

Sungrow Power Supply (300274 CH/Buy/Initiate)

Global leader in solar PV inverters

Yongdai Park yongdai.park@miraeasset.com

Sungrow Power Supply (300274 CH)

Global leader in solar PV inverters

Rating	Buy (Initiate)
Target price	CNY103.0
Current price (3/4/21)	CNY72.49
Country	China
Exchange	Shanghai
Expected return	42.1%

EPS growth (21F, %)	59.2
P/E (21F, x)	35.2
Market P/E (21F, x)	40.4
Dividend yield (%)	0.2
Market cap (CNYbn)	105.6
Market cap (Wtr)	18.53
Shares outstanding (mn)	786.6
52-week low (CNY)	9.39
52-week high (CNY)	122.18

(%)	1M	6M	12M
Absolute	-37.1	231.2	480.4
Relative	-29.5	217.3	349.7

Investment points

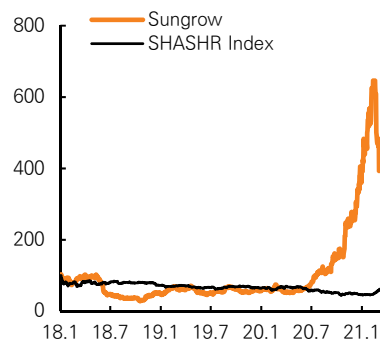
- Leading player in the global PV inverter market
 - In 2020, Sungrow Power Supply (Sungrow) overtook Huawei to become the no. 1 player in the global PV inverter market (24% M/S based on shipment volume).
- Beginning of the inverter replacement cycle
 - New solar PV capacity installations have expanded rapidly worldwide since 2015; we believe the inverter replacement cycle began last year.
- Growth potential of the ESS business
 - Sungrow is a leading player in China's energy storage system (ESS) market, which is expected to grow dramatically, driven by a rise in new installations related to renewable energy power generation.

Valuation

- We derived our target price of CNY103 by applying a P/E of 50x to our 2021F EPS
- Although Sungrow is the market leader, our target P/E reflects a 25% discount to the average multiple of global PV inverter peers to account for the "China discount."

Risk factors

- 1) Lower-than-expected global solar power demand; 2) US-China trade dispute



FY (Dec.)	2017	2018	2019	2020F	2021F	2022F
Revenue (CNYmn)	8,886	10,369	13,003	20,720	28,917	34,790
OP (CNYmn)	1,145	912	1,048	2,176	3,470	4,523
OP margin (%)	12.9	8.8	8.1	10.5	12.0	13.0
NP (CNYmn)	1,024	810	893	1,883	2,999	3,906
EPS (CNY)	0.72	0.58	0.63	1.29	2.06	2.68
ROE (%)	15.8	10.9	10.8	19.6	25.3	26.0
P/E (x)	25.9	15.5	16.7	56.3	35.2	27.0
P/B (x)	3.8	1.6	1.7	10.1	8.0	6.3

Source: Company data, Mirae Asset Daewoo Research

Global leader in solar PV inverters

Investment point 1: Leading player in the global PV inverter market

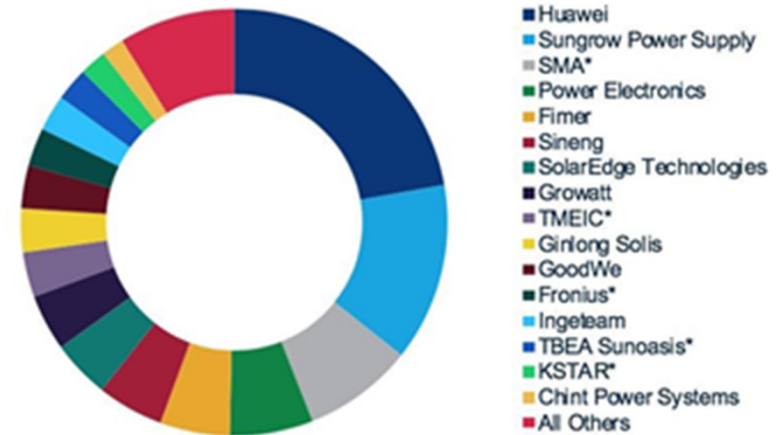
- In 2020, Sungrow overtook Huawei to become the no. 1 player in the global PV inverter market (M/S of 24% based on shipment volume).
- Management is targeting a global market share of 30% through overseas capacity expansions.
- We project that the global PV inverter market will expand at a 2020-25 CAGR of 15%.
- President Xi's pledge to reach carbon neutrality by 2060 should stimulate solar PV market growth in China, leading to a steady rise in inverter demand. And export opportunities should also increase on the back of robust global solar PV demand.
- Sungrow is rapidly extending its global reach, especially in the US and the EU. The revenue contribution of exports grew to 29% in 1H20.

Shifts in global PV inverter market rankings

	2016	2017	2018	2019
1	Huawei (24%)	Huawei (26%)	Huawei (22%)	Huawei
2	Sungrow (14%)	Sungrow (17%)	Sungrow (15%)	Sungrow (14%)
3	SMA (10%)	SMA (9%)	SMA (8%)	SMA
4	ABB (6%)	ABB (6%)	Power Elec. (6%)	Power Elec.
5	TMEIC (6%)	Sineng (5%)	ABB (5%)	Fimer
6	Sineng	TBEA SunOasis	Sineng	Sineng
7	TBEA SunOasis	Power Elec.	Goodwe	SolarEdge
8	Power Elec.	TMEIC	SolarEdge	Growatt
9	Kstar	Schneider	Ingeteam	TMEIC
10	Schneider	SolarEdge	TBEA SunOasis	Ginlong Solis

Source: Wood Mackenzie, Mirae Asset Daewoo Research

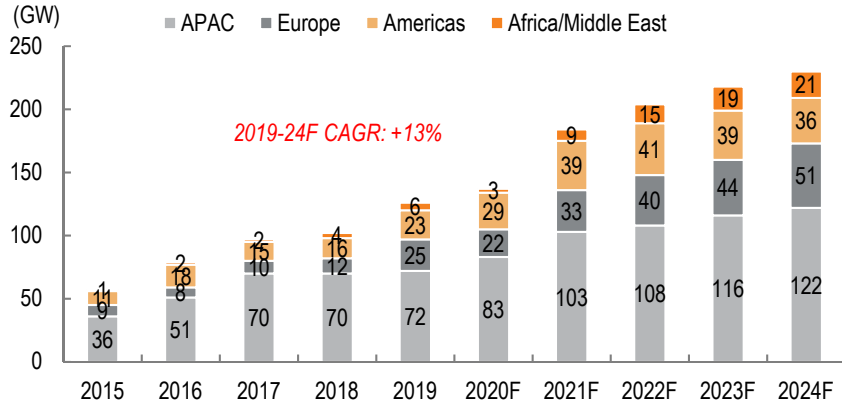
Global PV inverter M/S breakdown (2019)



