

海通国际电新&公用&ESG

装机爆发期动力电池将迎来首次退役高峰，锂回收业务前景可待

Lithium Recycling Business Prospering Since Scrapping Wave of Batteries Installed in Explosive Period

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热点速评 Flash Analysis

(Please see APPENDIX 1 for English summary)

锂回收业务布局早已开始，紧随电动车普及步伐。2013年开始，以补贴下调为信号，新能源汽车大规模推广初见成效。由于电池技术快速迭代，纯电动乘用车平均续航里程快速提升，前期安装动力电池面临快速替换。碳酸锂、磷酸铁锂电池均包含危废重金属与高危化合物（如六氟磷酸锂、有机碳酸酯等），对人体与环境有较大潜在伤害，回收动力电池废料同时具有经济性与环境公益性。

2016-2018年电动车渗透率爆发带来动力电池装机将迎退役潮。2016-2018年新能源汽车产量分别为51.7/81.0/122.2万辆，复合增长超60%，2018年全年动力电池装机量增长超80%。按平均6年使用寿命，当前中国正步入动力电池退役高峰。去年我国理论回收量约为76万吨，统计各类电池废料回收量约30万吨，其中63%为三元废料，磷酸铁锂废料占约三成，剩余为少量钴酸锂。预计到27年动力电池报废量将达140GWh，为今年4倍。去年全球锂离子电池出货量达958GWh，未来废旧电池回收前景广阔。

碳酸锂价格高企助益回收经济性，新玩家踊跃进入。2022年全年碳酸锂价格延续上涨势头，至11月价格暴涨超60万元每吨。受到原料涨价影响，废料折扣系数普遍远超100%，如报废三元正极片超180，三元极片粉料超190，三元电池料超180。去年全国回收废旧锂电池30万吨同比增长27%，历史累计危废旧电池几种进行处理。22年全年新增电池回收注册企业超4万家。主要玩家纷纷扩产，以广州邦普、格林美、天奇股份为代表的回收厂商产能翻倍。今年年中电池级碳酸锂价格再度反弹企稳位置在30万元每吨，利好回收厂商再度进入景气格局。

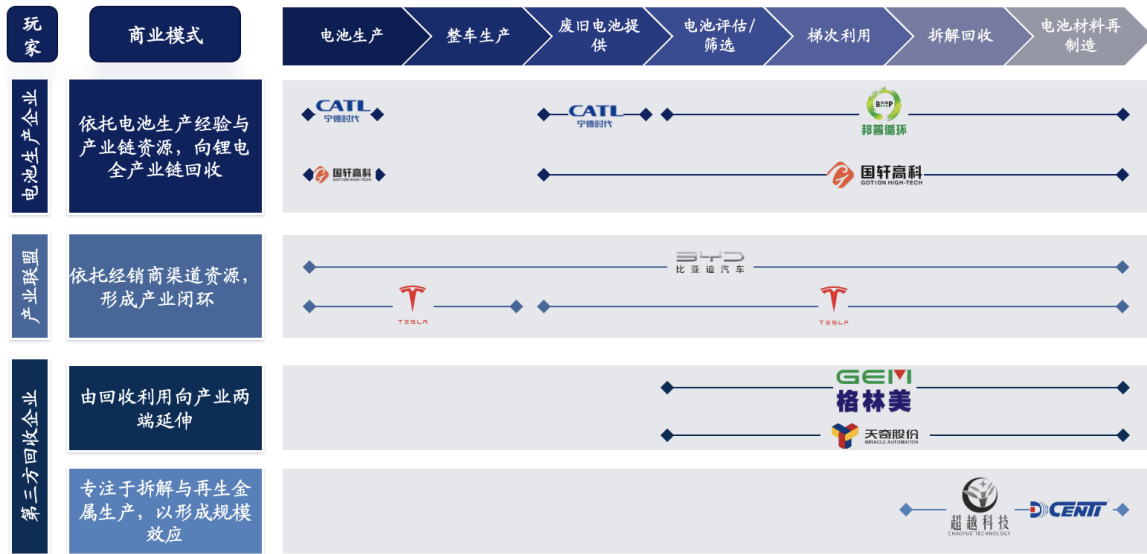
回收模式为核心，以优势资源方为主。当前动力电池回收渠道主要有三种模式，分别以动力电池厂、行业联盟和第三方专业回收平台为主导。动力电池回收本身技术壁垒有限，核心在于废旧电池资源。行业强势环节通过占有核心电池流通分发渠道获得更高话语权。目前行业龙头代表为动力电池厂主导的回收体系，同时第三方回收网络由于玩家众多行业处于快速发展期，仍然值得关注。成长空间广阔。

