

## 鹿山新材 Lushan New Materials (603051 CH)

### 专注高性能热熔胶粘结材料，光伏胶膜快速放量

Focusing on high-performance hot melt adhesive bonding materials, with fast growth of photovoltaic adhesive film

梁爽 Helen Liang

helen.s.liang@htsec.com

#### 热点速评 Flash Analysis

(Please see APPENDIX 1 for English summary)

- **公司是一家专注于绿色环保高性能的高分子热熔粘接材料研发、生产和销售的高新技术企业。**公司产品广泛应用于复合建材、能源管道、高阻隔包装、光伏新能源、平板显示等多个领域，为全球多个国家和地区的客户 提供粘接综合解决方案，是国内领先的高性能热熔粘接材料企业之一。
- **胶粘剂在下游行业应用广泛，主要包括汽车、能源、电子电器、建筑、包装、高铁、电力系统、脱硫环保、工程机械、水处理等领域。**根据中国胶粘剂和胶粘带工业协会及前瞻产业研究院统计，2012-2019 年我国胶粘剂产量年均增速 6.7%、胶粘剂销售额年均增速 3.0%。2019 年我国胶粘剂总产量 881.9 万吨，市场规模近 900 亿元。预计 2019-2025 年产量平均增速 7.4%，销售额平均增速 7.5%。
- **公司主营产品在行业中凭借可靠的产品质量和严格的技术指标，具备较强的竞争优势。**功能性聚烯烃热熔胶粒产品方面，多种产品已逐步实现进口替代，。热熔胶膜产品方面，公司太阳能电池封装胶膜已形成较为完善的产品系列，技术指标及品控水平已形成较强的市场竞争力，具备与龙头品牌竞争的产品综合实力，产品获得日本松下、比亚迪等知名客户的充分认可。
- **募投项目：**公司 IPO 募投功能性聚烯烃热熔胶粒产能 4 万吨/年、新增热塑型光学透明胶膜（TOCF）产能 150 万平方米/年。公司拟发行可转债募资 3.67 亿元用于 1.8 亿平方米/年太阳能电池封装胶膜扩产项目，项目总投资 4.58 亿元，本项目建设期拟定 2 年，将形成年产 9000 万平方米 POE 胶膜及 9000 万平方米白色 EVA 胶膜的产能规模。
- **风险提示：**光伏装机增速不及预期；原材料价格大幅波动；在建项目进展不及预期等。

公司专注粘结材料。公司成立于1998年，于2022年3月上市，是一家专注于绿色环保高性能的高分子热熔粘接材料研发、生产和销售的高新技术企业，产品广泛应用于复合建材、能源管道、高阻隔包装、光伏新能源、平板显示等多个领域。公司主要产品包括功能性胶膜，以及功能性聚烯烃热熔胶粒；其中，功能性胶膜主要包括太阳能电池封装胶膜（用于光伏组件等）、热塑性光学透明胶膜；功能性聚烯烃热熔胶粒主要包括复合建材热熔胶、油气管道防腐热熔胶、高阻隔包装热熔胶等。

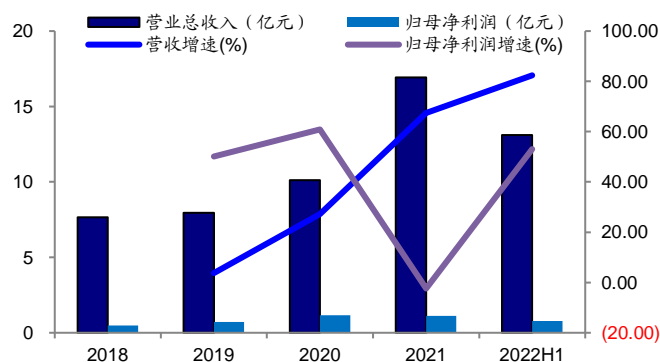
表1 公司主要产品情况

产品类别	产品	产品用途
功能性胶膜	太阳能电池封装胶膜	主要应用于太阳能光伏组件的封装
	热塑性光学透明胶膜	主要应用于各种尺寸的触控面板及显示模组的贴合封装
功能性聚烯烃热熔胶粒	复合建材热熔胶	主要应用于复合板材和复合管材当中
	油气管道防腐热熔胶	主要用于石油、天然气、成品油输送管道外层粘接与防护
	高阻隔包装热熔胶	主要用于高阻隔包装生产的多层共挤复合工艺环节，用于粘接通用树脂与高阻隔材料

资料来源：鹿山新材年报（2021），海通国际

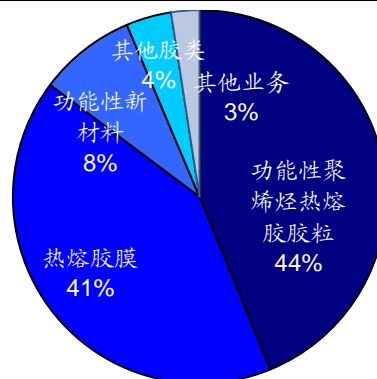
2021年公司营业收入16.93亿元，同比增长67.39%；归母净利润1.13亿元，同比减少2.40%。2021年公司营业收入中，功能性聚烯烃热熔胶7.42亿元，热熔胶膜7.01亿元，原材料1.42亿元，其他胶类0.66亿元，其他业务0.41亿元，占比分别为43.8%、41.4%、8.4%、3.9%和2.4%。

图1 2018-2021年营业收入和归母净利润及其增速



资料来源：Wind，海通国际

图2 2021年营业收入占比情况



资料来源：Wind，海通国际

胶膜及热熔胶粒产能整体较快增长。（1）热熔胶膜：2018-2022H1总产能从4370万平方米提升至7260万平方米，年均复合增长率18.44%。在建产能22000万平方米，公司预计2023年3月完工。（2）功能性聚烯烃热熔胶粒：2018-2021年产能从3.06万吨提升至7.05万吨，年均复合增长率32.07%。在建产能4万吨，公司预计2023年底完工。

表4 公司产品产能情况

项目名称	设计产能	在建产能	预计完工时间
功能性聚烯烃热熔胶粒	7.05万吨	4万吨	2023年12月
热熔胶膜	7260万平方米	22000万平方米	2023年3月

资料来源：鹿山新材年报（2021），海通国际

表 5 公司产品产能情况

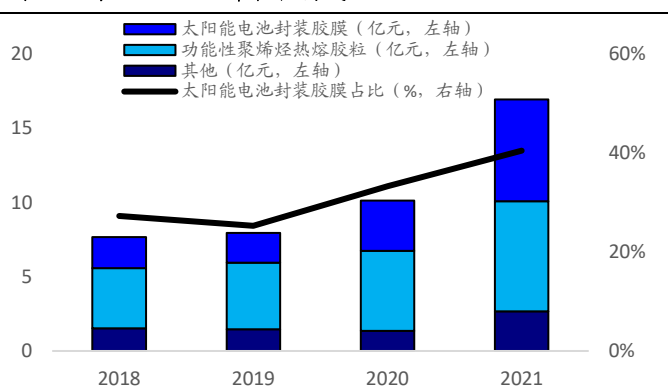
产品类别	项目	2018 年	2019 年	2020 年	2021 年	2022H1
功能性聚烯烃	产量 (万吨)	3.16	3.5	4.74	6.34	3.43
	销量 (万吨)	2.97	3.34	4.52	6.05	3.27
	产销率	93.99%	95.43%	95.36%	95.43%	95.34%
热熔胶粒	产量 (万平方米)	2921.48	2676.51	4025.39	5,660.98	5,923.58
	销量 (万平方米)	2914.8	2648.07	3875.64	5,633.59	5,701.34
	产销率	99.77%	98.94%	96.28%	99.52%	96.25%