Source: Wood Mackenzie, Mirae Asset Daewoo Research

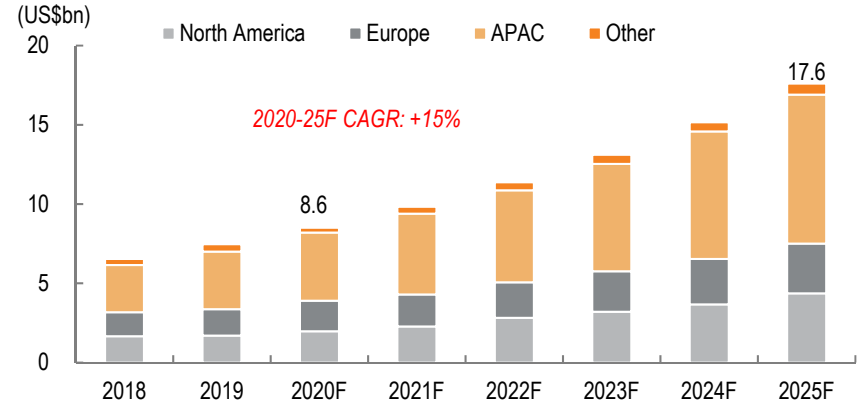
Global leader in solar PV inverters

Newly installed global solar PV capacity



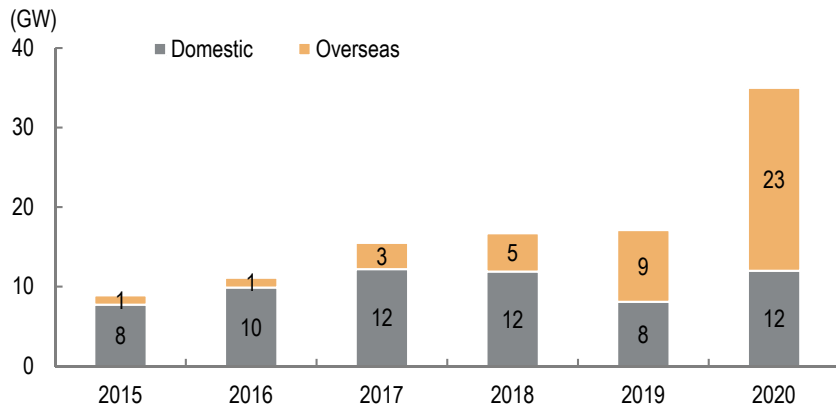
Source: SolarEdge, IHS, Mirae Asset Daewoo Research

Global PV inverter market size



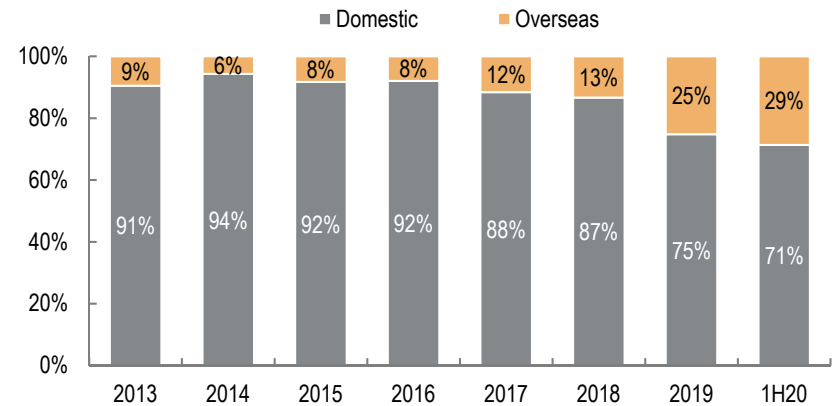
Source: Industry data, MarketsandMarkets, Mirae Asset Daewoo Research

Sungrow: PV inverter shipment volume



Source: Company data, Mirae Asset Daewoo Research

Sungrow: Domestic vs. overseas revenue



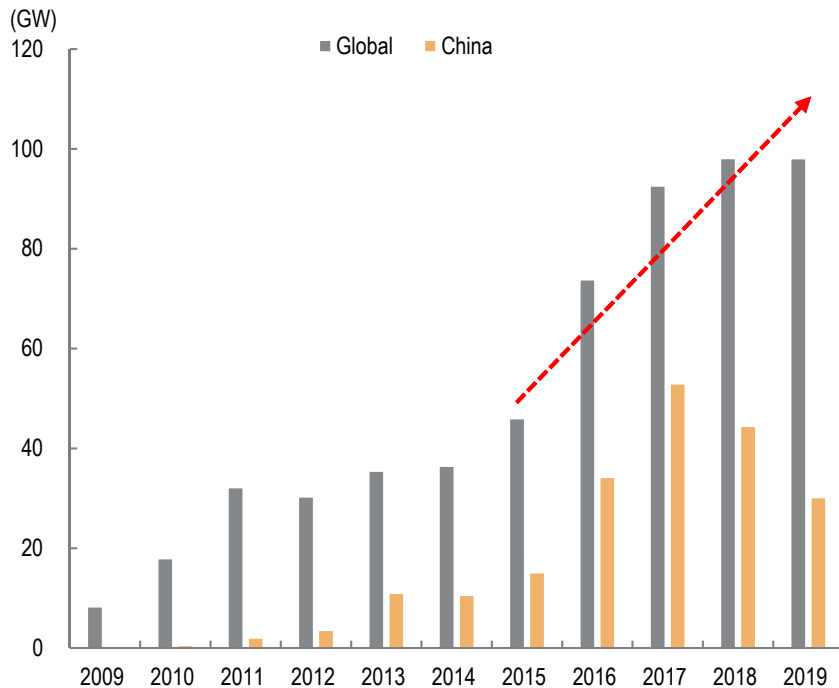
Source: Company data, Mirae Asset Daewoo Research