政策端给予大力鼓励，行业标准与核心玩家格局渐成。行业政策出台至目前大概可分为三阶段。2016年以前，受限于当时电动车渗透率仍然较低，电池回收仅被相关政策零星提及，由于其时电池技术也尚未成熟，主要思路在于梯级利用；2016-2018年，随着电动车大规模放量趋势逐渐明朗，工信部、发改委针对动力电池回收陆续出台多项政策，对回收利用管理、回收技术标准作出详细规定，完善白名单制度；2019年至今，随着电池退役量将迎井喷式增长，政策出台明显加速，国内电池回收企业规范化、专业化、大型化趋势加快。

投资建议：重点关注小盘风格成长性标的。我们推荐关注动力电池与碳酸锂再生利用的核心标的，重点关注回收业务对于其公司业绩有较大成长性的公司。建议关注标的：天奇股份、超越科技、迪生力。

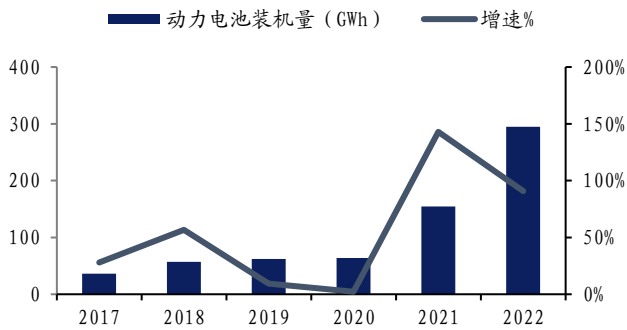
风险：碳酸锂价格出现大幅波动、市场竞争加剧、行业政策出现反复。

图表 1: 动力电池回收模式主要玩家



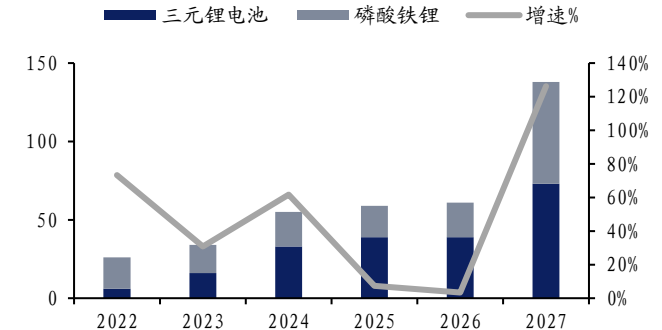
资料来源: 公司官网, 德勤咨询, HTI

图表 2: 2017-2022 动力电池装机量营收



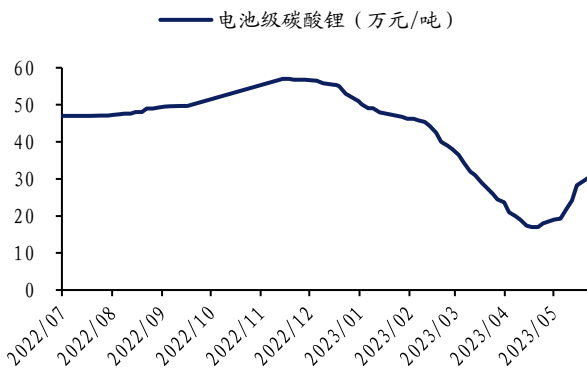
资料来源: 第一电动网, HTI

图表 3: 动力电池报废量预测



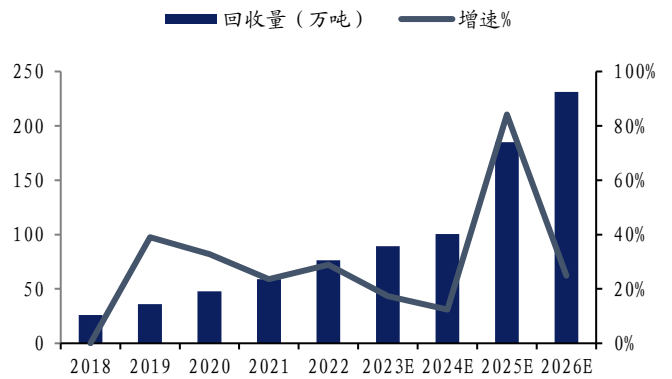
资料来源: 前瞻产业研究院, HTI

图表 4: 近一年电池级碳酸锂价格



资料来源: Wind, HTI

图表 5: 2018-2026 中国废旧锂电池理论回收量



资料来源: EVTank, HTI

图表 6: 政策列表

时间	政策	主要内容及影响	出台部委
2022年11月	《关于做好锂离子电池产业链供应链协同稳定发展工作的通知》	鼓励锂电（电芯及电池组）生产企业、锂电一阶材料企业、锂电二阶材料企业、锂镍钴等上游资源企业、锂电回收企业、锂电终端应用企业及系统集成、渠道分销、物流运输等企业深度合作，通过签订长单、技术合作等方式建立长效机制，引导上下游稳定预期、明确量价、保障供应、合作共赢。	工信部
2022年8月	《信息通信行业绿色低碳发展行动计划（2022-2025）》	鼓励企业利用人工智能、大数据等多种技术手段实施网络设施智能化改造和绿色升级，重点针对电池等基础设施产品，有序开展退网，逐步形成科学完备的老旧设备回收、处理及循环利用体系	工信部
2022年1月	《关于加快推动工业资源综合利用的实施方案》	完善废旧动力电池回收利用体系，完善管理制度，强化新能源汽车动力电池全生命周期溯源管理，培育一批梯次和再生利用骨干企业，加大动力电池无损检测、自动化拆解、有价金属高效提取等技术的研发推广力度。	工信部