资料来源：鹿山新材招股说明书，鹿山新材年报（2021），鹿山新材 2022 年经营数据，海通国际

太阳能电池封装胶膜业务快速发展。2020 年以来光伏行业高景气，公司大力发展太阳能电池封装胶膜业务，销量从 2018 年 2899.01 万平方米提升至 2021 年 3833.27 万平方米，年复合增长率 14.99%；营收从 2018 年 2.09 亿元（占比 27.27%）上升至 2021 年 6.85 亿元（占比 40.46%），毛利占比从 2018 年 19.59% 上升至 2021H1 的 30.08%。2022 年 1-6 月，公司太阳能电池封装胶膜产能利用率达 98.17%，已接近满产。

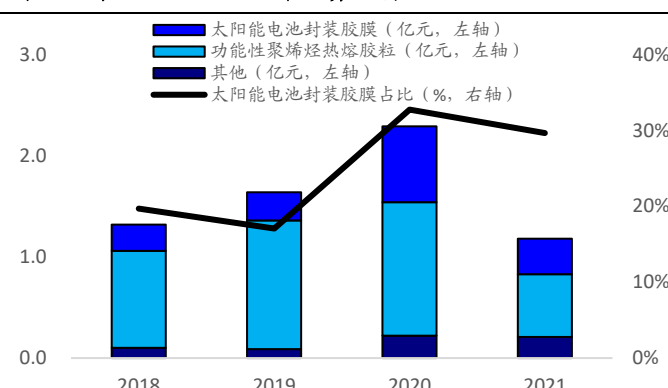
公司积极推进江苏鹿山、盐城鹿山新增光伏组件封装胶膜项目建设，公司 2021 年报预计项目达产后，公司光伏组件封装胶膜总产能达到约 3 亿平方米/年。同时，公司加强与晶澳、晶科、比亚迪、天合、阿特斯等知名组件厂商合作，大部分新客户已批量合作收获落地订单，部分客户正在认证过程中。

图3 公司 2018-2021 年营收构成



资料来源: Wind, 海通国际

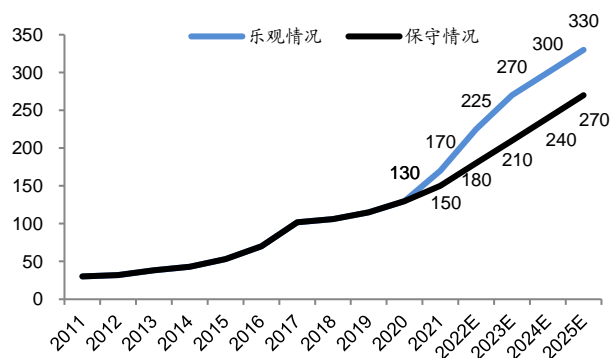
图4 公司 2018-2021H1 主营业务毛利



资料来源: Wind, 海通国际

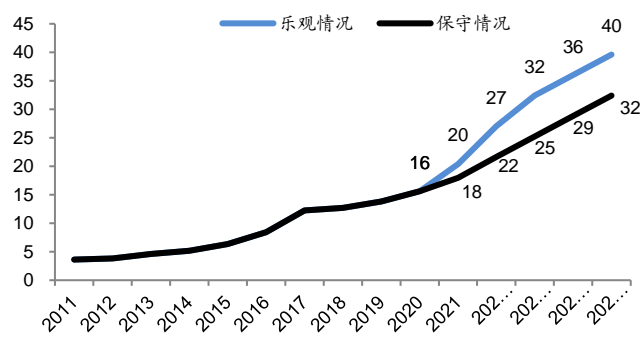
光伏行业景气，推动胶膜需求量维持较快增长。“双碳”目标下，我们预计光伏行业有望迎来景气周期。2022 年 1-6 月国内光伏累计新增装机 30.88GW，同比增长 179%。根据中金公司研究部统计，2022 年 1-6 月国内光伏组件招标量已达到 80GW，同比增长 217%。根据中国光伏行业协会，预计 2022 年国内新增装机 85-100GW，较 2021 年新增装机 54.88GW 增幅将达到 55-82%；2021 年全球新增光伏装机 170GW，其中中国新增 54.88GW；预计 2025 年全球新增光伏装机 270-330GW，年复合增长率 12%-18%。光伏行业高景气，带动光伏胶膜需求快速增长。根据我们测算，2021 年光伏胶膜全球需求量约 20 亿平方米，预计 2025 年达到 32-40 亿平方米。

图5 全球光伏新增装机 (GW)



资料来源:中国光伏行业协会,海通国际

图6 全球光伏胶膜需求 (亿平方米)



资料来源:中国光伏行业协会,海通国际测算

功能性聚烯烃热熔胶粒产品体系主要适用于复合建材、油气管道和高阻隔包装三大领域。主要产品为复合建材热熔胶、油气管道防腐热熔胶和高阻隔包装热熔胶;2018-2021年其收入复合增速为45.9%,毛利复合增速为47.4%。2022H1,功能性聚烯烃热熔胶粒收入4.11亿元,同比+14.72%。2022H1,功能性聚烯烃热熔胶粒收入4.11亿元,同比+14.72%。2018-2021年功能性聚烯烃热熔胶粒的销售金额稳步增长,该类产品销售收入占比分别为52.75%、56.20%、53.37%和43.81%;毛利占比分别为72.83%、77.24%、57.48%和47.91%。

公司复合建材热熔胶主要应用于复合板材(主要包括铝塑板、铝蜂窝板、装饰板等)和复合管材(主要包括给排水管道)当中。油气管道防腐热熔胶产品主要用于石油、天然气、成品油输送管道外层粘接与防护,起到防腐、保温等效果。高阻隔包装热熔胶主要用于高阻隔包装生产的多层共挤复合工艺环节,用于粘接通用树脂与高阻隔材料,同时起到阻隔氧气及水分的作用,广泛应用于食品、药品、日化等领域。

表6 功能性聚烯烃热熔胶粒产品营业收入和占比情况

产品类别	项目	2018年	2019年	2020年	2021H1
营业收入 (万元)	复合建材热熔胶	26,182.85	29,454.36	39,335.32	26,741.18
	油气管道防腐热熔胶	10,887.23	10,382.10	8,959.50	5,084.81
	高阻隔包装热熔胶	3,355.42	4,840.91	5,688.24	3,959.53
占主营收入 比重	复合建材热熔胶	14.28%	13.11%	8.90%	7.28%
	油气管道防腐热熔胶	4.40%	6.11%	5.65%	5.67%
	高阻隔包装热熔胶	99.77%	98.94%	96.28%	99.52%

资料来源:鹿山新材招股说明书,鹿山新材年报(2021),鹿山新材2022年经营数据,海通国际

公司2022年激励计划限制性股票首次授予日为2022年9月5日,授予价格为33.36元/股,实际授予对象共51人。首次授予数量138万股,占公司总股本的1.50%,其中高层占比0.29%,中层管理人员、核心技术(业务)骨干(46人)占比1.21%。首次授予的限制性股票的解除限售考核年度为2022-2024年三个会计年度,营业收入考核指标分别不低于22.5亿元、35亿元和45亿元;净利润考核指标分别为不低于1.5亿元、2.5亿元和3.5亿元。