Global leader in solar PV inverters

Investment point 2: Beginning of inverter replacement cycle

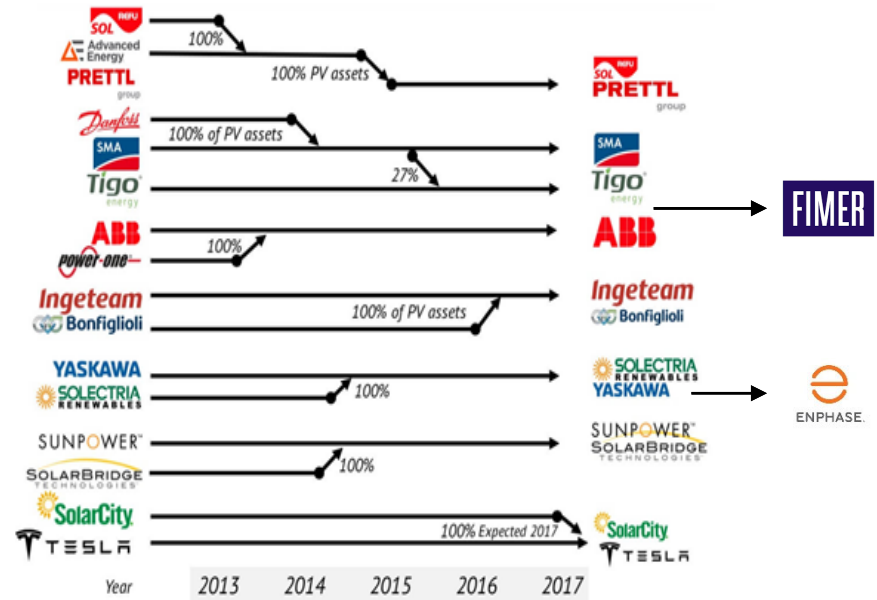
- Sungrow stands to benefit from not only new demand but also growing replacement demand.
- While a solar farm typically has a life span of 20-25 years, solar inverters are usually warranted for five to 15 years.
- New solar PV capacity installations, both in China and globally, have expanded rapidly since 2015. Given this, we believe the inverter replacement cycle began last year (with some warranty periods beginning to expire).
- It should also be noted that the global PV inverter market is undergoing consolidation. Accordingly, large, well-established players are expanding their market shares by forcing out or taking over less competitive players.

Newly installed solar PV capacity (2009-20): Global vs. China



Source: IRENA, Mirae Asset Daewoo Research

Major M&As in the global PV inverter market



Source: www.pointthegap.com, Mirae Asset Daewoo Research

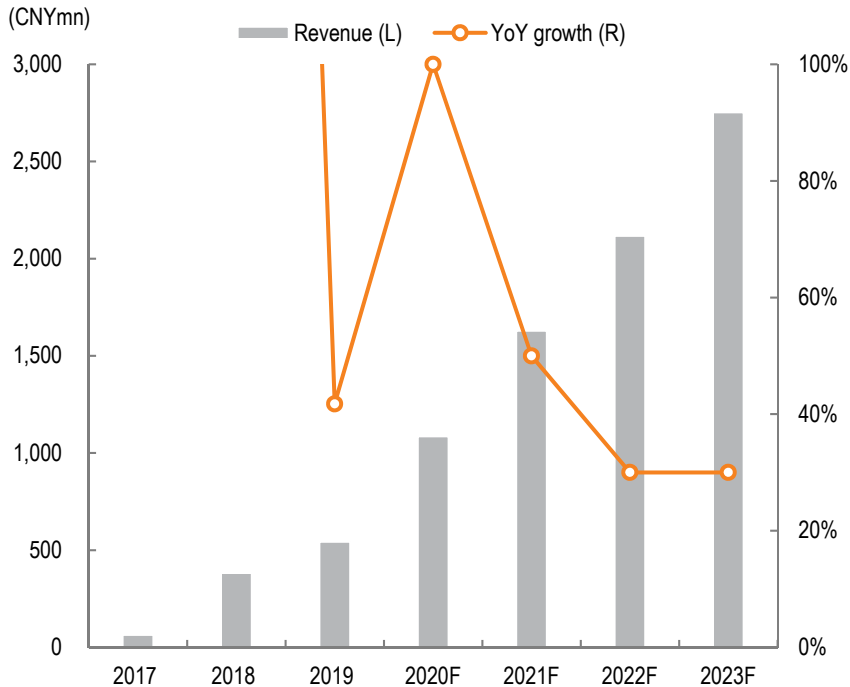
Global leader in solar PV inverters

Investment point 3: Growth potential of ESS business

- We forecast revenue from ESS to expand at a three-year CAGR of 36%.
- For 2020, management guided ESS revenue of CNY1bn (+100% YoY).
- We expect ESS demand to grow steadily, driven by a rise in new ESS installations related to renewable energy power generation.
- The Chinese government is committed to fostering the ESS sector.* Some grid companies are calling for ESS to be introduced into new solar PV/wind power generation projects.
- Sungrow plans to collaborate with lithium battery manufacturers and export ESS through its existing inverter customer networks. As the market grows, we believe Sungrow is poised to benefit from its early lead in ESS.

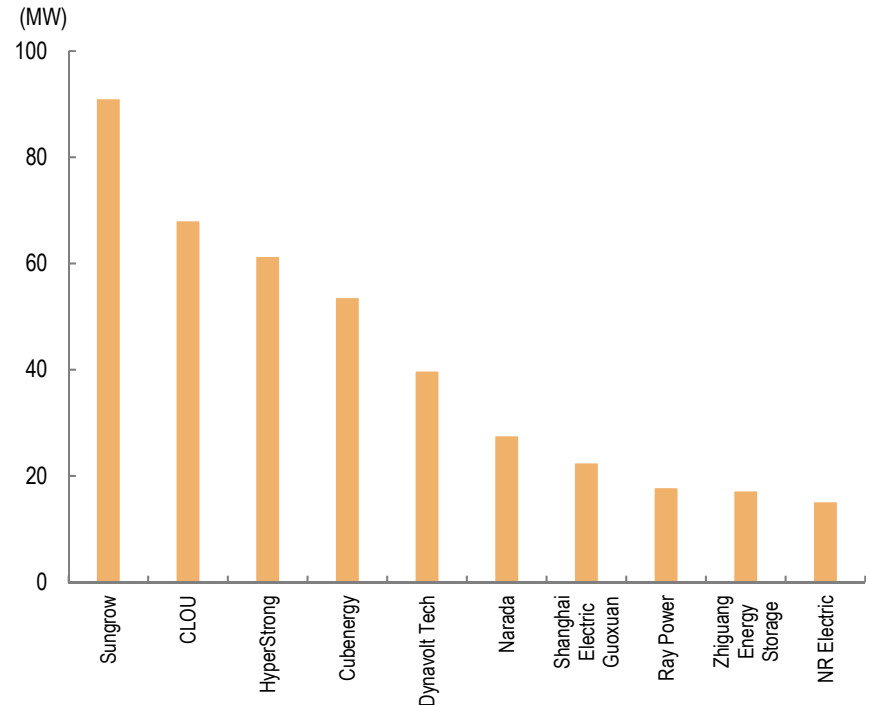
* "Guiding Opinions on Integration of Wind-Solar-Hydro-Thermal-Storage and Integration of Generation-Grid-Load-Storage"

