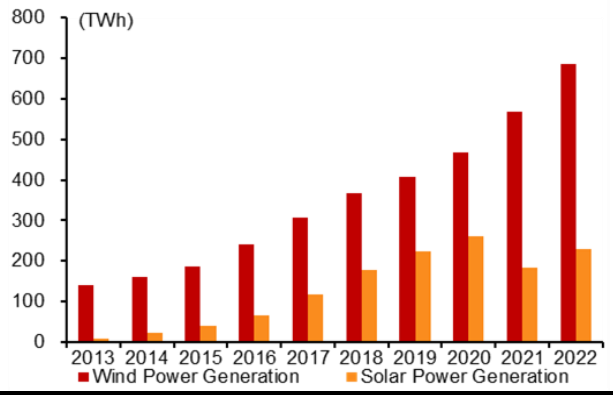
Lower upstream costs in the short to medium term are expected to benefit the IRR of new energy projects of CTGR. Continuous technological progress may also create opportunities for IRR improvement. Otherwise, changes in the non-technical costs of local governments will need to be monitored to comprehensively measure project's IRR as well.

Additionally, CTGR's accelerated deployment of wind and solar power installed capacity, as well as active deployment of energy storage, is expected to benefit the stability of wind and photovoltaic power generation. However, configuring energy storage may increase construction costs and put some pressure on the project's IRR. Therefore, overall changes in IRR should be considered comprehensively.

- **The improvement of power generation and average utilization hours**

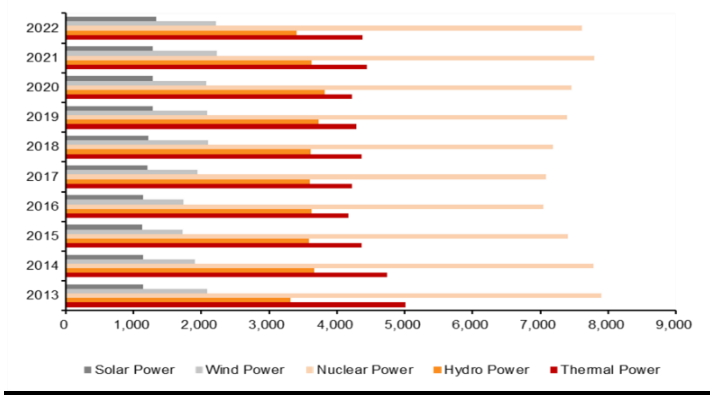
Due to the rapid increase in wind power and solar installed capacity, China's wind power and solar power generation have grown significantly. The average utilization hours of grid-connected wind and solar power equipment showed an overall upward trend, mainly due to the significant improvement in the wind and solar power curtailment rate.

Figure 23: China's wind and solar power generation(2013-2022)



Source: Company data, CMBIGM estimates

Figure 24: China's utilization hours of main power (2013-2022)



Source: Company data, CMBIGM estimates

CTGR's on-grid tariff tend to be stable

- **Tariff policies change and trend**

Tariff of onshore wind power and solar power have remained stable after the on-grid parity, while local subsidies for offshore wind still exist, but still take time to realize grid parity.

China's wind and solar power industries have undergone three stages of pricing from 2009

to the present: benchmark pricing (2009-2018), guided pricing (2019-2020), and grid-parity pricing (2021 onwards). During the benchmark pricing stage, new energy projects received a fixed electricity price with excess payments above the local coal benchmark price as subsidies. During the guided pricing stage, on-grid electricity prices were determined by market competition but could not exceed the guided price in the resource area.

Since 2021, wind and photovoltaic projects in China have been enter the cusp of grid parity, with the on-grid electricity price set according to the local coal benchmark price. The on-grid tariff of onshore wind power and solar power tend to be rebound and stable in 2023.

For offshore wind power, the Chinese government has announced the gradual cancellation of national subsidies for offshore wind power and the implementation of local subsidies, promoting healthy development and competitiveness of the industry. Although it presents challenges, the policy provides opportunities for the industry, and offshore wind power is expected to gradually achieve grid parity in the future.

Figure 25: Tariff policies (onshore wind power project and offshore wind power project)

Offshore Wind Power Projects Tariff Policies						
Project Approve Time		2018	2019	2020	2021	2022
Grid Connection Time		Fixed Feed-in	Tneder Price under Price Cellings	Tender Price under Price Cellings	Grid Parity(Provincial Coal fired Power Price	Grid Parity(Provincial Coal-fired Power Price)
COD by Dec 2021	Formula	0.78,0.85	<0.52,<0.8	<0.47,<0.75		
	Rate(RMB/kWh)					
COD since 2022	Formula	Grid Parity				
	Rate(RMB/kWh)	Provincial Coal-fired Power Price				

Onshore Wind Power Projects Tariff Policies						
(Right)Project Approve Time		2016-2017	2018	2019	2020	2021
(Below)Grid Connection Time						
COD by Dec 2021	Formula	Fixed Feed-in Tariffs(Encourage voluntary grid-parity)		Tender Price under Price		Grid Parity(Provincial Coal-fired Power Price)
	Rate(RMB/kWh)					
COD since 2022	Formula	0.47,0.5,0.56,0.61	0.4,0.45,0.49,0.57	<0.34,<0.39,<0.43,<0.52	<0.29,<0.34,<0.38,<0.48	
	Rate(RMB/kWh)	Grid Parity(Provincial Coal-fired Power	Grid Parity(Provincial Coal-fired Power Price)	Grid Parity(Provincial Coal-fired Power Price)		
COD since 2022	Formula					
	Rate(RMB/kWh)					

Source: NEA, NDRC, MoF Policy, Energy Iceberg, BBG CMBIGM estimates

Figure 26: Tariff policies (solar power)