表 7 激励计划业绩考核目标 (不低于)

会计年度	营业收入 (亿元)	净利润 (亿元)
2022 年	22.5	1.5
2023 年	35	2.5
2024 年	45	3.5

资料来源: 鹿山新材关于向激励对象首次授予限制性股票的公告, 海通国际

公司拟发行可转债募投 1.8 亿平方米/年太阳能电池封装胶膜扩产项目。项目工程场址为公司子公司江苏鹿山现有厂区。项目建设期拟定 2 年。项目建成后, 将形成年产 9000 万平方米 POE 胶膜及 9000 万平方米白色 EVA 胶膜的产能规模。随着光伏产业技术不断进步, 光伏企业将更加重视组件的转换效率、可靠性、衰减率等全生命周期发电指标进而提高光伏发电的经济性, 电池薄片化趋势愈发明显, 高效组件将越来越受市场青睐。白色 EVA 胶膜在适应电池薄片化以及提升组件功率方面的优势, 将帮助其未来市场占比将进一步提升。而随着双玻组 6 件及 N 型光伏组件的市场份额的提升, POE 胶膜的市场份额也有望进一步提升。

表 8 可转债募投产品特点及用途差异

产品类别	产品用途
透明 EVA 胶膜	行业最早推广使用的传统胶膜产品, 价格相对便宜
白色 EVA 胶膜	主要用于光伏组件下层封装, 可有效提升可见光及红外线的发射率
POE 胶膜	具有较高的透射率、阻水性, 能有效解决双玻组件采用透明 EVA 时吸水雾化问题, 提升双玻组件的抗 PID 性能, 一直以来被作为主要的双玻组件封装材料

资料来源: 鹿山新材年报 (2021), 海通国际

## APPENDIX 1

### Summary

- The company focuses on hot melt bonding materials, and its main products include functional adhesive film and functional polyolefin hot melt adhesive particles.** The company was listed in March 2022. The company's solar cell packaging adhesive film is mainly used for the packaging of solar photovoltaic modules. In 2021, the Company will achieve an operating revenue of Rmb1.693bn (+67.39% YoY); The NPATs was Rmb113mn. 1H22, the company achieved operating revenue of Rmb1.31bn (+82.39% YoY); The net profit attributable to the parent company was Rmb77.15mn (+53.02% YoY).
- Rapid development of the solar cell packaging film business.** The sales volume of the company's solar cell packaging film increased from 28.9901 million square meters in 2018 to 38.3327 million square meters in 2020. The revenue increased from Rmb209mn in 2018 to Rmb685mn in 2021, and the gross profit ratio increased from 19.59% in 2018 to 30.08% in 2021H1. The company actively promoted the construction of new projects, and the total production capacity of the company's photovoltaic adhesive film reached about 300 million square meters per year after the project reached its capacity. According to the data of China Photovoltaic Industry Association, it is estimated that the new photovoltaic installed capacity in the world will be 270-330GW in 2025, with a compound annual growth rate of 12%-18%. The high prosperity of photovoltaic industry has driven the rapid growth of demand for photovoltaic adhesive film. According to our estimation, the global demand for photovoltaic adhesive film is expected to reach 3.2-4 billion square meters in 2025.
- The business of functional polyolefin hot melt adhesive particles grew rapidly.** The main products are composite building materials hot melt adhesive, oil and gas pipeline anti-corrosion hot melt adhesive and high barrier packaging hot melt adhesive. From 2018 to 2021, the compound growth rate of revenue and gross profit will be 45.9% and 47.4% respectively. In 2022H1, the revenue of functional polyolefin hot melt adhesive particles was Rmb411mn (+14.72% YoY). From 2018 to 2021, the sales amount of functional polyolefin hot melt adhesive particles will grow steadily, accounting for 52.75%, 56.20%, 53.37% and 43.81% of the sales revenue respectively; The gross profit accounted for 72.83%, 77.24%, 57.48% and 47.91% respectively.
- Equity incentive: the company's incentive plan accounts for 1.50% of the company's total capital stock.** The assessment year for the lifting of restrictions on sales of restricted stocks granted for the first time is 2022-2024, and the net profit assessment indicators are no less than 150mn, 250mn and 350mn respectively.
- Fund raising projects:** the Company raised 40000 t/a of production capacity of functional polyolefin hot melt adhesive particles and 1.5mn square meters/year of production capacity of TOCF through IPO. It is proposed to issue convertible bonds to raise investment in 180mn square meters/year solar cell encapsulation film expansion project, with a construction period of two years.
- Risks:** The growth rate of photovoltaic installation is lower than expected; The price of raw materials fluctuates significantly; The progress of the project under construction is not as expected.

## 附录 APPENDIX

### 重要信息披露

本研究报告由海通国际分销，海通国际是由海通国际研究有限公司(HTIRL)，Haitong Securities India Private Limited (HSIPL)，Haitong International Japan K.K. (HTIJKK)和海通国际证券有限公司(HTISCL)的证券研究团队所组成的全球品牌，海通国际证券集团(HTISG)各成员分别在其许可的司法管辖区内从事证券活动。

### IMPORTANT DISCLOSURES

This research report is distributed by Haitong International, a global brand name for the equity research teams of Haitong International Research Limited (“HTIRL”), Haitong Securities India Private Limited (“HSIPL”), Haitong International Japan K.K. (“HTIJKK”), Haitong International Securities Company Limited (“HTISCL”), and any other members within the Haitong International Securities Group of Companies (“HTISG”), each authorized to engage in securities activities in its respective jurisdiction.

### HTIRL 分析师认证 Analyst Certification:

我，梁爽，在此保证 (i) 本研究报告中的意见准确反映了我们对本研究中提及的任何或所有目标公司或上市公司的个人观点，并且 (ii) 我的报酬中没有任何部分与本研究报告中表达的具体建议或观点直接或间接相关；及就此报告中所讨论目标公司的证券，我们（包括我们的家属）在其中均不持有任何财务利益。I, Helen Liang, certify that (i) the views expressed in this research report accurately reflect my personal views about any or all of the subject companies or issuers referred to in this research and (ii) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report; and that I (including members of my household) have no financial interest in the security or securities of the subject companies discussed.

### 利益冲突披露 Conflict of Interest Disclosures

海通国际及其某些关联公司可从事投资银行业务和/或对本研究中的特定股票或公司进行做市或持有自营头寸。就本研究报告而言，以下是有关该等关系的披露事项（以下披露不能保证及时无遗漏，如需了解及时全面信息，请发邮件至 [ERD-Disclosure@htisec.com](mailto:ERD-Disclosure@htisec.com)）

HTI and some of its affiliates may engage in investment banking and / or serve as a market maker or hold proprietary trading positions of certain stocks or companies in this research report. As far as this research report is concerned, the following are the disclosure matters related to such relationship (As the following disclosure does not ensure timeliness and completeness, please send an email to [ERD-Disclosure@htisec.com](mailto:ERD-Disclosure@htisec.com) if timely and comprehensive information is needed).

武汉福斯特物业公司目前或过去 12 个月内是海通的客户。海通向客户提供非投资银行业务的证券相关业务服务。

武汉福斯特物业公司 is/was a client of Haitong currently or within the past 12 months. The client has been provided for non-investment-banking securities-related services.