2021年11月	《锂离子电池行业规范条件（2021年本）》（征求意见稿）	鼓励锂电企业加强技术创新、提高产品质量、降低生产成本。对锂电池的工艺技术、质量管理、产品性能，都做了规范性的引导，同时强调企业安全生产与管理，加强资源综合利用和环境保护，鼓励企业履行卫生和社会责任。	工信部
2021年8月	《新能源汽车动力蓄电池梯次利用管理办法》	加强新能源汽车动力蓄电池梯次利用管理，提升资源综合利用水平	工信部
2021年7月	《“十四五”循环经济发展规划的通知》	研究制定汽车使用全生命周期管理方案，构建涵盖汽车生产企业、经销商、维修企业、回收拆解企业等的汽车使用全生命周期信息交互系统，加强汽车生产、进口、销售、登记、维修、二手车交易、报废、关键零部件流向等信息互联互通和交互共享。	发改委
2020年1月	《新能源汽车废旧电力蓄电池综合利用行业规范条件（2019本）》	对综合利用企业开展梯次利用和再生利用，提出了诸多规范性要求，内容涉及企业布局与项目选址、技术、装备和工艺、资源综合利用及能耗、环境保护要求、产品质量和职业教育。	工信部
2019年11月	《新能源汽车动力蓄电池回收服务网点建设和运营指南》	新能源汽车生产及梯次利用等企业应按照国家有关管理要求通过自建、共建、授权等方式建立回收服务网点，并且要注重安全环保问题，给出了回收服务网点作业规程。	工信部
2019年9月	《新能源汽车废旧动力蓄电池综合利用行业规范条件》（修订征求意见稿）	从事梯次利用的综合利用企业，应对废旧动力蓄电池性能做综合判断，进行分类处置，同时对金属回收率提出了要求。	工信部
2018年7月	《汽车产业投资管理规定（征求意见稿）》	动力电池回收利用领域重点发展动力电池高效回收利用技术和专用装备，推动梯级利用、再生利用与处置等能力建设。	发改委
2018年7月	《关于做好新能源汽车动力蓄电池回收利用试点工作的通知》	推动汽车生产企业落实生产者责任延伸制度，建立回收服务网点，充分发挥现有售后服务渠道优势，与电池生产、报废汽车回收拆解及综合利用企业合作构建区域化回收利用体系。	工信部等
2017年7月	《电动汽车用动力蓄电池产品规格尺寸》、《汽车动力蓄电池编码规则》、《车用动力电池回收利用余能检测》	对动力蓄电池产品规格尺寸、蓄电池编码规则、回收利用余能检测推出了推荐性标准，让新能源汽车在全生命周期都有标可依。	质检总局
2017年1月	《关于促进储能技术与产业发展的指导意见》	拓展电动汽车等分散电池资源的储能应用化，完善动力电池全生命周期监管，开展对淘汰动力电池进行储能梯次利用研究。	发改委
2016年12月	《新能源汽车动力蓄电池回收利用管理暂行办法》（征求意见稿）	国家支持开展动力蓄电池回收利用的科学技术研究，引导产学研协作，鼓励开展梯级利用和再生利用，推动动力蓄电池回收利用模式创新。并明确设计、生产及回收责任。	工信部