Sungrow: ESS revenue growth



Source: Company data, Mirae Asset Daewoo Research

Chinese ESS market rankings based on newly installed capacity (2019)



Source: CNESA Global Energy Storage Database, Mirae Asset Daewoo Research

Global leader in solar PV inverters

Earnings and forecasts

(CNYmn)	2017	2018	2019	2020F	2021F	2022F
Revenue	8,886	10,369	13,003	20,720	28,917	34,790
Solar PV	8,598	9,650	11,855	18,968	26,556	31,867
ESS	64	383	543	1,086	1,629	2,118
Other	224	336	605	666	732	805
COGS	(6,464)	(7,791)	(9,907)	(15,436)	(21,109)	(25,049)
GP	2,422	2,578	3,096	5,284	7,808	9,741
SG&A	(1,157)	(1,028)	(1,314)	(2,072)	(2,892)	(3,479)
R&D	(192)	(482)	(636)	(1,036)	(1,446)	(1,740)
Other operating income/expenses	72	(155)	(98)	0	0	0
EBIT	1,145	912	1,048	2,176	3,470	4,523
Non-operating income/expenses	16	10	(16)	10	10	10
PBT	1,162	923	1,032	2,186	3,480	4,533
Tax	(147)	(105)	(120)	(262)	(418)	(544)
PAT	1,014	817	912	1,923	3,062	3,989
Minority interests	(10)	8	19	40	64	83
NP	1,024	810	893	1,883	2,999	3,906
Revenue (YoY)	48%	17%	25%	59%	40%	20%
GP (YoY)	64%	6%	20%	71%	48%	25%
PBT (YoY)	74%	-21%	12%	112%	59%	30%
NP (YoY)	85%	-21%	10%	111%	59%	30%
Gross margin	27%	25%	24%	26%	27%	28%
SG&A/revenue	13%	10%	10%	10%	10%	10%
R&D/revenue	2%	5%	5%	5%	5%	5%
Net margin	12%	8%	7%	9%	10%	11%

Source: Company data, Mirae Asset Daewoo Research

Global leader in solar PV inverters

Valuation

- At a 2021F P/E of 35x and 2022F P/E of 27x, Sungrow is trading well above the five-year average (18x) and at a premium to global solar PV equipment suppliers (29x and 21x, respectively).
- After rising to CNY122 amid a broad rally in the renewable energy sector, Sungrow's stock is now undergoing a correction.
- We derived our target price of CNY103 by applying a fair P/E of 50x (25% discount to 2021F global PV inverter peer average of 65.7x).
- Although Sungrow is the no. 1 player in the global PV inverter market, our target multiple reflects a discount to the global peer average to account for the "China discount."

Sungrow: P/E valuation table

(CNYmn)	2017	2018	2019	2020F	2021F	2022F
Net profit	1,024	810	893	1,883	2,999	3,906
YoY	85%	-21%	10%	111%	59%	30%
EPS	0.72	0.58	0.63	1.29	2.06	2.68
YoY	85%	-21%	10%	105%	59%	30%
P/E (x)	25.9	15.5	16.7	56.3	35.2	27.0
12MF EPS (CNY)	2.06					
Target P/E (x)	50					
Target price (CNY)	103					

Source: Company data, Mirae Asset Daewoo Research

Global leader in solar PV inverters

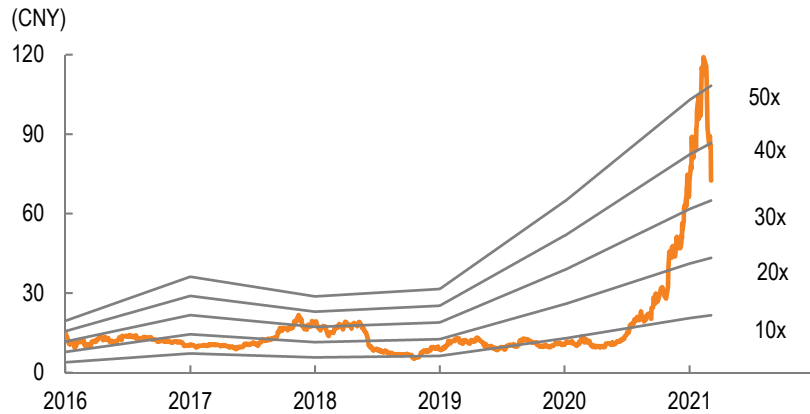
Peer valuation table

Company	Ticker	Price (local currency)	Market cap (US\$mn)	P/E (x)		P/B (x)		ROE (%)		EPS growth (%)	
				21F	22F	21F	22F	21F	22F	21F	22F
Sungrow	300274 CH	72.5	16,324	35.2	27.0	8.0	6.3	25.2	26.0	59.2	30.2
Enphase Energy	ENPH US	149.9	19,338	76.0	56.9	23.9	17.1	41.6	43.3	33.5	42.1
SolarEdge	SEDG US	256.3	13,218	53.9	42.5	9.9	8.2	20.9	21.9	26.7	28.7
SMA Solar Technology	S92 GR	48.7	2,022	67.1	55.7	3.9	3.4	6.6	6.3	20.4	41.9
Avg. of PV inverter players				65.7	51.7	12.5	9.6	23.0	23.8	26.9	37.5
LONGi Green Energy Technology	601012 CH	98.1	57,189	44.1	33.1	10.5	8.2	24.6	25.3	33.2	22.6
Tongwei	600438 CH	38.8	26,988	38.6	30.8	6.9	5.8	19.6	19.8	25.0	25.2
Xinyi Solar	968 HK	13.1	14,918	16.9	15.3	3.8	3.3	24.6	23.7	10.8	17.7
Tianjin Zhonghuan Semi.	002129 CH	26.6	12,479	58.0	38.8	4.7	4.2	8.1	10.8	49.5	31.2
Flat Glass Group	601865 CH	30.8	9,417	40.4	25.3	9.0	7.0	24.8	28.2	60.0	26.8
Daqo New Energy	DQ US	110.3	6,883	18.0	16.4	2.2	2.0	13.0	13.1	9.7	9.5
Wacker Chemie	WCH GY	44,700.0	6,523	13.1	11.7	1.1	1.0	8.8	9.0	11.6	(15.6)
Hanwha Solutions	009830 KS	86.1	5,985	42.0	18.2	8.4	4.6	22.5	31.6	130.6	14.7
Canadian Solar	CSIQ US	127,000.0	2,670	22.3	16.9	1.2	1.1	5.3	6.7	32.3	34.2
OCI	010060 KS	41.5	2,448	25.2	20.8	1.5	1.3	6.8	9.1	21.1	38.0
JinkoSolar	JKS US	14.1	1,969	19.4	10.5	1.5	1.3	7.3	12.1	85.3	36.6
Risen Energy	300118 CH	40.9	1,914	13.1	9.6	1.0	0.9	8.6	10.9	37.1	1.2
Avg. of solar PV equipment players				29.3	20.6	4.3	3.4	14.5	16.7	42.2	20.2
CATL	300750 CH	325.6	117,219	146.1	98.9	13.5	12.0	10.1	12.8	47.6	32.6
NARI Technology	600406 CH	28.4	20,316	25.3	21.4	3.8	3.4	15.2	16.0	18.3	17.2
Shanghai Putailai	603659 CH	90.3	6,925	53.0	38.2	7.1	6.1	16.6	18.0	39.0	29.2
Hongfa Technology	600885 CH	51.1	5,887	36.6	29.9	5.9	5.1	16.5	17.3	22.5	24.0
Avg. of other notable players				65.3	47.1	7.6	6.6	14.6	16.0	31.9	25.7