Mounted PV Projects Tariff Policies						
(Right)Project Approve Time		2018(5.31)	2018(5.31-2019(05)	2019(5.12)	2020	2021
(Below)Grid Connection Time						
COD by Dec 2021	Formula	Fixed Feed-in Tariffs	Fixed Feed-in Tariffs	Tender Price under Price Cellings(Encourage voluntary grid-parity)		Grid Parity(Provincial Coal-fired Power Price)
	Rate(RMB/kWh)	0.55,0.64,0.75	0.5,0.6,0.7			
COD since 2022	Formula	NA	Fixed Feed-in Tariffs	<0.34,<0.39,<0.43,<0.52	<0.29,<0.34,<0.38,<0.48	
	Rate(RMB/kWh)		0.5,0.6,0.7	NA		
COD since 2022	Formula		Tender Price under Price Cellings	Tender Price under Price Cellings	Tender Price under Price Cellings	
	Rate(RMB/kWh)		<0.4,<0.45,<0.55	<0.4,<0.45,<0.56	TBD(<0.35,0.4,0.5)	

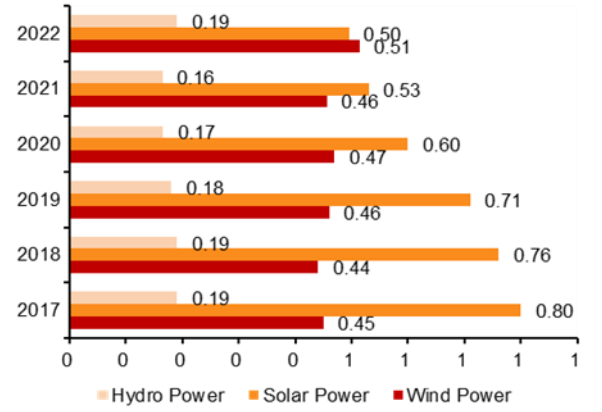
Source: NEA, NDRC, MoF Policy, Energy Iceberg, BBG, CMBIGM estimates

Grid parity lowers overall electricity prices in 2021, while the tariff tend to be stable in 2023 as CTGR's mgmt.'s guidance

The downslope in subsidies and the promotion of grid-parity pricing have led to a general decline in the CTGR's tariff, particularly in solar power. From 2017 to 2022, the Company's integrated average on-grid tariff had a CAGR of -1.9%. Among them, wind power had an average CAGR of 2.68%, photovoltaic power had an average CAGR of -9.15%, and hydropower had a flat average CAGR.

In 2022, CTGR's overall on-grid electricity price (ex-taxes) reached RMB0.5/kWh, an increase of 0.54%YoY (based on FY22 financial report adjustment from RMB0.4705/W in FY21 financial report to RMB0.4994/W). Wind power increased by 12.6% YoY to RMB0.51 /kWh, photovoltaic power decreased by 6.6% YoY to RMB0.50 /kWh, and hydropower increased by 15.4% YoY on average.

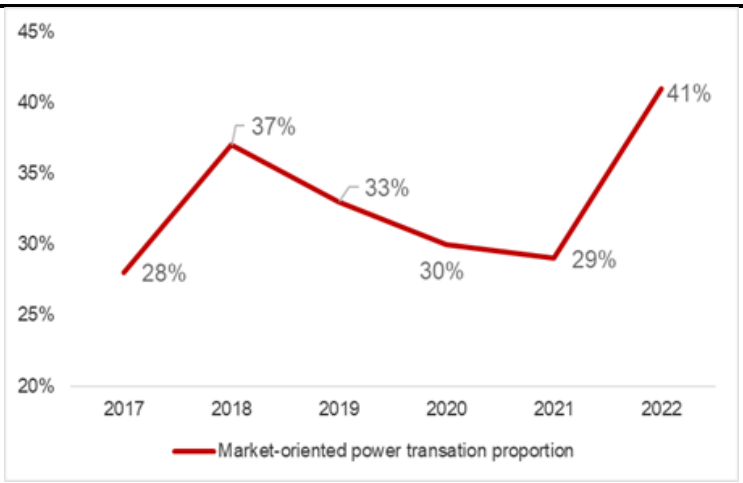
Figure 27: CTGR's tariff (2017-2022)



Source: Company data, CMBIGM estimates

In 2022, CTGR participated in market-oriented electricity transactions in 19 provinces and regions, with a trading volume of 19.087bn kWh, accounting for 40.58% of the on-grid electricity transaction volume. The proportion of market electricity sales has increased and is expected to continue to rise.

Figure 28: CTGR's electricity transactions proportion (2017-2022)



Source: Company data, CMBIGM estimates

For new energy's executive tariff, new energy projects have been executing market-

oriented transaction prices with some discount compared to the approved tariff. However, with the increase of grid parity projects and the emergence of a tight supply-demand balance in electricity, the discount on tariff has gradually decreased over the years.

Assuming a grid-connected electricity price of RMB0.45/kWh (based on the national benchmark coal-fired electricity price) for new grid-parity projects, we estimate the CTGR realized tariff to be RMB0.514, RMB0.501, and RMB0.484 /kWh from 2023 to 2025

In 2022, CTGR actively participated in carbon reduction asset, green energy, and green certificate trading, locking in an additional revenue of over RMB280mn. CTGR signed its first ten-year green energy trading agreement as well. We believe that the scale of green energy trading will continue to expand, bringing potential performance growth from the green energy premium.