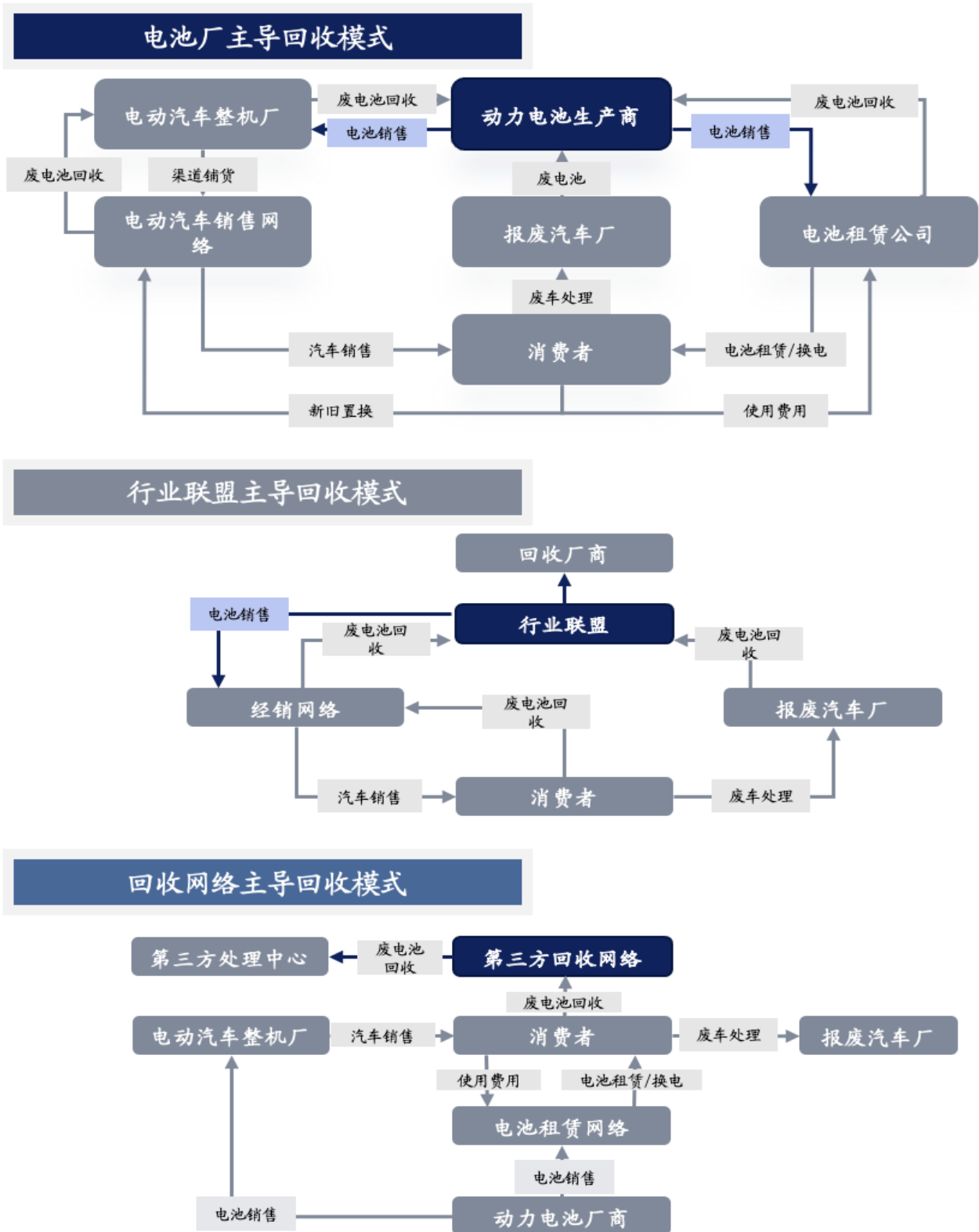
资料来源：各政府网站，HTI

图表 7: 金属回收量测算

对应退役年份	2022E	2023E	2023E	2023E
三元材料 (GWh)	30.72	52.22	71.58	100.53
三元电池报废量 (万吨)	21.94	34.82	44.74	59.14
磷酸铁锂 (GWh)	21.57	24.03	27.62	33.96
磷酸铁锂报废量 (万吨)	16.59	17.16	18.41	21.23
退役总量 (GWh)	52.29	76.25	99.21	134.49
报废电池总量 (万吨)	38.54	51.98	65.15	80.36
梯次利用市场空间 (亿元)	99.56	102.99	110.49	127.36
拆解回收市场空间 (亿元)	82.26	130.53	167.74	221.71
总回收市场空间 (亿元)	183.66	236.44	281.98	354.03

资料来源: 中汽中心, HTI

图表 8: 主要回收模式



资料来源:《电动汽车动力电池回收模式研究》, HTI

APPENDIX 1**Summary**

The layout of lithium recycling business has already started, following the pace of popularization of electric vehicles. The explosion of the penetration rate of electric vehicles in 2016-2018 will lead to the wave of retirement of power battery installations. The high price of lithium carbonate helps the economics of recycling, and new players are actively entering. The recycling model is the core, and the superior resources are the main sources. The policy side has given strong encouragement, and industry standards and core players have gradually formed.

Investment advice: focus on small-cap style growth targets. We recommend focusing on the core targets of power batteries and lithium carbonate recycling, and focusing on companies whose recycling business has a greater growth potential for their company performance. It is recommended to pay attention to the targets: Tianqi shares, Chaoyue Technology, and Dcenti.