### 评级定义（从 2020 年 7 月 1 日开始执行）:

海通国际（以下简称“HTI”）采用相对评级系统来为投资者推荐我们覆盖的公司：优于大市、中性或弱于大市。投资者应仔细阅读 HTI 的评级定义。并且 HTI 发布分析师观点的完整信息，投资者应仔细阅读全文而非仅看评级。在任何情况下，分析师的评级和研究都不能作为投资建议。投资者的买卖股票的决策应基于各自情况（比如投资者的现有持仓）以及其他因素。

### 分析师股票评级

**优于大市**，未来 12-18 个月内预期相对基准指数涨幅在 10%以上，基准定义如下

**中性**，未来 12-18 个月内预期相对基准指数变化不大，基准定义如下。根据 FINRA/NYSE 的评级分布规则，我们会将中性评级划入持有这一类别。

**弱于大市**，未来 12-18 个月内预期相对基准指数跌幅在 10%以上，基准定义如下

各地股票基准指数：日本 – TOPIX, 韩国 – KOSPI, 台湾 – TAIEX, 印度 – Nifty100, 美国 – SP500; 其他所有中国概念股 – MSCI China.

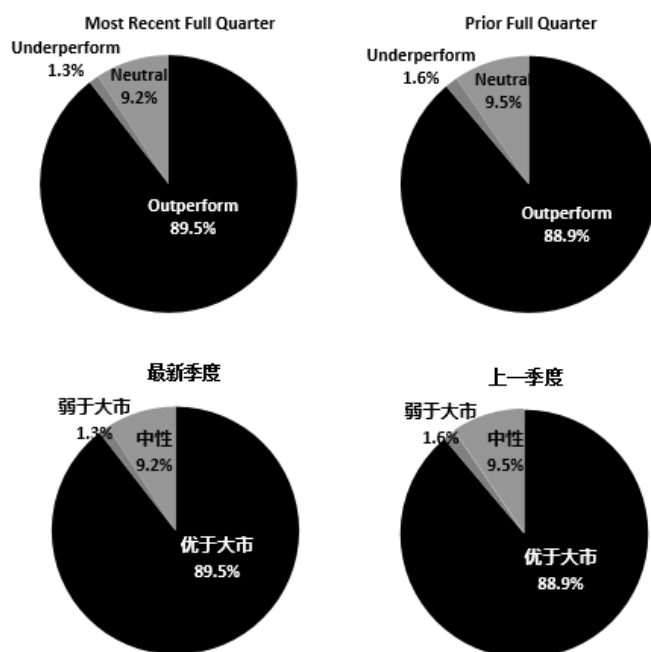
### Ratings Definitions (from 1 Jul 2020):

Haitong International uses a relative rating system using Outperform, Neutral, or Underperform for recommending the stocks we cover to investors. Investors should carefully read the definitions of all ratings used in Haitong International Research. In addition, since Haitong International Research contains more complete information concerning the analyst's views, investors should carefully read Haitong International Research, in its entirety, and not infer the contents from the rating alone. In any case, ratings (or research) should not be used or relied upon as investment advice. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations.

### Analyst Stock Ratings

**Outperform:** The stock's total return over the next 12-18 months is expected to exceed the return of its relevant broad market benchmark, as indicated below.

### 评级分布 Rating Distribution



**Neutral:** The stock's total return over the next 12-18 months is expected to be in line with the return of its relevant broad market benchmark, as indicated below. For purposes only of FINRA/NYSE ratings distribution rules, our Neutral rating falls into a hold rating category.

**Underperform:** The stock's total return over the next 12-18 months is expected to be below the return of its relevant broad market benchmark, as indicated below.

**Benchmarks for each stock's listed region are as follows: Japan – TOPIX, Korea – KOSPI, Taiwan – TAIEX, India – Nifty100, US – SP500; for all other China-concept stocks – MSCI China.**

**截至 2022 年 6 月 30 日海通国际股票研究评级分布**

	优于大市	中性 (持有)	弱于大市
海通国际股票研究覆盖率	89.5%	9.2%	1.3%
投资银行客户*	5.9%	5.6%	5.0%

\*在每个评级类别里投资银行客户所占的百分比。

上述分布中的买入，中性和卖出分别对应我们当前优于大市，中性和落后大市评级。

只有根据 FINRA/NYSE 的评级分布规则，我们才将中性评级划入持有这一类别。请注意在上表中不包含非评级的股票。

**此前的评级系统定义（直至 2020 年 6 月 30 日）：**

买入，未来 12-18 个月内预期相对基准指数涨幅在 10%以上，基准定义如下

中性，未来 12-18 个月内预期相对基准指数变化不大，基准定义如下。根据 FINRA/NYSE 的评级分布规则，我们会将中性评级划入持有这一类别。

卖出，未来 12-18 个月内预期相对基准指数跌幅在 10%以上，基准定义如下

各地股票基准指数：日本 – TOPIX, 韩国 – KOSPI, 台湾 – TAIEX, 印度 – Nifty100; 其他所有中国概念股 – MSCI China.

**Haitong International Equity Research Ratings Distribution, as of Jun 30, 2022**

	Outperform	Neutral (hold)	Underperform
HTI Equity Research Coverage	89.5%	9.2%	1.3%
IB clients*	5.9%	5.6%	5.0%

\*Percentage of investment banking clients in each rating category.

BUY, Neutral, and SELL in the above distribution correspond to our current ratings of Outperform, Neutral, and Underperform.

For purposes only of FINRA/NYSE ratings distribution rules, our Neutral rating falls into a hold rating category. Please note that stocks with an NR designation are not included in the table above.

**Previous rating system definitions (until 30 Jun 2020):**

**BUY:** The stock's total return over the next 12-18 months is expected to exceed the return of its relevant broad market benchmark, as indicated below.

**NEUTRAL:** The stock's total return over the next 12-18 months is expected to be in line with the return of its relevant broad market benchmark, as indicated below. For purposes only of FINRA/NYSE ratings distribution rules, our Neutral rating falls into a hold rating category.

**SELL:** The stock's total return over the next 12-18 months is expected to be below the return of its relevant broad market benchmark, as indicated below.

**Benchmarks for each stock's listed region are as follows: Japan – TOPIX, Korea – KOSPI, Taiwan – TAIEX, India – Nifty100; for all other China-concept stocks – MSCI China.**

**海通国际非评级研究：**海通国际发布计量、筛选或短篇报告，并在报告中根据估值和其他指标对股票进行排名，或者基于可能的估值倍数提出建议价格。这种排名或建议价格并非为进行了股票评级、提出目标价格或进行基本面估值，而仅供参考使用。

**Haitong International Non-Rated Research:** Haitong International publishes quantitative, screening or short reports which may rank stocks according to valuation and other metrics or may suggest prices based on possible valuation multiples. Such rankings or suggested prices do not purport to be stock ratings or target prices or fundamental values and are for information only.

