

Power Equipment & New Energy & Utilities & ESG

海通国际 ESG 行业报告：碳边境税推动能源转型，中期绿氢需求有望爆发 ESG Industry Report: Carbon Border Tax Promotes Energy Transformation, and Medium-Term Green Hydrogen Demand Expected to Boom

杨斌 Bin Yang

bin.yang@htisec.com

热点速评 Flash Analysis

(Please see APPENDIX 2 for English summary)

4月25日，欧盟理事会投票通过了碳边境调节机制（CBAM）。这标志着欧盟 CBAM 走完了整个立法程序，将于 2023 年 10 月 1 日生效且进入过渡阶段，并于 2026 年正式开征，8 年后完全取消免费配额。

2026 年后欧洲灰氢进口将面临 1.1 欧元/千克的氢气碳配额成本（假设 100 欧元/吨的碳价），绿氢经济性有望超越灰氢。 欧盟坚定不移地推动碳中和战略，使得碳价在近年来维持高位。欧盟排放交易体系于 2005 年启动，多年来价格疲软，直到 2018 年欧盟从市场上取消过剩许可，碳价才开始回升。2021 年，当欧盟公布了最新的二氧化碳减排法时，价格上涨了 150%。高碳价是欧盟政策制定者的初衷和预期，高昂的碳价有助于加速推动从化石能源的转型，因此碳配额供给或将长期维持偏紧。Andurand Capital Management 气候研究主管马克刘易斯表示，如果碳价保持在每吨 100 欧元以上，绿氢才可能比灰氢和蓝氢更具有成本竞争力。煤制氢每生产 1 公斤灰氢将会排放 11 公斤二氧化碳，考虑到碳税居高不下，按当前 100 欧元/吨的碳价计算，煤制氢需要增加 1.1 欧元/kg 的氢气碳配额成本，灰氢将会变得更昂贵。目前灰氢制备成本约 1 欧元至 2 欧元/千克，绿氢制备成本约 3 欧元至 8 欧元/千克。随着碳关税的全面实施，和可再生能源发电成本的下降，未来绿氢经济性有望超越灰氢。

欧盟及欧洲多国出台政策刺激电解槽行业的发展。 短期内 CBAM 对电解槽的需求影响有限，中长期看 CBAM 会提高绿氢的经济性，结合欧盟/欧洲各国发布的氢能战略，中长期看氢能需求有望爆发。欧盟在 2020 年 7 月发布《欧洲氢能战略》，分三个阶段发展并扩大氢能的应用。战略提出短期目标 2020–2024 年安装至少 6GW 氢电解槽及生产 100 万吨绿氢；中期目标 2025–2030 年目标安装 40GW 以上的氢电解槽和高达 1000 万吨的绿氢产量；远期目标 2030–2050 年绿氢能够大规模部署。欧盟又于 2022 年 5 月公布 REPowerEU 计划，其中提出到 2030 年达到绿氢产量 1000 万吨，并增加了进口 1000 万吨绿氢的目标。2023 年 3 月，欧盟委员会官网公布《净零工业法案》，提出 2030 年至少达到 100GW 氢气的电解槽总装机容量，并提出本土产能达到 100GW 的目标的至少 40%。此外，欧洲各国也纷纷出台氢能战略，仅西班牙、英国、德国、荷兰、法国和意大利等六国的战略规划便能大体满足《净零工业法案》的 2030 年 40GW 电解槽产能的战略目标。

电解槽是绿氢制备的重要设备，其产能将直接影响到绿氢发展速度。当前世界范围内电解槽装机量依然较少。随着碳关税的全面实施，和可再生能源发电成本的下降，未来绿氢经济性有望超越灰氢。中长期绿氢的大规模应用将加速全球能源转型。