Risks: large fluctuations in lithium carbonate prices, intensified market competition, and repeated industry policies.

附录 APPENDIX

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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。

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Analyst Stock Ratings

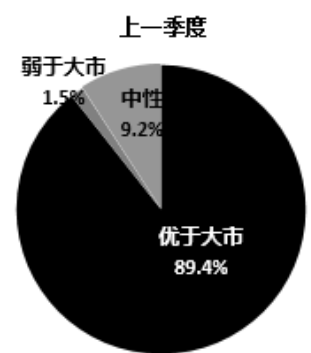
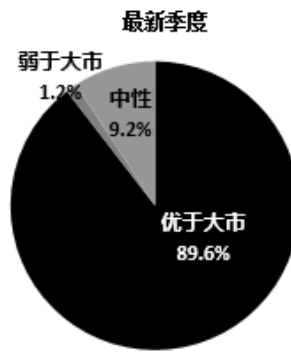
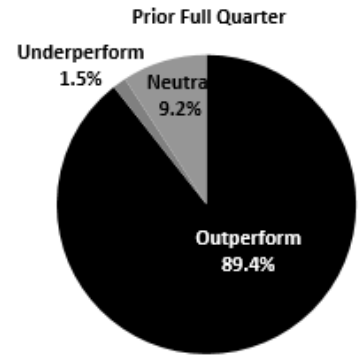
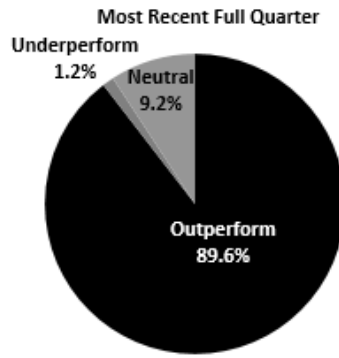
Outperform: The stock's total return over the next 12-18 months is expected to exceed the return of its relevant broad market benchmark, as indicated below.

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.

评级分布 Rating Distribution



截至 2023 年 3 月 31 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	89.6%	9.2%	1.2%
投资银行客户*	5.2%	6.4%	9.5%

*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 Mar 31, 2023

	Outperform	Neutral (hold)	Underperform
HTI Equity Research Coverage	89.6%	9.2%	1.2%
IB clients*	5.2%	6.4%	9.5%

*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.

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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.

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