Figure 29: CTGR's tariff summarize (2017-2022)

	2017	2018	2019	2020	2021	2022
Wind Power	0.45	0.44	0.46	0.47	0.46	0.51
Solar Power	0.80	0.76	0.71	0.60	0.53	0.50
Hydro Power	0.19	0.19	0.18	0.17	0.16	0.19

Source: Company data, CMBIGM estimates

The improved subsidy return and great incentive mechanism of CTGR

- **Expected improved progress in subsidy disbursement**

CTGR's new energy subsidy funds mainly come from special funds and the China central treasury, with low possibility of being unable to recover. However, the accumulation of subsidies may pressure the Company's cash flow. If the subsidy receipts accelerate, it will benefit the Company's financial expense savings and new installed capacity investment.

- **Incentive mechanism flexibility is expected to enhance business expansion enthusiasm and attention to market value management**

CTGR granted restricted shares at a discount to incentive objects in 2021, with a performance assessment requirement of achieving a revenue CAGR of at least 15.0%, 16.5%, and 18.0% from 2022 to 2024. While the equity incentive will increase management expenses, it is expected to enhance business expansion and market value management.

CTGR's business expansion

CTGR's Stable Operation, Accelerated Installation Expansion

(I) Offshore Wind Power

The Company firmly implements the "Offshore Wind Power Leader" strategy, vigorously promotes preliminary work in Guangdong, Fujian, Jiangsu, Liaoning, Shandong, and other places, and constantly consolidates the advantages of large-scale development of offshore wind power.

In 2022, the Company persisted in playing its differentiation advantages, and added 2.15mn kW of offshore wind power resources. Shanghai, Hainan, and Tianjin successively achieved "zero" breakthrough, and the coastal area layout covered a wider area. By 2022, CTGR's offshore wind power grid-connected installed capacity totaled 4,875,200kW. The first marine ranch and integrated demonstration project of parity offshore wind power in Shandong, the Changyi project (300,000kW), achieved full capacity grid connection within six months of going offshore, and the Muping offshore wind power project in Shandong (300,000kW) started construction.

In terms of technology, in recent years, CTGR has actively explored offshore wind power technology innovation and implemented a batch of high-quality offshore wind power projects, as follows:

Figure 30: China Three Gorge's onshore wind power expansion

Offshore Wind Power Projects	Discription
Jiangsu Xiangshui Offshore Wind Farm	China's first near-shore offshore wind power project
Shanghai East Sea Bridge Offshore Wind Farm	China's first commercially operated offshore wind power project; built the first 220 kV offshore booster station and laid the first 220 kV offshore cable in China, playing a positive demonstration role in China's wind power development into deep blue waters
Dalian Zhuanghe Offshore Wind Farm	The first approved and under construction offshore wind power project in Northeast China; successfully installed China's first 6.45 MW low-temperature large-diameter direct-drive offshore wind turbine, accumulating valuable experience for exploring new technologies for offshore wind power development in the cold sea areas of northern China
Jiangsu Dafeng H8-2 Offshore Wind Farm	China's offshore wind farm with the farthest distance from shore; created the record for the longest distance and largest diameter of AC submarine cable application in China
Jiangsu Rudong Offshore Wind Farm	China's first flexible DC transmission project for offshore wind power
Yangxi Sha Ba Offshore Wind Farm	The first successful application of large-diameter single-pile foundation offshore wind power project in the Guangdong sea area of Three Gorges New Energy
Nanao Yangdong Offshore Wind Farm	The first composite foundation bearing capacity test of underwater compacted sand piles under the conditions of the farthest sea area, the deepest water depth, and the largest load in China
Changyi Marine Ranch and Three Gorges 300 MW Offshore Wind Power Integration Test Demonstration Project	The first offshore wind power project in China to integrate with a marine ranch
Fuzhou Xinghua Bay Offshore Wind Power Test Field	The world's first high-power offshore wind power test field
National Offshore Wind Power Technology Center	The world's first high-power offshore wind turbine prototype test project, realizing the competition of large-capacity units from eight wind turbine manufacturers at the offshore wind power "Olympic Games" at home and abroad
Yangjiang Offshore Wind Farm	China's first offshore wind power project with a capacity of one million kilowatts, the largest offshore wind farm in Asia, and the largest offshore booster station in Asia; created many "firsts" in the use of wind turbine foundation forms

Source: Company data, CMBIGM estimates

(II) Onshore Wind Power

CTGR is promoting onshore wind power development, focusing on ultra-high-voltage transmission and large-scale projects. The Company has onshore wind power projects in 25 provinces, including the largest project in China and Asia in Inner Mongolia. The Company completed the first megawatt-level wind power project at high altitude in Xitieshan, Qinghai, and the Qingshui Baituo wind farm in Gansu supports clean energy and poverty alleviation.

(III) Solar Power

CTGR actively explores new models for the development of photovoltaic power generation, and promotes the construction of distributed photovoltaic power generation. As of the end of 2022, the Company's photovoltaic power generation capacity reached 2,326,300kW, and it has been installed in 30 provinces, autonomous regions, and municipalities across the country, including Tibet and Xinjiang. The Company has also actively developed photovoltaic poverty alleviation projects, and has won praise from the government and society for its contribution to poverty alleviation and rural revitalization.

(IV) Hydropower

CTGR continues to promote the development of hydropower, and strives to make full use of the advantages of clean energy and flexible regulation. As of the end of 2022, the

company's hydropower installed capacity totaled 111,703,200 kW, and it has built more than 30 large-scale hydropower bases in China, including the Three Gorges Dam, the Xiluodu Dam, and the Xiangjiaba Dam.

(V) Energy Storage

The Company actively explores new energy storage technologies and promotes the development of energy storage projects. As of the end of 2022, the Company's energy storage installed capacity totaled 1,824,800 kW, and it has built a number of energy storage demonstration projects across the country, including the Zhangbei Energy Storage Project in Hebei Province, the Shenzhen Bantian Energy Storage Project in Guangdong Province, and the Jiangsu Taixing Comprehensive Energy Storage Demonstration Project.