Source: Bloomberg, Mirae Asset Daewoo Research

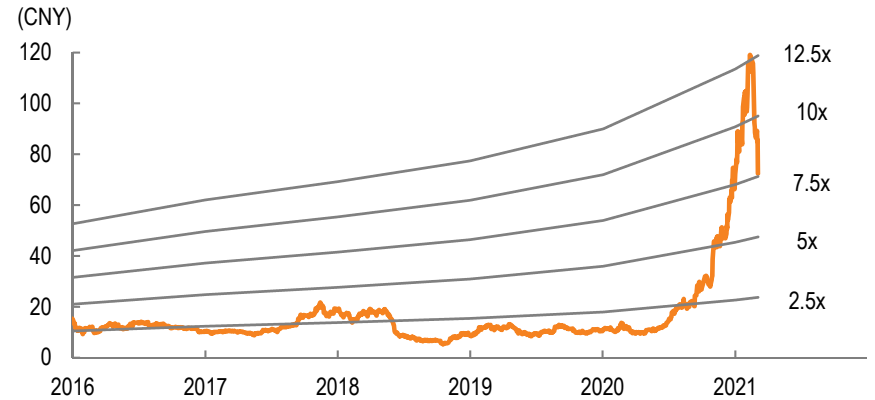
Global leader in solar PV inverters

Sungrow: 12-month forward P/E band chart



Source: Bloomberg, Mirae Asset Daewoo Research

Sungrow: 12-month forward P/B band chart



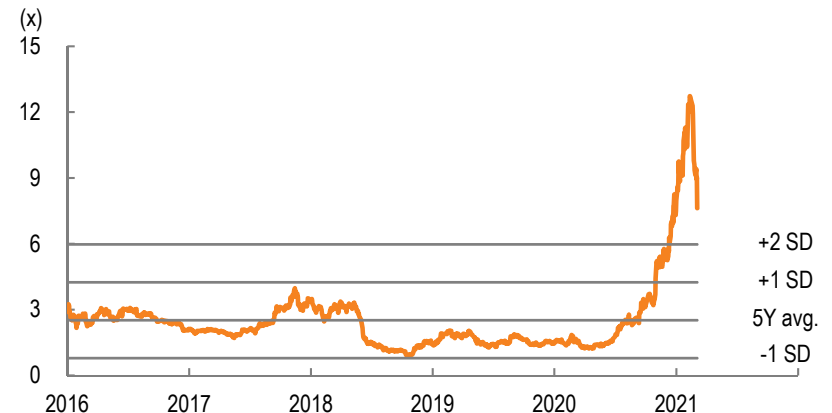
Source: Bloomberg, Mirae Asset Daewoo Research

Sungrow: 12-month forward P/E ± 2 SD



Source: Bloomberg, Mirae Asset Daewoo Research

Sungrow: 12-month forward P/B ± 2 SD



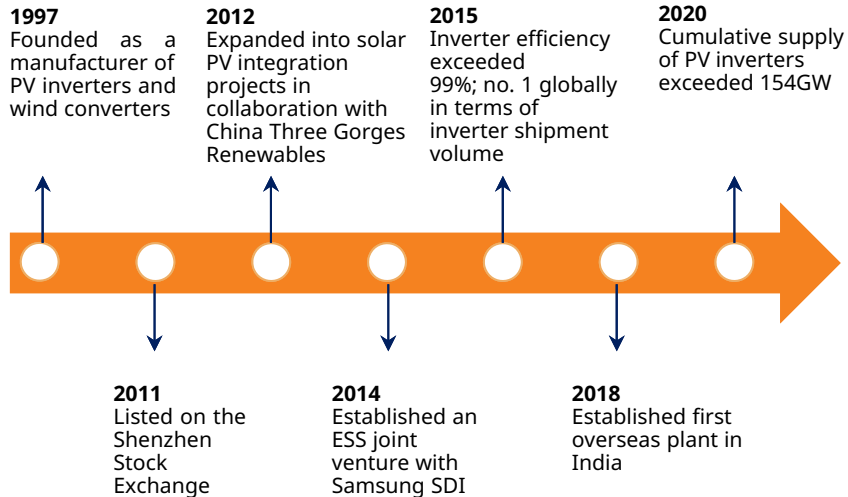
Source: Bloomberg, Mirae Asset Daewoo Research

Global leader in solar PV inverters

Company overview

- Sungrow is one of the world's most trusted manufacturers of PV inverters.
- Founded in 1997 by Cao Renxian, Sungrow has supplied solar PV inverters with cumulative capacity of over 154GW to about 150 countries.
- Sungrow's businesses include PV inverters (commercial, residential, and utility-scale), ESS, and floating solar PV.
- Sungrow has over 1,800 employees, and its in-house test center is certified by UL, CSA, and TÜV Rheinland.