**海通国际 A 股覆盖：**海通国际可能会就沪港通及深港通的中国 A 股进行覆盖及评级。海通证券（600837.CH），海通国际于上海的母公司，也会于中国发布中国 A 股的研究报告。但是，海通国际使用与海通证券不同的评级系统，所以海通国际与海通证券的中国 A 股评级可能有所不同。

**Haitong International Coverage of A-Shares:** Haitong International may cover and rate A-Shares that are subject to the Hong Kong Stock Connect scheme with Shanghai and Shenzhen. Haitong Securities (HS; 600837 CH), the ultimate parent company of HTISG based in Shanghai, covers and publishes research on these same A-Shares for distribution in mainland China. However, the rating system employed by HS differs from that used by HTI and as a result there may be a difference in the HTI and HS ratings for the same A-share stocks.

**海通国际优质 100 A 股 (Q100) 指数：**海通国际 Q100 指数是一个包括 100 支由海通证券覆盖的优质中国 A 股的计量产品。这些股票是通过基于质量的筛选过程，并结合对海通证券 A 股团队自下而上的研究。海通国际每季对 Q100 指数成分作出复审。

**Haitong International Quality 100 A-share (Q100) Index:** HTI's Q100 Index is a quant product that consists of 100 of the highest-quality A-shares under coverage at HS in Shanghai. These stocks are carefully selected through a quality-based screening process in combination with a review of the HS A-share team's bottom-up research. The Q100 constituent companies are reviewed quarterly.



**MSCI ESG 评级免责声明条款：**尽管海通国际的信息供货商（包括但不限于 MSCI ESG Research LLC 及其附属公司（「ESG 方」）从其认为可靠的来源获取信息（「信息」），ESG 方均不承担或保证此处任何数据的原创性、准确性和/或完整性，并明确表示不作出任何明示或默示的担保，包括可商售性和针对特定目的的适用性。该信息只能供阁下内部使用，不得以任何形式复制或重新传播，并不得用作任何金融工具、产品或指数的基础或组成部分。此外，信息本质上不能用于判断购买或出售何种证券，或何时购买或出售该证券。即使已被告知可能造成的损害，ESG 方均不承担与此处任何资料有关的任何错误或遗漏所引起的任何责任，也不对任何直接、间接、特殊、惩罚性、附带性或任何其他损害赔偿（包括利润损失）承担任何责任。

**MSCI ESG Disclaimer:** Although Haitong International's information providers, including without limitation, MSCI ESG Research LLC and its affiliates (the "ESG Parties"), obtain information (the "Information") from sources they consider reliable, none of the ESG Parties warrants or guarantees the originality, accuracy and/or completeness, of any data herein and expressly disclaim all express or implied warranties, including those of merchantability and fitness for a particular purpose. The Information may only be used for your internal use, may not be reproduced or disseminated in any form and may not be used as a basis for, or a component of, any financial instruments or products or indices. Further, none of the Information can in and of itself be used to determine which securities to buy or sell or when to buy or sell them. None of the ESG Parties shall have any liability for any errors or omissions in connection with any data herein, or any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

**盟浪义利 (FIN-ESG) 数据免责声明条款：**在使用盟浪义利 (FIN-ESG) 数据之前，请务必仔细阅读本条款并同意本声明：

**第一条** 义利 (FIN-ESG) 数据系由盟浪可持续数字科技有限责任公司（以下简称“本公司”）基于合法取得的公开信息评估而成，本公司对信息的准确性及完整性不作任何保证。对公司的评估结果仅供参考，并不构成对任何个人或机构投资建议，也不能作为任何个人或机构购买、出售或持有相关金融产品的依据。本公司不对任何个人或机构投资者因使用本数据表述的评估结果造成的任何直接或间接损失负责。

**第二条** 盟浪并不因收到此评估数据而将收件人视为客户，收件人使用此数据时应根据自身实际情况作出自我独立判断。本数据所载内容反映的是盟浪在最初发布本数据日期当日的判断，盟浪有权在不发出通知的情况下更新、修订与发出其他与本数据所载内容不一致或有不同结论的数据。除非另行说明，本数据（如财务业绩数据等）仅代表过往表现，过往的业绩表现不作为日后回报的预测。

**第三条** 本数据版权归本公司所有，本公司依法保留各项权利。未经本公司事先书面许可授权，任何个人或机构不得将本数据中的评估结果用于任何营利性目的，不得对本数据进行修改、复制、编译、汇编、再次编辑、改编、删减、缩写、节选、发行、出租、展览、表演、放映、广播、信息网络传播、摄制、增加图标及说明等，否则因此给盟浪或其他第三方造成损失的，由用户承担相应的赔偿责任，盟浪不承担责任。

**第四条** 如本免责声明未约定，而盟浪网站平台载明的其他协议内容（如《盟浪网站用户注册协议》《盟浪网用户服务（含认证）协议》《盟浪网隐私政策》等）有约定的，则按其他协议的约定执行；若本免责声明与其他协议约定存在冲突或不一致的，则以本免责声明约定为准。

**SusallWave FIN-ESG Data Service Disclaimer:** Please read these terms and conditions below carefully and confirm your agreement and acceptance with these terms before using SusallWave FIN-ESG Data Service.

1. FIN-ESG Data is produced by SusallWave Digital Technology Co., Ltd. (In short, SusallWave)'s assessment based on legal publicly accessible information. SusallWave shall not be responsible for any accuracy and completeness of the information. The assessment result is for reference only. It is not for any investment advice for any individual or institution and not for basis of purchasing, selling or holding any relative financial products. We will not be liable for any direct or indirect loss of any individual or institution as a result of using SusallWave FIN-ESG Data.

2. SusallWave do not consider recipients as customers for receiving these data. When using the data, recipients shall make your own independent judgment according to your practical individual status. The contents of the data reflect the judgment of us only on the release day. We have right to update and amend the data and release other data that contains inconsistent contents or different conclusions without notification. Unless expressly stated, the data (e.g., financial performance data) represents past performance only and the past performance cannot be viewed as the prediction of future return.

3. The copyright of this data belongs to SusallWave, and we reserve all rights in accordance with the law. Without the prior written permission of our company, none of individual or institution can use these data for any profitable purpose. Besides, none of individual or institution can take actions such as amendment, replication, translation, compilation, re-editing, adaption, deletion, abbreviation, excerpts, issuance, rent, exhibition, performance, projection, broadcast, information network transmission, shooting, adding icons and instructions. If any loss of SusallWave or any third-party is caused by those actions, users shall bear the corresponding compensation liability. SusallWave shall not be responsible for any loss.

4. If any term is not contained in this disclaimer but written in other agreements on our website (e.g. *User Registration Protocol of SusallWave Website*, *User Service (including authentication) Agreement of SusallWave Website*, *Privacy Policy of Susallwave Website*), it should be executed according to other agreements. If there is any difference between this disclaimer and other agreements, this disclaimer shall be applied.