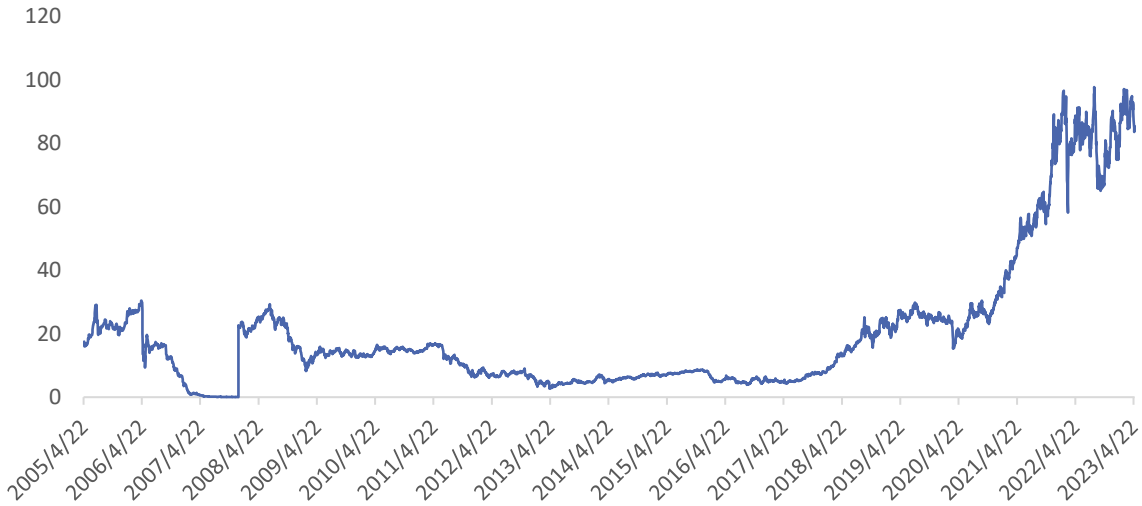
投资建议

CBAM 法案落地将进一步刺激绿氢需求，电解水设备产业链的公司将受益。建议关注电解槽标的：昇辉科技(300423 CH)、华电重工(601226 CH)、亿利洁能(600277 CH)。

风险

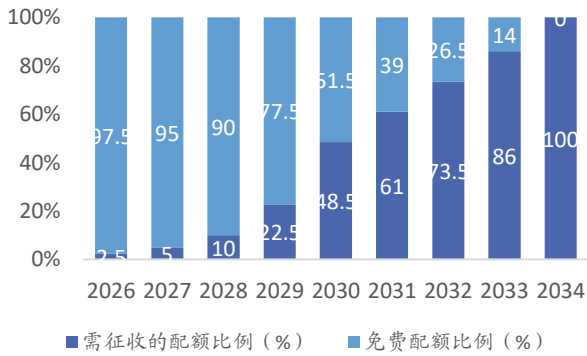
行业政策变化；法案后期落地进程不及预期；低碳转型不及预期

图表 1: 近期欧盟排放配额(EUA)结算价维持在高位



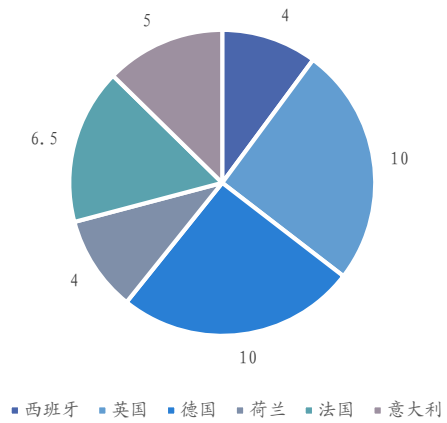
资料来源: Wind, HTI

图表 2: CBAM 将于 2026 年起征, 8 年后完全取消免费配额



资料来源: 欧盟官网, HTI

图表 3: 欧洲各国 2030 年低碳氢产能目标 (GW)



资料来源: 公开资料, HTI

图表 4: 主要制氢路径及其优缺点、生产成本

制氢方法	方法	原料	优点	缺点	碳排放 (kgCO ₂ /kgH ₂)	生产成本 (元/kgH ₂)
灰氢	煤制氢	煤	技术成熟、成本低	储量有限, 制氢过程存在碳排放问题, 须提纯及去除杂质	传统煤气化 ~19	6.77~12.14 元/kg
	天然气制氢	天然气			SMR ~9.5	7.5~24.3 元/kg
蓝氢	工业副产氢	焦炉煤气、化肥工业、氯碱、轻烃利用等	成本低、效率高	须提纯及杂质去除	焦炉气/氯碱制氢 <5	14.6-26.9 元/kg
	结合CCUS技术	灰氢原料+CCUS	碳排放量小	成本高, 经济性有限	传统煤气化+CCUS <2 / SMR+CCUS <1	25.8~32.1 元/kg
绿氢	电解水制氢	电、水	工艺简单, 无碳排放	成本高, 经济性有限	0	碱性电解: 9.2~40 元/kg PEM 电解: 20.5~48.5 元/kg (电价 0.1~0.6 元/kWh)

资料来源: 《中国氢能产业发展报告 2020》, 车百智库, HTI

APPENDIX 1

Summary

Event: On April 25, the Council of the European Union voted to adopt CBAM. This marks that the EU CBAM has completed the entire legislative process. It will take effect on October 1, 2023 and enter a transitional stage, and will be officially launched in 2026.