Sungrow: Company history



Source: BP, Mirae Asset Daewoo Research

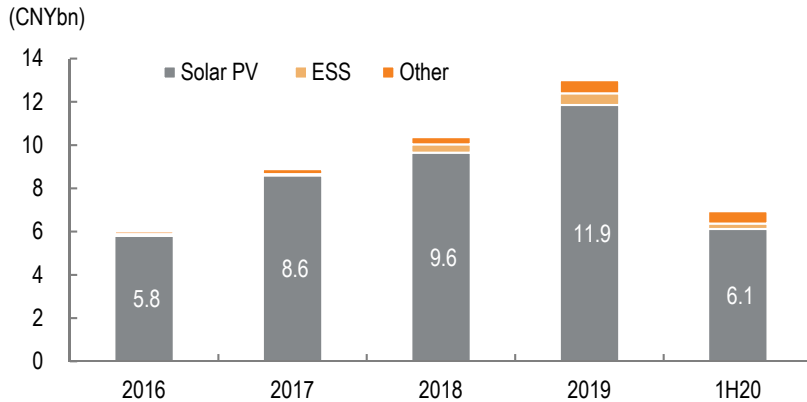
Cao Renxian: Professor turned CEO



Source: Tsinghua University, Mirae Asset Daewoo Research

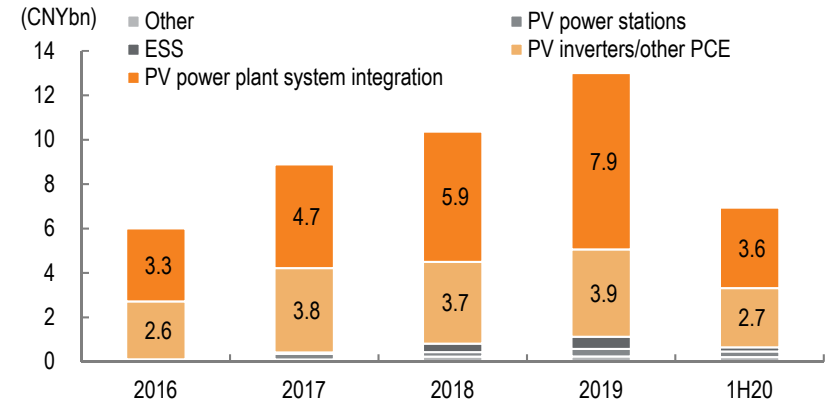
Global leader in solar PV inverters

Sungrow: Revenue by business



Source: Company data, Mirae Asset Daewoo Research

Sungrow: Revenue by product



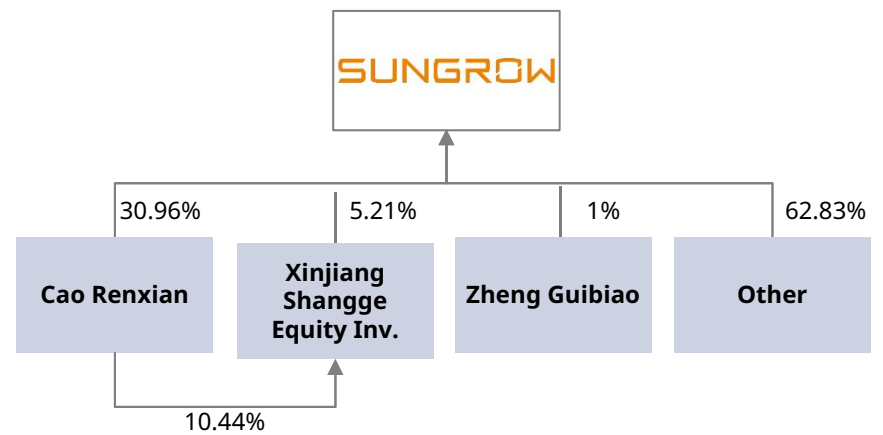
Source: Company data, Mirae Asset Daewoo Research

Sungrow: Production capacity

	2018	2019	2020F	2021F	2022F	2023F
PV inverters	18.5	21.5	23	50.5	71.5	95
Industrial Park I	18	20	20	30	40	50
Industrial Park II				10	20	30
Indian factory	0.5	1.5	3	10	10	10
SE Asia factory				0.5	1.5	5
ESS	3	3	5	10	15	20
Wind converters	7	8	10	15	20	25
Total	28.5	32.5	38.0	75.5	106.5	140.0

Source: Company data, Mirae Asset Daewoo Research

Sungrow: Ownership structure



Source: Company data, Mirae Asset Daewoo Research

Financial data

Income statement (summarized)

	2019	2020F	2021F	2022F
Revenue	13,003	20,720	28,917	34,790
Cost of revenue	-9,907	-15,436	-21,109	-25,049
GP	3,096	5,284	7,808	9,741
Operating expenses	-2,049	-3,108	-4,338	-5,219
OP	1,048	2,176	3,470	4,523
EBITDA	1,268	2,417	3,736	4,815
Net non-operating income	-16	10	10	10
PBT	1,032	2,186	3,480	4,533
Tax	-120	-262	-418	-544
PAT	912	1,923	3,062	3,989
Minority interests	19	40	64	83
NP	893	1,883	2,999	3,906

Cash flow statement (summarized)

	2019	2020F	2021F	2022F
NP	893	1,883	2,999	3,906
Depreciation & amortization	220	242	266	293
Non-cash items	271	271	271	271
Chg. in working capital	977	-823	-2,387	-2,535
Operating cash flow	2,360	1,573	1,149	1,935
Capex	-697	-700	-700	-700
Other	-902	0	0	0
Cash from investing activities	-1,599	-700	-700	-700
Dividends	-92	-188	-300	-391
Debt raised	132	250	250	250
Equity raised	40	0	0	0
Cash from financing activities	94	62	-50	-141
Net chg. in cash	864	935	399	1,094
Beginning cash	3,176	4,040	4,975	5,374
Ending cash	4,040	4,975	5,374	6,468

Source: Company data, Mirae Asset Daewoo Research

Balance sheet (summarized)

	2019	2020F	2021F	2022F
Current assets	18,429	26,242	33,125	40,732
Cash & equivalents	4,040	4,975	5,374	6,468
Accounts & notes receivable	8,156	11,614	14,660	18,027
Inventories	3,339	5,900	6,994	8,519
Non-current assets	4,390	6,251	7,890	9,702
PP&E	3,044	4,870	6,474	8,248
LT investments & receivables	693	727	764	802
Total assets	22,819	32,493	41,015	50,435
Current liabilities	12,193	19,182	23,679	28,751
Payables & accruals	6,634	13,223	17,280	21,869
ST bank & other borrowings	3,997	4,396	4,836	5,319
Non-current liabilities	1,871	2,829	4,106	4,872
LT bank & other borrowings	1,596	2,554	3,830	4,597
Total liabilities	14,064	22,011	27,784	33,623
Shareholders' equity	8,755	10,481	13,231	16,812