## 重要免责声明：

**非印度证券的研究报告：**本报告由海通国际证券集团有限公司（“HTISGL”）的全资附属公司海通国际研究有限公司（“HTIRL”）发行，该公司是根据香港证券及期货条例（第 571 章）持有第 4 类受规管活动（就证券提供意见）的持牌法团。该研究报告在 HTISGL 的全资附属公司 Haitong International (Japan) K.K.（“HTIJKK”）的协助下发行，HTIJKK 是由日本关东财务局监管为投资顾问。

**印度证券的研究报告：**本报告由从事证券交易、投资银行及证券分析及受 Securities and Exchange Board of India（“SEBI”）监管的 Haitong Securities India Private Limited（“HTSIPL”）所发行，包括制作及发布涵盖 BSE Limited（“BSE”）和 National Stock Exchange of India Limited（“NSE”）上市公司（统称为「印度交易所」）的研究报告。HTSIPL 于 2016 年 12 月 22 日被收购并成为海通国际证券集团有限公司（“HTISG”）的一部分。

所有研究报告均以海通国际为名作为全球品牌，经许可由海通国际证券股份有限公司及/或海通国际证券集团的其他成员在其司法管辖区发布。

本文件所载信息和观点已被编译或源自可靠来源，但 HTIRL、HTISCL 或任何其他属于海通国际证券集团有限公司（“HTISG”）的成员对其准确性、完整性和正确性不做任何明示或暗示的

不应被解释为对证券买卖的明示或暗示地出价或征价。在某些司法管辖区，本文件中提及的证券可能无法进行买卖。如果投资产品以投资者本国货币以外的币种进行计价，则汇率变化可能会对投资产生不利影响。过去的表现并不一定代表将来的结果。某些特定交易，包括设计金融衍生工具的，有产生重大风险的可能性，因此并不适合所有的投资者。您还应认识到

本文件中的建议并非为您量身定制。分析师并未考虑到您自身的财务情况，如您的财务状况和风险偏好。因此您必须自行分析并在适用的情况下咨询自己的法律、税收、会计、金融和其他方面的专业顾问，以期在投资之前评估该项建议是否适合于您。若由于使用本文件所载的材料而产生任何直接或间接的损失，HTISG 及其董事、雇员或代理人对此均不承担任何责任。

除对本文内容承担责任的分析师外，HTISG 及我们的关联公司、高级管理人员、董事和雇员，均可不时作为主事人就本文件所述的任何证券或衍生品持有长仓或短仓以及进行买卖。HTISG 的销售员、交易员和其他专业人士均可向 HTISG 的相关客户和公司提供与本文件所述意见相反的口头或书面市场评论意见或交易策略。HTISG 可做出与本文件所述建议或意见不一致的投资决策。但 HTIRL 没有义务来确保本文件的收件人了解到该等交易决定、思路或建议。

请访问海通国际网站 [www.equities.htisec.com](http://www.equities.htisec.com)，查阅更多有关海通国际为预防和避免利益冲突设立的组织和行政安排的内容信息。

**非美国分析师披露信息：** 本项研究首页上列明的海通国际分析师并未在 FINRA 进行注册或者取得相应的资格，并且不受美国 FINRA 有关与本项研究目标公司进行沟通、公开露面和自营证券交易的第 2241 条规则之限制。

#### IMPORTANT DISCLAIMER

**For research reports on non-Indian securities:** The research report is issued by Haitong International Research Limited (“HTIRL”), a wholly owned subsidiary of Haitong International Securities Group Limited (“HTISGL”) and a licensed corporation to carry on Type 4 regulated activity (advising on securities) for the purpose of the Securities and Futures Ordinance (Cap. 571) of Hong Kong, with the assistance of Haitong International (Japan) K.K. (“HTIJK”), a wholly owned subsidiary of HTISGL and which is regulated as an Investment Adviser by the Kanto Finance Bureau of Japan.

**For research reports on Indian securities:** The research report is issued by Haitong Securities India Private Limited (“HSIPL”), an Indian company and a Securities and Exchange Board of India (“SEBI”) registered Stock Broker, Merchant Banker and Research Analyst that, inter alia, produces and distributes research reports covering listed entities on the BSE Limited (“BSE”) and the National Stock Exchange of India Limited (“NSE”) (collectively referred to as “Indian Exchanges”). HSIPL was acquired and became part of the Haitong International Securities Group of Companies (“HTISG”) on 22 December 2016.

All the research reports are globally branded under the name Haitong International and approved for distribution by Haitong International Securities Company Limited (“HTISCL”) and/or any other members within HTISG in their respective jurisdictions.

The information and opinions contained in this research report have been compiled or arrived at from sources believed to be reliable and in good faith but no representation or warranty, express or implied, is made by HTIRL, HTISCL, HSIPL, HTIJK or any other members within HTISG from which this research report may be received, as to their accuracy, completeness or correctness. All opinions expressed herein are as of the date of this research report and are subject to change without notice. This research report is for information purpose only. Descriptions of any companies or their securities mentioned herein are not intended to be complete and this research report is not, and should not be construed expressly or impliedly as, an offer to buy or sell securities. The securities referred to in this research report may not be eligible for purchase or sale in some jurisdictions. If an investment product is denominated in a currency other than an investor's home currency, a change in exchange rates may adversely affect the investment. Past performance is not necessarily indicative of future results. Certain transactions, including those involving derivatives, give rise to substantial risk and are not suitable for all investors. You should also bear in mind that recommendations in this research report are not tailor-made for you. The analyst has not taken into account your unique financial circumstances, such as your financial situation and risk appetite. You must, therefore, analyze and should, where applicable, consult your own legal, tax, accounting, financial and other professional advisers to evaluate whether the recommendations suits you before investment. Neither HTISG nor any of its directors, employees or agents accepts any liability whatsoever for any direct or consequential loss arising from any use of the materials contained in this research report.

HTISG and our affiliates, officers, directors, and employees, excluding the analysts responsible for the content of this document, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research report. Sales, traders, and other professionals of HTISG may provide oral or written market commentary or trading strategies to the relevant clients and the companies within HTISG that reflect opinions that are contrary to the opinions expressed in this research report. HTISG may make investment decisions that are inconsistent with the recommendations or views expressed in this research report. HTI is under no obligation to ensure that such other trading decisions, ideas or recommendations are brought to the attention of any recipient of this research report.

Please refer to HTI's website [www.equities.htisec.com](http://www.equities.htisec.com) for further information on HTI's organizational and administrative arrangements set up for the prevention and avoidance of conflicts of interest with respect to Research.

**Non U.S. Analyst Disclosure:** The HTI analyst(s) listed on the cover of this Research is (are) not registered or qualified as a research analyst with FINRA and are not subject to U.S. FINRA Rule 2241 restrictions on communications with companies that are the subject of the Research; public appearances; and trading securities by a research analyst.

#### 分发和地区通知:

除非下文另有规定，否则任何希望讨论本报告或者就本项研究中讨论的任何证券进行任何交易的收件人均应联系其所在国家或地区的海通国际销售人员。

**香港投资者的通知事项：** 海通国际证券股份有限公司 (“HTISCL”) 负责分发该研究报告，HTISCL 是在香港有权实施第 1 类受规管活动（从事证券交易）的持牌公司。该研究报告并不构成《证券及期货条例》（香港法例第 571 章）（以下简称“SFO”）所界定的要约邀请，证券要约或公众要约。本研究报告仅提供给 SFO 所界定的“专业投资者”。本研究报告未经过证券及期货事务监察委员会的审查。您不应根据本研究报告中所载的信息做出投资决定。本研究报告的收件人就研究报告中产生或与之相关的任何事宜请联系 HTISCL 销售人员。