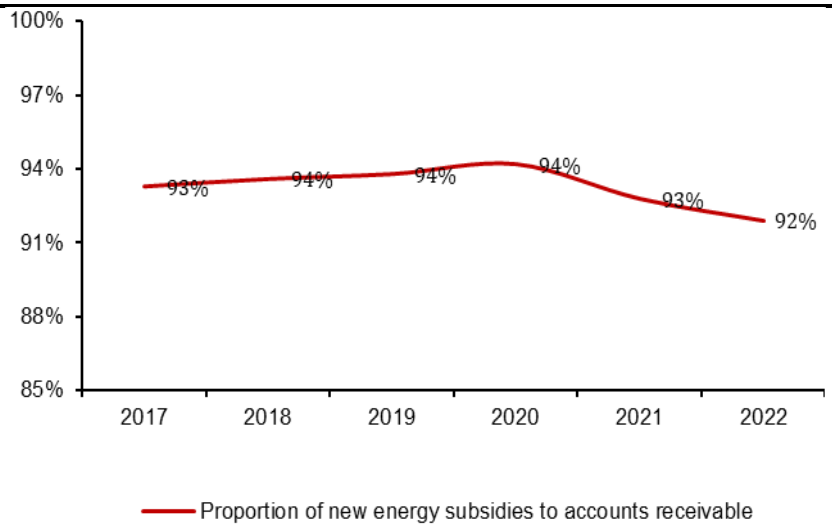
Overall, the Company's stable operation and accelerated installation capacity expansion in the renewable energy sector demonstrates its commitment to promoting clean energy and sustainable development.

Financial analysis and valuation

- **Better proportion of new energy subsidies to account receivable, expected further subsidies return will improve company's profit**

CTGR provisions impairment of renewable energy subsidies under conservative assumptions, which affects current profit. Accounts receivable for new energy subsidies accounts for 92.8% of the total, which show slight improvement. The Company has set aside RMB 560mn in bad debt reserves for subsidy receivables, which may increase the Company's net profit and operating cash flow if the subsidies are returned and the bad debt provision is less than the book balance of the reserve.

Figure 31: Proportion of new energy subsidies to accounts receivable (2017-2022)



Source: Company data, CMBIGM estimates

- **Profit forecast key assumptions**

(1) **Installed capacity**: According to the company's guidance, it is expected that the annual wind and solar power installed capacity will increase by no less than 5mn kW during the "14th Five-Year Plan" period. Based on the projects of the under-construction and approved. We expect that the total installed capacity in 2023-2025 will reach 31,421MW, 37,421MW, and 44,221mn kW, respectively.

(2) **Utilization hours**: Wind and solar resources are easily affected by climatic conditions. We assume that the utilization hours of onshore wind, photovoltaic, and hydropower for the CTGR will be 2,065, 1,348, and 4,250 hours in 2023. We assume that the utilization hours of onshore wind power will increase by 1% YoY in 2024, the utilization hours of photovoltaic will up by 3% YoY, and the utilization hours of hydropower will remain unchanged.

(3) **Tariff**: We calculate the wind and solar power grid tariff for the Company in 2023-2025 based on the weighted average price of subsidies and trading prices. We assume that the subsidy policies for wind and solar power will remain stable during the forecast period, and the proportion of subsidies in the grid price will gradually decrease. Overall, we assume that the market electricity prices will remain stable compared with last year.

(4) **Cost of generation**: We assume that the cost of wind and solar power generation for the Company will continue to decrease due to technological advancement and lower upstream costs. For 2023, we estimate that the cost of wind power generation will decrease by 4% YoY, and the cost of solar power generation will decrease by 6% YoY.

(5) **Revenue growth**: We assume that the Company's revenue CAGR will reach 16.8% during the forecast period, driven by the continuous expansion of installed capacity and the improvement of grid parity.

Figure 32: Key assumption table

Wind Power	2022	2023E	2024E	2025E	2026E
Revenue-RMB mn	16,886	18,874	21,296	23,682	27,020
YoY %	*68%*	*12%*	*13%*	*11%*	*14%*
Total attributed installed capacity-MW	15,922	17,922	20,422	23,422	27,022
YoY %	*12%*	*13%*	*14%*	*15%*	*15%*
Newly-added installed capcaity-MW	1,653	2,000	2,500	3,000	3,600
YoY%	*-69%*	*21%*	*25%*	*20%*	*20%*
offshore wind	*300*	*360.00*	*450.00*	*600.00*	*720.00*
% of wind	*18%*	*18%*	*18%*	*20%*	*20%*
Effective utilization hours	2,065	2,065	2,086	2,106	2,127
YoY %	*33%*	*0%*	*1%*	*1%*	*1%*
Grid parity power generation-GWh	32,878	37,008	42,592	49,337	57,489
YoY%	*49%*	*13%*	*15%*	*16%*	*17%*
Average tariff (RMB/kWh)	0.51	0.51	0.50	0.48	0.47
COGs-RMB mn	6,494	7,793	8,962	10,306	12,367
YoY %	*63%*	*20%*	*15%*	*15%*	*20%*
Solar Power					
Revenue-RMB mn	6,535	9,309	11,649	14,420	16,589
YoY %	*32%*	*42%*	*25%*	*24%*	*15%*
Total attributed installed capacity-MW	10,284	13,284	16,784	20,584	23,584
YoY %	*22%*	*29%*	*26%*	*23%*	*15%*
Newly-added installed capcaity-MW	1,872	3,000	3,500	3,800	3,000
YoY %	*-2%*	*60%*	*17%*	*9%*	*-21%*
Effective utilization hours	1,283	1,348	1,388	1,430	1,465
YoY%	*16%*	*5%*	*3%*	*3%*	*3%*
Grid parity power generation-GWh	13,199	17,902	23,297	29,429	34,561
YoY %	*41.67%*	*35.63%*	*30.14%*	*26.32%*	*17.44%*
Average tariff	0.50	0.52	0.50	0.49	0.48
COGs-RMB mn	3,085	3,857	4,358	4,924	5,417
YoY %	*19%*	*25%*	*13%*	*13%*	*10%*
Hydro Power					
Revenue-RMB mn	174	174	174	174	174
YoY %	*36%*	*0%*	*0%*	*0%*	*0%*
Total attributed installed capacity-MW	215	215	215	215	215
YoY %	*0%*	*0%*	*0%*	*0%*	*0%*
Effective utilization hours	4,250	4,250	4,250	4,250	4,250
YoY %	*18%*	*0%*	*0%*	*0%*	*0%*
Grid parity power generation-GWh	913.38	915	915	915	915
YoY %	*18%*				
Average tariff	0.19	0.19	0.19	0.19	0.19
COGs-RMB mn	83	76	76	76	76