Key metrics (summarized)

	2019	2020F	2021F	2022F
P/E (x)	16.7	56.3	35.2	27.0
P/B (x)	1.7	10.1	8.0	6.3
EV/EBITDA (x)	13.5	44.5	29.2	22.7
EPS (CNY)	0.63	1.29	2.06	2.68
BPS (CNY)	6.19	7.19	9.08	11.54
DPS (CNY)	0.07	0.13	0.21	0.27
Payout ratio	11.1%	10.0%	10.0%	10.0%
Dividend yield	0.1%	0.2%	0.2%	0.3%
ROAA	4.3%	6.8%	8.2%	8.5%
ROAE	10.8%	19.6%	25.3%	26.0%
Current ratio (x)	1.5	1.4	1.4	1.4
Quick ratio (x)	1.2	1.1	1.1	1.1
Net debt/equity	17.7%	18.8%	24.9%	20.5%
Net debt/EBITDA (x)	1.2	0.8	0.9	0.7

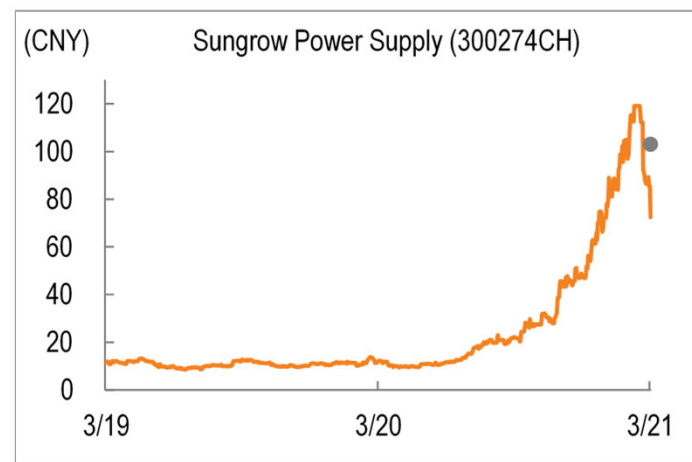
Source: Company data, Mirae Asset Daewoo Research

Appendix 1

Important disclosures and disclaimers

Two-year rating and TP history

Company	Date	Rating	TP (CNY)
Sungrow Power Supply (300274 CH)	03/05/21	Buy	103



Stock ratings

Buy	Expected 12-month performance: +20% or greater
Trading Buy	Expected 12-month performance: +10% to +20%
Hold	Expected 12-month performance: -10% to +10%
Sell	Expected 12-month performance: -10% or worse

Sector ratings

Overweight	Expected to outperform the market over 12 months
Neutral	Expected to perform in line with the market over 12 months
Underweight	Expected to underperform the market over 12 months

Rating and TP history: Share price (—), TP (■), Not Rated (■), Buy (▲), Trading Buy (■), Hold (●), Sell (◆)

* Our investment rating is a guide to the expected return of the stock over the next 12 months.

* Outside of the official ratings of Mirae Asset Daewoo Co., Ltd., analysts may call trading opportunities should technical or short-term material developments arise.

* The TP was determined by the research analyst through valuation methods discussed in this report, in part based on estimates of future earnings.

* TP achievement may be impeded by risks related to the subject securities and companies, as well as general market and economic conditions.

Compliance notice

Ratings distribution and investment banking services

	Buy	Trading Buy	Hold	Sell
Ratings distribution	78.43%	11.76%	8.50%	1.31%
Investment banking services	66.67%	22.22%	11.11%	0.00%

* Based on recommendations in the last 12 months (as of December 31, 2020)

Disclosures

As of the publication date, Mirae Asset Daewoo Co., Ltd. and/or its affiliates do not have any special interest with the subject company and do not own 1% or more of the subject company's shares outstanding.

Analyst certification

The research analysts who prepared this report (the "Analysts") are registered with the Korea Financial Investment Association and are subject to Korean securities regulations. They are neither registered as research analysts in any other jurisdiction nor subject to the laws or regulations thereof. Each Analyst responsible for the preparation of this report certifies that (i) all views expressed in this report accurately reflect the personal views of the Analyst about any and all of the issuers and securities named in this report and (ii) no part of the compensation of the Analyst was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report. Mirae Asset Daewoo Co., Ltd. ("Mirae Asset Daewoo") policy prohibits its Analysts and members of their households from owning securities of any company in the Analyst's area of coverage, and the Analysts do not serve as an officer, director, or advisory board member of the subject companies. Except as otherwise specified herein, the Analysts have not received any compensation or any other benefits from the subject companies in the past 12 months and have not been promised the same in connection with this report. Like all employees of Mirae Asset Daewoo, the Analysts receive compensation that is determined by overall firm profitability, which includes revenues from, among other business units, the institutional equities, investment banking, proprietary trading, and private client divisions. At the time of publication of this report, the Analysts do not know or have reason to know of any actual, material conflict of interest of the Analyst or Mirae Asset Daewoo except as otherwise stated herein.

Disclaimers

This report was prepared by Mirae Asset Daewoo, a broker-dealer registered in the Republic of Korea and a member of the Korea Exchange. Information and opinions contained herein have been compiled in good faith and from sources believed to be reliable, but such information has not been independently verified and Mirae Asset Daewoo makes no guarantee, representation or warranty, express or implied, as to the fairness, accuracy, completeness, or correctness of the information and opinions contained herein or of any translation into English from the Korean language. In case of an English translation of a report prepared in the Korean language, the original Korean language report may have been made available to investors in advance of this report.

The intended recipients of this report are sophisticated institutional investors who have substantial knowledge of the local business environment, its common practices, laws, and accounting principles, and no person whose receipt or use of this report would violate any laws or regulations or subject Mirae Asset Daewoo or any of its affiliates to registration or licensing requirements in any jurisdiction shall receive or make any use hereof.

This report is for general information purposes only and is not and shall not be construed as an offer or a solicitation of an offer to effect transactions in any securities or other financial instruments. The report does not constitute investment advice to any person, and such person shall not be treated as a client of Mirae Asset Daewoo by virtue of receiving this report. This report does not take into account the particular investment objectives, financial situations, or needs of individual clients. The report is not to be relied upon in substitution for the exercise of independent judgment. Information and opinions contained herein are as of the date hereof and are subject to change without notice. The price and value of the investments referred to in this report and the income from them may depreciate or appreciate, and investors may incur losses on investments. Past performance is not a guide to future performance. Future returns are not guaranteed, and a loss of original capital may occur. Mirae Asset Daewoo, its affiliates, and their directors, officers, employees, and agents do not accept any liability for any loss arising out of the use hereof.