After 2026, European gray hydrogen imports will face a hydrogen carbon quota cost of 1.1 euros/kg (assuming a carbon price of 100 euros/ton), and the cost performance of green hydrogen is expected to surpass that of gray hydrogen.

The European Union and many European countries have introduced policies to stimulate the development of the electrolyzer industry.

The electrolyser is an important equipment to produce green hydrogen and its capacity will have an impact on the development rate of green hydrogen. The current installed capacity of electrolysers is still relatively small worldwide. With the full implementation of carbon tariffs and the decreasing cost of renewable energy power generation, the economics of green hydrogen is expected to surpass that of grey hydrogen in the future. In the medium to long term, the large-scale application of green hydrogen will accelerate the global energy transition.

Investment Advice: The implementation of the CBAM will further stimulate the demand for green hydrogen, and companies in the green hydrogen industry chain will benefit. We suggest the attention on Sunfly Intelligent Technology (300423 CH), Huadian Heavy Industry (601226 CH), Elion Energy (600277 CH).

Risk: Changes in industry policies; the implementation of the bill may be less than expected; the low-carbon transformation may be less than expected

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。

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.

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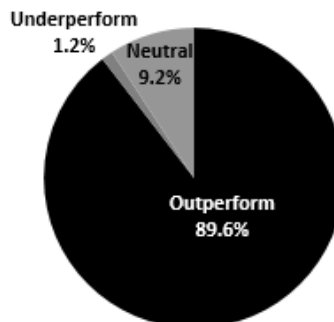
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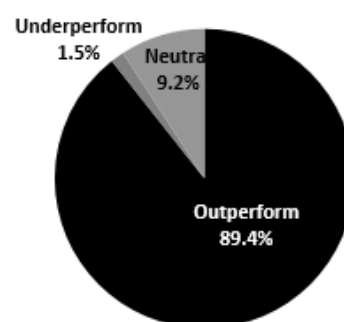
Outperform: The stock's total return over the next 12-18 months is expected to exceed the return of its relevant broad market benchmark, as indicated below.

评级分布 Rating Distribution

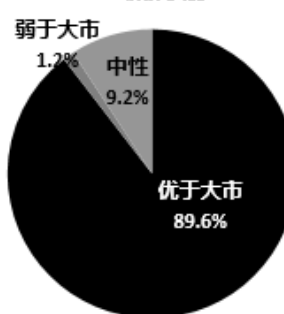
Most Recent Full Quarter



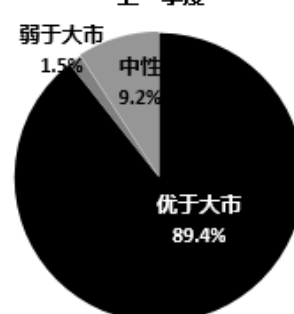
Prior Full Quarter



最新季度



上一季度



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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

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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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研究机构名称: Haitong Securities India Private Limited

SEBI 研究分析师注册号: INH000002590

地址: 1203A, Floor 12A, Tower 2A, One World Center

841 Senapati Bapat Marg, Elphinstone Road, Mumbai 400 013, India

CIN U74140MH2011FTC224070

电话: +91 22 43156800 传真: +91 22 24216327

合规和申诉办公室联系人: Prasanna Chandwaskar; 电话: +91 22 43156803; 电子邮箱: prasanna.chandwaskar@htisec.com

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Name of the entity: Haitong Securities India Private Limited

SEBI Research Analyst Registration Number: INH000002590

Address : 1203A, Floor 12A, Tower 2A, One World Center

841 Senapati Bapat Marg, Elphinstone Road, Mumbai 400 013, India

CIN U74140MH2011FTC224070

Ph: +91 22 43156800 Fax:+91 22 24216327

Details of the Compliance Officer and Grievance Officer : Prasanna Chandwaskar : Ph: +91 22 43156803; Email id: prasanna.chandwaskar@htisec.com

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