Source: Company data, CMBIGM estimates

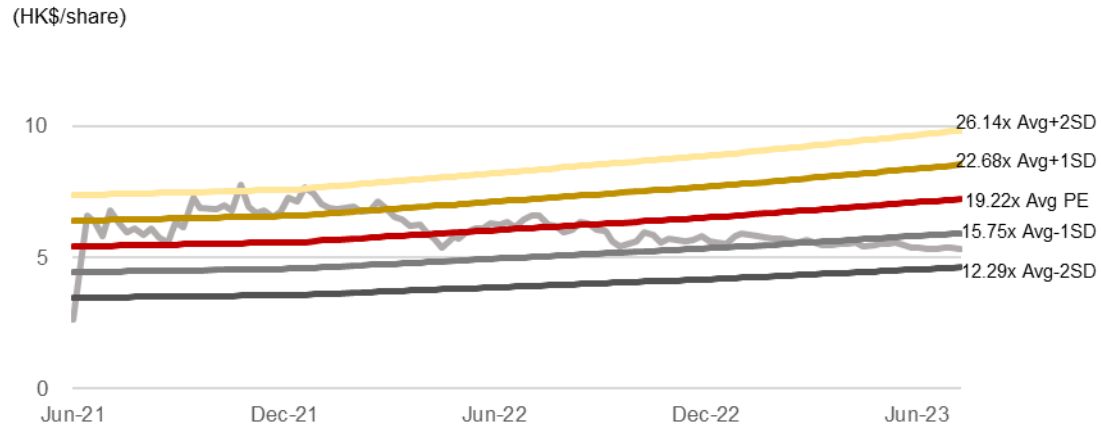
We estimate CTGR's net profit attributable to shareholders to be RMB9.7bn, RMB11.79bn, and RMB14.44bn in 2023, 2024, and 2025, respectively, with EPS of RMB0.34, RMB0.41, and RMB0.50/share.

Currently, CTGR is trading at 17x FY23E PE, which was lower than its peer China Longyuan (001289 CH) 22x FY23E PE. For CTGR, its valuation was 22.59x for FY22 PE. Thus, we regard CTGR's valuation should be re-rated and close to its peer China Longyuan's valuation as they both are the leading new energy operators with strong background of state-owned parent company and solid new energy installed capacity.

For CTGR, it has the growth potential in 2023 as follows: 1) speed up new energy installation as the higher IRR of the projects with lower upstream cost, as we estimated solar power newly-added capacity will up by 60%YoY to 3000MW and wind power newly-added installed capacity will up by 21%YoY to 2000MW in 2023; 2) robust on-grid tariff management capability and active green power trading enable CTGR to stabilize its overall on-grid tariff and we expected the on-grid tariff of 2023 will reach RMB0.5/W; 3) we also predicted further lower upstream cost to boost the GPM from 58% in 2022 to 59%,59%,60% in 2023-25E; 4)continually stable and attractive dividend payout ratio;

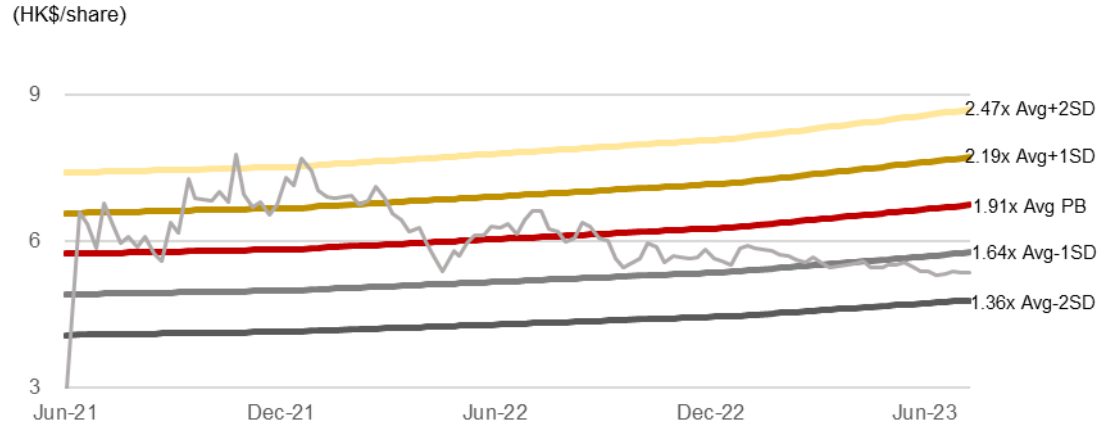
Summing up, **we assign CTGR with an FY23 target PE of 20x, which close to the valuation of China Longyuan(001289 CH) 22x for FY23E, and arrive at the target price of RMB 6.79/ share. Initiate with BUY rating.**