Mirae Asset Daewoo may have issued other reports that are inconsistent with, and reach different conclusions from, the opinions presented in this report. The reports may reflect different assumptions, views, and analytical methods of the analysts who prepared them. Mirae Asset Daewoo may make investment decisions that are inconsistent with the opinions and views expressed in this research report. Mirae Asset Daewoo, its affiliates, and their directors, officers, employees, and agents may have long or short positions in any of the subject securities at any time and may make a purchase or sale, or offer to make a purchase or sale, of any such securities or other financial instruments from time to time in the open market or otherwise, in each case either as principals or agents. Mirae Asset Daewoo and its affiliates may have had, or may be expecting to enter into, business relationships with the subject companies to provide investment banking, market-making, or other financial services as are permitted under applicable laws and regulations.

No part of this document may be copied or reproduced in any manner or form or redistributed or published, in whole or in part, without the prior written consent of Mirae Asset Daewoo. For further information regarding company-specific information as it pertains to the representations and disclosures in this Appendix 1, please contact compliance@miraeasset.us.com or +1 (212) 407-1000.

Compliance notice

Distribution

United Kingdom: This report is being distributed by Mirae Asset Securities (UK) Ltd. in the United Kingdom only to (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the “Order”), and (ii) high net worth companies and other persons to whom it may lawfully be communicated, falling within Article 49(2)(A) to (E) of the Order (all such persons together being referred to as “Relevant Persons”). This report is directed only at Relevant Persons. Any person who is not a Relevant Person should not act or rely on this report or any of its contents.

United States: Mirae Asset Daewoo is not a registered broker-dealer in the United States and, therefore, is not subject to U.S. rules regarding the preparation of research reports and the independence of research analysts. This report is distributed in the U.S. by Mirae Asset Securities (USA) Inc., a member of FINRA/SIPC, to “major U.S. institutional investors” in reliance on the exemption from registration provided by Rule 15a-6(b)(4) under the U.S. Securities Exchange Act of 1934, as amended. All U.S. persons that receive this document by their acceptance hereof represent and warrant that they are a major U.S. institutional investor and have not received this report under any express or implied understanding that they will direct commission income to Mirae Asset Daewoo or its affiliates. Any U.S. recipient of this document wishing to effect a transaction in any securities discussed herein should contact and place orders with Mirae Asset Securities (USA) Inc. Mirae Asset Securities (USA) Inc. accepts responsibility for the contents of this report in the U.S., subject to the terms hereof, to the extent that it is delivered to a U.S. person other than a major U.S. institutional investor. Under no circumstances should any recipient of this research report effect any transaction to buy or sell securities or related financial instruments through Mirae Asset Daewoo. The securities described in this report may not have been registered under the U.S. Securities Act of 1933, as amended, and, in such case, may not be offered or sold in the U.S. or to U.S. persons absent registration or an applicable exemption from the registration requirements.

Hong Kong: This report is distributed in Hong Kong by Mirae Asset Securities (HK) Limited, which is regulated by the Hong Kong Securities and Futures Commission. The contents of this report have not been reviewed by any regulatory authority in Hong Kong. This report is for distribution only to professional investors within the meaning of Part I of Schedule 1 to the Securities and Futures Ordinance of Hong Kong (Cap. 571, Laws of Hong Kong) and any rules made thereunder and may not be redistributed in whole or in part in Hong Kong to any person.

All other jurisdictions: Customers in all other countries who wish to effect a transaction in any securities referenced in this report should contact Mirae Asset Daewoo or its affiliates only if distribution to or use by such customer of this report would not violate applicable laws and regulations and not subject Mirae Asset Daewoo and its affiliates to any registration or licensing requirement within such jurisdiction.

Mirae Asset Daewoo International Network

Mirae Asset Daewoo International Network

Mirae Asset Daewoo Co., Ltd. (Seoul)

One-Asia Equity Sales Team
Mirae Asset Center 1 Building
26 Eulji-ro 5-gil, Jung-gu, Seoul 04539
Korea

Tel: 82-2-3774-2124

Mirae Asset Securities (USA) Inc.

810 Seventh Avenue, 37th Floor
New York, NY 10019
USA

Tel: 1-212-407-1000

PT. Mirae Asset Sekuritas Indonesia

Equity Tower Building Lt. 50
Sudirman Central Business District
Jl. Jend. Sudirman, Kav. 52-53
Jakarta Selatan 12190
Indonesia

Tel: 62-21-515-3281

Mirae Asset Securities Mongolia UTSK LLC

#406, Blue Sky Tower, Peace Avenue 17
1 Khoroo, Sukhbaatar District
Ulaanbaatar 14240
Mongolia

Tel: 976-7011-0806

Shanghai Representative Office

38T31, 38F, Shanghai World Financial Center
100 Century Avenue, Pudong New Area
Shanghai 200120
China

Tel: 86-21-5013-6392

Mirae Asset Securities (HK) Ltd.

Units 8501, 8507-8508, 85/F
International Commerce Centre
1 Austin Road West
Kowloon
Hong Kong
Tel: 852-2845-6332

Mirae Asset Wealth Management (USA) Inc.

555 S. Flower Street, Suite 4410,
Los Angeles, California 90071
USA

Tel: 1-213-262-3807

Mirae Asset Securities (Singapore) Pte. Ltd.

6 Battery Road, #11-01
Singapore 049909
Republic of Singapore

Tel: 65-6671-9845

Mirae Asset Investment Advisory (Beijing) Co., Ltd

2401B, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District Beijing 100022
China

Tel: 86-10-6567-9699

Ho Chi Minh Representative Office

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3910-7715

Mirae Asset Securities (UK) Ltd.

41st Floor, Tower 42
25 Old Broad Street,
London EC2N 1HQ
United Kingdom

Tel: 44-20-7982-8000

Mirae Asset Wealth Management (Brazil) CCTVM

Rua Funchal, 418, 18th Floor, E-Tower Building
Vila Olimpia
Sao Paulo - SP
04551-060
Brazil
Tel: 55-11-2789-2100

Mirae Asset Securities (Vietnam) LLC

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3911-0633 (ext.110)

Beijing Representative Office

2401A, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District Beijing 100022
China

Tel: 86-10-6567-9699 (ext. 3300)

Mirae Asset Capital Markets (India) Private Limited

Unit No. 506, 5th Floor, Windsor Bldg., Off CST Road, Kalina,
Santacruz (East), Mumbai - 400098
India

Tel: 91-22-62661336