**美国投资者的通知事项：** 本研究报告由 HTIRL, HSIPL 或 HTIJK 编写。HTIRL, HSIPL, HTIJK 以及任何非 HTISG 美国联营公司，均未在美国注册，因此不受美国关于研究报告编制和研究分析人员独立性规定的约束。本研究报告提供给依照 1934 年“美国证券交易法”第 15a-6 条规定的豁免注册的「美国主要机构投资者」（“Major U.S. Institutional Investor”）和「机构投资者」（“U.S. Institutional Investors”）。在向美国机构投资者分发研究报告时，Haitong International Securities (USA) Inc. (“HTI USA”) 将对报告的内容负责。任何收到本研究报告的美国投资者，希望根据本研究报告提供的信息进行任何证券或相关金融工具买卖的交易，只能通过 HTI USA。HTI USA 位于 340 Madison Avenue, 12th Floor, New York, NY 10173, 电话 (212) 351-6050。HTI USA 是在美国于 U.S. Securities and Exchange Commission (“SEC”) 注册的经纪商，也是 Financial Industry Regulatory Authority, Inc. (“FINRA”) 的成员。HTIUSA 不负责编写本研究报告，也不负责其中包含的分析。在任何情况下，收到本研究报告的任何美国投资者，不得直接与分析师直接联系，也不得通过 HSIPL, HTIRL 或 HTIJK 直接进行买卖证券或相关金融工具的交易。本研究报告中出现的 HSIPL, HTIRL 或 HTIJK 分析师没有注册或具备 FINRA 的研究分析师资格，因此可能不受 FINRA 第 2241 条规定的与目标公司的交流，公开露面和分析师账户持有的交易证券等限制。投资本研究报告中讨论的任何非美国证券或相关金融工具（包括 ADR）可能存在一定风险。非美国发行的证券可能没有注册，或不受美国法规的约束。有关非美国证券或相关金融工具的信息可能有限制。外国公司可能不受审计和汇报的标准以及与美国境内生效相符的监管要求。本研究报告中以美元以外的其他货币计价的任何证券或相关金融工具的投资或收益的价值受汇率波动的影响，可能对该等证券或相关金融工具的价值或收入产生正面或负面影响。美国收件人的所有问询请联系：

Haitong International Securities (USA) Inc.  
340 Madison Avenue, 12th Floor  
New York, NY 10173  
联系人电话: (212) 351 6050

#### DISTRIBUTION AND REGIONAL NOTICES

Except as otherwise indicated below, any Recipient wishing to discuss this research report or effect any transaction in any security discussed in HTI's research should contact the Haitong International salesperson in their own country or region.

**Notice to Hong Kong investors:** The research report is distributed by Haitong International Securities Company Limited ("HTISCL"), which is a licensed corporation to carry on Type 1 regulated activity (dealing in securities) in Hong Kong. This research report does not constitute a solicitation or an offer of securities or an invitation to the public within the meaning of the SFO. This research report is only to be circulated to "Professional Investors" as defined in the SFO. This research report has not been reviewed by the Securities and Futures Commission. You should not make investment decisions solely on the basis of the information contained in this research report. Recipients of this research report are to contact HTISCL salespersons in respect of any matters arising from, or in connection with, the research report.

**Notice to U.S. investors:** As described above, this research report was prepared by HTIRL, HSIPL or HTIJKK. Neither HTIRL, HSIPL, HTIJKK, nor any of the non U.S. HTISG affiliates is registered 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 research report is provided for distribution to "major U.S. institutional investors" and "U.S. institutional investors" in reliance on the exemption from registration provided by Rule 15a-6 of the U.S. Securities Exchange Act of 1934, as amended. When distributing research reports to "U.S. institutional investors," HTI USA will accept the responsibilities for the content of the reports. Any U.S. recipient of this research report wishing to effect any transaction to buy or sell securities or related financial instruments based on the information provided in this research report should do so only through Haitong International Securities (USA) Inc. ("HTI USA"), located at 340 Madison Avenue, 12th Floor, New York, NY 10173, USA; telephone (212) 351 6050. HTI USA is a broker-dealer registered in the U.S. with the U.S. Securities and Exchange Commission (the "SEC") and a member of the Financial Industry Regulatory Authority, Inc. ("FINRA"). HTI USA is not responsible for the preparation of this research report nor for the analysis contained therein. Under no circumstances should any U.S. recipient of this research report contact the analyst directly or effect any transaction to buy or sell securities or related financial instruments directly through HSIPL, HTIRL or HTIJKK. The HSIPL, HTIRL or HTIJKK analyst(s) whose name appears in this research report is not registered or qualified as a research analyst with FINRA and, therefore, may not be subject to FINRA Rule 2241 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. Investing in any non-U.S. securities or related financial instruments (including ADRs) discussed in this research report may present certain risks. The securities of non-U.S. issuers may not be registered with, or be subject to U.S. regulations. Information on such non-U.S. securities or related financial instruments may be limited. Foreign companies may not be subject to audit and reporting standards and regulatory requirements comparable to those in effect within the U.S. The value of any investment or income from any securities or related financial instruments discussed in this research report denominated in a currency other than U.S. dollars is subject to exchange rate fluctuations that may have a positive or adverse effect on the value of or income from such securities or related financial instruments. All inquiries by U.S. recipients should be directed to:

Haitong International Securities (USA) Inc.  
340 Madison Avenue, 12<sup>th</sup> Floor  
New York, NY 10173  
Attn: Sales Desk at (212) 351 6050

**中华人民共和国的通知事项:** 在中华人民共和国(下称“中国”,就本报告目的而言,不包括香港特别行政区、澳门特别行政区和台湾)只有根据适用的中国法律法规而收到该材料的人员方可使用该材料。并且根据相关法律法规,该材料中的信息并不构成“在中国从事生产、经营活动”。本文件在中国并不构成相关证券的公开发售或认购。无论根据法律规定或其他任何规定,在取得中国政府所有的批准或许可之前,任何法人或自然人均不得直接或间接地购买本材料中的任何证券或任何实益权益。接收本文件的人员须遵守上述限制性规定。

**加拿大投资者的通知事项:** 在任何情况下该等材料均不得被解释为在任何加拿大的司法管辖区内出售证券的要约或认购证券的要约邀请。本材料中所述证券在加拿大的任何要约或出售行为均只能在豁免向有关加拿大证券监管机构提交招股说明书的前提下由 Haitong International Securities (USA) Inc. (“HTI USA”) 予以实施,该公司是一家根据 National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations (“NI 31-103”) 的规定得到「国际交易商豁免」 (“International Dealer Exemption”) 的交易商,位于艾伯塔省、不列颠哥伦比亚省、安大略省和魁北克省。在加拿大,该等材料在任何情况下均不得被解释为任何证券的招股说明书、发行备忘录、广告或公开发行。加拿大的任何证券委员会或类似的监管机构均未审查或以任何方式批准该等材料、其中所载的信息或所述证券的优点,任何与此相反的声明即属违法。在收到该等材料时,每个加拿大的收件人均将被视为属于 National Instrument 45-106 Prospectus Exemptions 第 1.1 节或者 Securities Act (Ontario) 第 73.3(1) 节所规定的「认可投资者」 (“Accredited Investor”), 或者在适用情况下 National Instrument 31-103 第 1.1 节所规定的「许可投资者」 (“Permitted Investor”)。

**新加坡投资者的通知事项:** 本研究报告由 Haitong International Securities (Singapore) Pte Ltd (“HTISSPL”) [公司注册编号 201311400G] 于新加坡提供。HTISSPL 是符合《财务顾问法》(第 110 章) (“FAA”) 定义的豁免财务顾问,可 (a) 提供关于证券,集体投资计划的部分,交易所衍生品合约和场外衍生品合约的建议 (b) 发行或公布有关证券、交易所衍生品合约和场外衍生品合约的研究分析或研究报告。本研究报告仅提供给符合《证券及期货法》(第 289 章) 第 4A 条项下规定的机构投资者。对于因本研究报告而产生的或与之相关的任何问题,本研究报告的收件人应通过以下信息与 HTISSPL 联系:

Haitong International Securities (Singapore) Pte. Ltd  
50 Raffles Place, #33-03 Singapore Land Tower, Singapore 048623  
电话: (65) 6536 1920

**日本投资者的通知事项:** 本研究报告由海通国际证券有限公司所发布,旨在分发给从事投资管理的金融服务提供商或注册金融机构(根据日本金融机构和交易法 (“FIEL”) ) 第 61 (1) 条,第 17-11 (1) 条的执行及相关条款)。

**英国及欧盟投资者的通知事项:** 本报告由从事投资顾问的 Haitong International Securities Company Limited 所发布,本报告只面向有投资相关经验的专业客户发布。任何投资或与本报告相关的投资行为只面对此类专业客户。没有投资经验或相关投资经验的客户不得依赖本报告。Haitong International Securities Company Limited 的分支机构的净长期或短期金融权益可能超过本研究报告中提及的实体已发行股本总额的 0.5%。特别提醒有些英文报告有可能此前已经通过中文或其它语言完成发布。

**澳大利亚投资者的通知事项:** Haitong International Securities (Singapore) Pte Ltd, Haitong International Securities Company Limited 和 Haitong International Securities (UK) Limited 分别根据澳大利亚证券和投资委员会（以下简称“ASIC”）公司（废除及过度性）文书第 2016/396 号规章在澳大利亚分发本项研究，该等规章免除了根据 2001 年《公司法》在澳大利亚为批发客户提供金融服务时海通国际需持有澳大利亚金融服务许可的要求。ASIC 的规章副本可在以下网站获取：[www.legislation.gov.au](http://www.legislation.gov.au)。海通国际提供的金融服务受外国法律法规规定的管制，该等法律与在澳大利亚所适用的法律存在差异。

**印度投资者的通知事项:** 本报告由从事证券交易、投资银行及证券分析及受 Securities and Exchange Board of India (“SEBI”) 监管的 Haitong Securities India Private Limited (“HTSIPL”) 所发布，包括制作及发布涵盖 BSE Limited (“BSE”) 和 National Stock Exchange of India Limited (“NSE”) (统称为「印度交易所」) 研究报告。

本项研究仅供收件人使用，未经海通国际的书面同意不得予以复制和再次分发。

版权所有：海通国际证券集团有限公司 2019 年。保留所有权利。

**People’s Republic of China (PRC):** In the PRC, the research report is directed for the sole use of those who receive the research report in accordance with the applicable PRC laws and regulations. Further, the information on the research report does not constitute "production and business activities in the PRC" under relevant PRC laws. This research report does not constitute a public offer of the security, whether by sale or subscription, in the PRC. Further, no legal or natural persons of the PRC may directly or indirectly purchase any of the security or any beneficial interest therein without obtaining all prior PRC government approvals or licenses that are required, whether statutorily or otherwise. Persons who come into possession of this research are required to observe these restrictions.

**Notice to Canadian Investors:** Under no circumstances is this research report to be construed as an offer to sell securities or as a solicitation of an offer to buy securities in any jurisdiction of Canada. Any offer or sale of the securities described herein in Canada will be made only under an exemption from the requirements to file a prospectus with the relevant Canadian securities regulators and only by Haitong International Securities (USA) Inc., a dealer relying on the “international dealer exemption” under National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations (“NI 31-103”) in Alberta, British Columbia, Ontario and Quebec. This research report is not, and under no circumstances should be construed as, a prospectus, an offering memorandum, an advertisement or a public offering of any securities in Canada. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed upon this research report, the information contained herein or the merits of the securities described herein and any representation to the contrary is an offence. Upon receipt of this research report, each Canadian recipient will be deemed to have represented that the investor is an “accredited investor” as such term is defined in section 1.1 of National Instrument 45-106 Prospectus Exemptions or, in Ontario, in section 73.3(1) of the Securities Act (Ontario), as applicable, and a “permitted client” as such term is defined in section 1.1 of NI 31-103, respectively.

**Notice to Singapore investors:** This research report is provided in Singapore by or through Haitong International Securities (Singapore) Pte Ltd (“HTISSPL”) [Co Reg No 201311400G. HTISSPL is an Exempt Financial Adviser under the Financial Advisers Act (Cap. 110) (“FAA”) to (a) advise on securities, units in a collective investment scheme, exchange-traded derivatives contracts and over-the-counter derivatives contracts and (b) issue or promulgate research analyses or research reports on securities, exchange-traded derivatives contracts and over-the-counter derivatives contracts. This research report is only provided to institutional investors, within the meaning of Section 4A of the Securities and Futures Act (Cap. 289). Recipients of this research report are to contact HTISSPL via the details below in respect of any matters arising from, or in connection with, the research report:

Haitong International Securities (Singapore) Pte. Ltd.

10 Collyer Quay, #19-01 - #19-05 Ocean Financial Centre, Singapore 049315

Telephone: (65) 6536 1920

**Notice to Japanese investors:** This research report is distributed by Haitong International Securities Company Limited and intended to be distributed to Financial Services Providers or Registered Financial Institutions engaged in investment management (as defined in the Japan Financial Instruments and Exchange Act (“FIEL”) Art. 61(1), Order for Enforcement of FIEL Art. 17-11(1), and related articles).

**Notice to UK and European Union investors:** This research report is distributed by Haitong International Securities Company Limited. This research is directed at persons having professional experience in matters relating to investments. Any investment or investment activity to which this research relates is available only to such persons or will be engaged in only with such persons. Persons who do not have professional experience in matters relating to investments should not rely on this research. Haitong International Securities Company Limited’s affiliates may have a net long or short financial interest in excess of 0.5% of the total issued share capital of the entities mentioned in this research report. Please be aware that any report in English may have been published previously in Chinese or another language.

**Notice to Australian investors:** The research report is distributed in Australia by Haitong International Securities (Singapore) Pte Ltd, Haitong International Securities Company Limited, and Haitong International Securities (UK) Limited in reliance on ASIC Corporations (Repeal and Transitional) Instrument 2016/396, which exempts those HTISG entities from the requirement to hold an Australian financial services license under the Corporations Act 2001 in respect of the financial services it provides to wholesale clients in Australia. A copy of the ASIC Class Orders may be obtained at the following website, [www.legislation.gov.au](http://www.legislation.gov.au). Financial services provided by Haitong International Securities (Singapore) Pte Ltd, Haitong International Securities Company Limited, and Haitong International Securities (UK) Limited are regulated under foreign laws and regulatory requirements, which are different from the laws applying in Australia.

**Notice to Indian investors:** The research report is distributed by Haitong Securities India Private Limited (“HSIPL”), an Indian company and a Securities and Exchange Board of India (“SEBI”) registered Stock Broker, Merchant Banker and Research Analyst that, inter alia, produces and distributes research reports covering listed entities on the BSE Limited (“BSE”) and the National Stock Exchange of India Limited (“NSE”) (collectively referred to as “Indian Exchanges”).

This research report is intended for the recipients only and may not be reproduced or redistributed without the written consent of an authorized signatory of HTISG.

Copyright: Haitong International Securities Group Limited 2019. All rights reserved.

<http://equities.htisec.com/x/legal.html>