Figure 33: CTGR's PE band



Source: Company data, CMBIGM estimates

Figure 34: CTGR's PB band



Source: Company data, CMBIGM estimates

Figure 35: Peer's table (A/H-share)

Company	Ticker	Closing Price (RMB)	Mkt cap (RMBmn)	EPS 23E	EPS 24E	EPS 25E	23-25E CAGR	PER 23E	PER 24E	PER 25E	PBR 23E	PBR 24E	PBR 25E
CHINA THREE GO-A	600905 CH	5.44	155713.20	0.31	0.37	0.45	19.4%	17.44	14.74	12.22	1.83	1.65	1.45
CHINA LONGYUAN-A	001289 CH	20.22	124646.57	0.93	1.10	1.27	16.4%	21.65	18.37	15.98	2.23	2.02	1.83
HUANENG POWER-A	600011 CH	8.95	117448.67	0.78	0.88	1.05	16.1%	11.47	10.16	8.51	1.18	1.15	0.99
HUADIAN POWER-A	600027 CH	5.84	55274.86	0.56	0.68	0.78	17.5%	10.37	8.56	7.52	0.99	0.92	0.83
DATANG INTL PO-A	601991 CH	3.20	47703.25	0.20	0.28	0.34	32.0%	16.41	11.64	9.41	0.91	0.85	0.79
SDIC POWER HOL-A	600886 CH	13.09	97575.21	0.86	0.97	1.08	12.2%	15.22	13.44	12.10	1.66	1.55	1.43
Average								**15.4**	**12.8**	**11.0**	**1.5**	**1.4**	**1.2**

Company	Ticker	Closing Price (HK$)	Mkt cap (HK$mn)	EPS 23E	EPS 24E	EPS 25E	23-25E CAGR	PER 23E	PER 24E	PER 25E	PBR 23E	PBR 24E	PBR 25E
CHINA LONGYUAN-H	916 HK	7.39	135542.27	0.94	1.13	1.30	17.5%	7.21	6.02	5.22	0.77	0.69	0.62
CHINA POWER INTE	2380 HK	2.96	36615.65	0.31	0.42	0.54	32.9%	8.92	6.45	5.05	na	na	na
HUANENG POWER-H	902 HK	4.40	127715.18	0.65	0.74	0.90	18.2%	6.25	5.51	4.48	0.65	0.60	0.48
HUADIAN POWER-H	1071 HK	3.53	60106.59	0.56	0.68	0.80	19.7%	5.84	4.75	4.07	0.57	0.53	0.44
CHINA DATANG C-H	1798 CH	2.55	18547.94	0.38	0.43	0.51	15.7%	6.20	5.47	4.63	0.93	0.80	0.69
CHINA RES POWER	836 CH	17.10	82258.59	2.41	2.87	3.32	17.3%	7.10	5.96	5.15	0.89	0.81	0.73
CGN NEW ENERGY H	1811 CH	2.26	9697.26	0.05	0.06	0.07	13.5%	5.58	4.68	4.33	0.81	0.71	0.63
Average								**6.7**	**5.5**	**4.7**	**0.8**	**0.7**	**0.6**

Source: Company data, CMBIGM estimates

Financial Summary

INCOME STATEMENT	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec (RMB mn)						
Revenue	**11,315**	**15,484**	**23,812**	**28,682**	**33,444**	**38,601**
Cost of goods sold	(4,788)	(6,440)	(9,906)	(11,894)	(13,565)	(15,475)
Gross profit	**6,527**	**9,044**	**13,906**	**16,788**	**19,879**	**23,126**
Operating expenses	**(662)**	**(1,139)**	**(1,576)**	**(2,043)**	**(2,362)**	**(2,513)**
SG&A expense	(557)	(1,007)	(1,406)	(1,864)	(2,174)	(2,316)
Others	(105)	(133)	(170)	(179)	(188)	(197)
Operating profit	**5,866**	**7,904**	**12,330**	**14,745**	**17,518**	**20,613**
Other income	21	(3)	241	0	0	0
Other expense	(18)	(145)	(148)	0	0	0
Investment gain/loss	52	580	(181)	(100)	(100)	(100)
Share of (losses)/profits of associates/JV	455	1,150	1,289	1,289	1,000	1,000
EBITDA	**9,853**	**13,094**	**20,207**	**24,682**	**28,381**	**32,787**
Depreciation	3,907	5,113	7,636	9,697	10,623	11,933
Other amortisation	81	77	241	241	241	241
EBIT	**5,866**	**7,904**	**12,330**	**14,745**	**17,518**	**20,613**
Interest income	38	175	223	264	560	533
Interest expense	(2,129)	(3,020)	(4,074)	(4,779)	(5,052)	(4,799)
Net Interest income/(expense)	**(2,091)**	**(2,844)**	**(3,987)**	**(4,515)**	**(4,491)**	**(4,266)**
Foreign exchange gain/loss	0	0	0	0	0	0
Other income/expense	21	(3)	241	0	0	0
Others	490	1,582	485	1,189	900	900
Pre-tax profit	**4,286**	**6,640**	**9,069**	**11,418**	**13,926**	**17,246**
Income tax	(344)	(554)	(686)	(971)	(1,253)	(1,725)
After tax profit	**3,941**	**6,086**	**8,383**	**10,448**	**12,673**	**15,522**
Minority interest	(330)	(444)	(1,227)	(731)	(887)	(1,087)
Net profit	**3,611**	**5,642**	**7,155**	**9,716**	**11,786**	**14,435**

BALANCE SHEET	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec (RMB mn)						
Current assets	**21,044**	**33,728**	**42,804**	**59,089**	**61,406**	**54,058**
Cash & equivalents	1,851	13,207	10,566	22,420	21,319	11,738
Account receivables	12,362	19,088	27,007	31,433	34,818	37,015
Inventories	79	131	222	228	260	297
Other current assets	6,751	1,302	5,009	5,009	5,009	5,009
PP&E	67,030	87,864	138,354	148,747	161,959	176,892
Intangibles	1,871	1,738	5,139	4,898	4,658	4,417
Other non-current assets	52,632	95,520	75,830	77,019	77,919	78,819
Total assets	**142,576**	**218,850**	**262,127**	**289,754**	**305,942**	**314,186**
Current liabilities	**30,244**	**38,393**	**47,155**	**45,049**	**44,536**	**43,438**
Short-term borrowings	7,821	5,524	4,340	4,340	4,340	4,340
Account payables	12,508	21,874	24,916	22,811	22,298	21,199
Other current liabilities	9,915	10,995	17,899	17,899	17,899	17,899
Non-current liabilities	**65,897**	**102,390**	**127,013**	**147,013**	**152,013**	**147,013**
Long-term borrowings	52,698	83,677	99,456	119,456	124,456	119,456
Other non-current liabilities	13,198	18,713	27,557	27,557	27,557	27,557
Total liabilities	**96,141**	**140,783**	**174,168**	**192,062**	**196,549**	**190,451**
Share capital	29,781	52,429	52,221	52,221	52,221	52,221
Retained earnings	12,002	17,661	189	9,189	20,004	33,260
Other reserves	130	90	24,804	24,804	24,804	24,804
Total shareholders equity	**41,913**	**70,180**	**77,051**	**86,052**	**96,866**	**110,122**
Minority interest	4,522	7,887	10,908	11,640	12,527	13,613
Total equity and liabilities	**142,576**	**218,850**	**262,127**	**289,754**	**305,942**	**314,186**

CASH FLOW	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec (RMB mn)						
Operating						
Profit before taxation	**3,611**	**5,642**	**7,155**	**9,716**	**11,786**	**14,435**
Depreciation & amortization	3,988	5,190	7,877	9,938	10,864	12,174
Change in working capital	(662)	(3,941)	(3,249)	(6,537)	(3,931)	(3,332)
Others	2,040	1,926	5,088	(457)	(13)	187
Net cash from operations	**8,976**	**8,818**	**16,871**	**12,660**	**18,706**	**23,464**
Investing						
Capital expenditure	(25,456)	(29,906)	(27,731)	(20,090)	(23,835)	(26,866)
Acquisition of subsidiaries/ investments	(1,928)	(2,251)	(1,608)	0	0	0
Others	(687)	(2,740)	(452)	0	0	0
Net cash from investing	**(28,072)**	**(34,897)**	**(29,790)**	**(20,090)**	**(23,835)**	**(26,866)**
Financing						
Dividend paid	(2,610)	(4,973)	(4,922)	(716)	(972)	(1,179)
Net borrowings	22,330	28,682	14,595	20,000	5,000	(5,000)
Others	(2,879)	13,537	600	0	0	0
Net cash from financing	**16,841**	**37,246**	**10,273**	**19,284**	**4,028**	**(6,179)**
Net change in cash						
Exchange difference	0	4	5	0	0	0
Others	(2,255)	11,166	(2,646)	11,854	(1,101)	(9,581)
Cash at the end of the year	**(2,255)**	**11,170**	**(2,642)**	**11,854**	**(1,101)**	**(9,581)**

GROWTH	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
Revenue	26.3%	36.8%	53.8%	20.5%	16.6%	15.4%
Gross profit	28.4%	38.6%	53.8%	20.7%	18.4%	16.3%
Operating profit	28.0%	34.8%	56.0%	19.6%	18.8%	17.7%
EBITDA	26.3%	32.9%	54.3%	22.1%	15.0%	15.5%
EBIT	28.0%	34.8%	56.0%	19.6%	18.8%	17.7%
Net profit	27.2%	56.3%	26.8%	35.8%	21.3%	22.5%

PROFITABILITY	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
Gross profit margin	57.7%	58.4%	58.4%	58.5%	59.4%	59.9%
Operating margin	51.8%	51.0%	51.8%	51.4%	52.4%	53.4%
EBITDA margin	87.1%	84.6%	84.9%	86.1%	84.9%	84.9%
Return on equity (ROE)	9.0%	10.1%	9.7%	11.9%	12.9%	13.9%

GEARING/LIQUIDITY/ACTIVITIES	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
Current ratio (x)	0.7	0.9	0.9	1.3	1.4	1.2
Receivable turnover days	398.8	449.9	414.0	400.0	380.0	350.0
Inventory turnover days	6.0	7.4	8.2	7.0	7.0	7.0
Payable turnover days	953.6	1,239.7	918.1	700.0	600.0	500.0

VALUATION	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						

Source: Company data, CMBIGM estimates. Note: The calculation of net cash includes financial assets.

Disclosures & Disclaimers

Analyst Certification

The research analyst who is primary responsible for the content of this research report, in whole or in part, certifies that with respect to the securities or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about the subject securities or issuer; and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific views expressed by that analyst in this report.

Besides, the analyst confirms that neither the analyst nor his/her associates (as defined in the code of conduct issued by The Hong Kong Securities and Futures Commission) (1) have dealt in or traded in the stock(s) covered in this research report within 30 calendar days prior to the date of issue of this report; (2) will deal in or trade in the stock(s) covered in this research report 3 business days after the date of issue of this report; (3) serve as an officer of any of the Hong Kong listed companies covered in this report; and (4) have any financial interests in the Hong Kong listed companies covered in this report.

CMBIGM Ratings

BUY	: Stock with potential return of over 15% over next 12 months
HOLD	: Stock with potential return of +15% to -10% over next 12 months
SELL	: Stock with potential loss of over 10% over next 12 months
NOT RATED	: Stock is not rated by CMBIGM
OUTPERFORM	: Industry expected to outperform the relevant broad market benchmark over next 12 months
MARKET-PERFORM	: Industry expected to perform in-line with the relevant broad market benchmark over next 12 months
UNDERPERFORM	: Industry expected to underperform the relevant broad market benchmark over next 12 months

CMB International Global Markets Limited

Address: 45/F, Champion Tower, 3 Garden Road, Hong Kong, Tel: (852) 3900 0888 Fax: (852) 3900 0800

CMB International Global Markets Limited ("CMBIGM") is a wholly owned subsidiary of CMB International Capital Corporation Limited (a wholly owned subsidiary of China Merchants Bank)

Important Disclosures

There are risks involved in transacting in any securities. The information contained in this report may not be suitable for the purposes of all investors. CMBIGM does not provide individually tailored investment advice. This report has been prepared without regard to the individual investment objectives, financial position or special requirements. Past performance has no indication of future performance, and actual events may differ materially from that which is contained in the report. The value of, and returns from, any investments are uncertain and are not guaranteed and may fluctuate as a result of their dependence on the performance of underlying assets or other variable market factors. CMBIGM recommends that investors should independently evaluate particular investments and strategies, and encourages investors to consult with a professional financial advisor in order to make their own investment decisions.

This report or any information contained herein, have been prepared by the CMBIGM, solely for the purpose of supplying information to the clients of CMBIGM or its affiliate(s) to whom it is distributed. This report is not and should not be construed as an offer or solicitation to buy or sell any security or any interest in securities or enter into any transaction. Neither CMBIGM nor any of its affiliates, shareholders, agents, consultants, directors, officers or employees shall be liable for any loss, damage or expense whatsoever, whether direct or consequential, incurred in relying on the information contained in this report. Anyone making use of the information contained in this report does so entirely at their own risk.

The information and contents contained in this report are based on the analyses and interpretations of information believed to be publicly available and reliable. CMBIGM has exerted every effort in its capacity to ensure, but not to guarantee, their accuracy, completeness, timeliness or correctness. CMBIGM provides the information, advices and forecasts on an "AS IS" basis. The information and contents are subject to change without notice. CMBIGM may issue other publications having information and/ or conclusions different from this report. These publications reflect different assumption, point-of-view and analytical methods when compiling. CMBIGM may make investment decisions or take proprietary positions that are inconsistent with the recommendations or views in this report.

CMBIGM may have a position, make markets or act as principal or engage in transactions in securities of companies referred to in this report for itself and/or on behalf of its clients from time to time. Investors should assume that CMBIGM does or seeks to have investment banking or other business relationships with the companies in this report. As a result, recipients should be aware that CMBIGM may have a conflict of interest that could affect the objectivity of this report and CMBIS will not assume any responsibility in respect thereof. This report is for the use of intended recipients only and this publication, may not be reproduced, reprinted, sold, redistributed or published in whole or in part for any purpose without prior written consent of CMBIGM.

Additional information on recommended securities is available upon request.

For recipients of this document in the United Kingdom

This report has been provided only to persons (I)falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended from time to time)("The Order") or (II) are persons falling within Article 49(2) (a) to (d) ("High Net Worth Companies, Unincorporated Associations, etc.,) of the Order, and may not be provided to any other person without the prior written consent of CMBIGM.

For recipients of this document in the United States

CMBIGM is not a registered broker-dealer in the United States. As a result, CMBIGM is not subject to U.S. rules regarding the preparation of research reports and the independence of research analysts. The research analyst who is primary responsible for the content of this research report is not registered or qualified as a research analyst with the Financial Industry Regulatory Authority ("FINRA"). The analyst is not subject to applicable restrictions under FINRA Rules intended to ensure that the analyst is not affected by potential conflicts of interest that could bear upon the reliability of the research report. This report is intended for distribution in the United States solely to "major US institutional investors", as defined in Rule 15a-6 under the US, Securities Exchange Act of 1934, as amended, and may not be furnished to any other person in the United States. Each major US institutional investor that receives a copy of this report by its acceptance hereof represents and agrees that it shall not distribute or provide this report to any other person. Any U.S. recipient of this report wishing to effect any transaction to buy or sell securities based on the information provided in this report should do so only through a U.S.-registered broker-dealer.

For recipients of this document in Singapore

This report is distributed in Singapore by CMBI (Singapore) Pte. Limited (CMBISG) (Company Regn. No. 201731928D), an Exempt Financial Adviser as defined in the Financial Advisers Act (Cap. 110) of Singapore and regulated by the Monetary Authority of Singapore. CMBISG may distribute reports produced by its respective foreign entities, affiliates or other foreign research houses pursuant to an arrangement under Regulation 32C of the Financial Advisers Regulations. Where the report is distributed in Singapore to a person who is not an Accredited Investor, Expert Investor or an Institutional Investor, as defined in the Securities and Futures Act (Cap. 289) of Singapore, CMBISG accepts legal responsibility for the contents of the report to such persons only to the extent required by law. Singapore recipients should contact CMBISG at +65 6350 4400 for matters arising from, or in connection with the report.