How Energy Storage is Reshaping Europe's Electricity Market

欧洲储能如何重塑电力市场

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EAEST
EUROPEAN ASSOCIATION OF ENERGY STORAGE TRADE

01

The Basic Structure and Core Challenges of the European Electricity Market
欧洲电力市场的基本结构与核心挑战

The Basic Structure and Core Challenges of the European Electricity Market

The European electricity market is characterized by cross-border interconnection, a high reliance on renewable energy, and market-driven pricing. However, it faces 3 major structural contradictions:
欧洲电力市场以跨国互联性、高比例可再生能源依赖及电力市场化定价为核心特征，但面临三大结构性矛盾：

- Challenge 1 -Cross-border Interconnection without Adequate Coordination

跨国互联协调不足

- Challenge 2 -High Renewable Penetration and Grid Adaptability Lag

新能源高渗透率与电网适应性滞后

- Challenge3 -Market Pricing Disconnected from Grid Physics

市场化定价与物理电网特性脱节

Core Challenges

Current core conflict:当前核心矛盾

Renewable integration needs vs. lagging grid adaptability.

新能源并网需求与电网适应性滞后的冲突。

Market Evolution:市场演进

2010s saw subsidy-driven renewable capacity boom.

2020s: Rising penetration exposed grid dispatch inefficiencies and market imbalances.

2010 年代补贴推动风光 装机爆发式增长。

2020 年代随着渗透率提升，电网调度不足与市场机制失衡问题凸显。

Renewable integration needs vs. lagging grid adaptability

新能源并网需求与电网适应性滞后的冲突

Share of intermittent renewables in the electricity mix of selected European countries
部分欧洲国家电力结构中间歇性可再生能源占比

Countries with high shares of wind and solar power – such as Germany, Spain and the Netherlands, where renewables exceed 30% of the energy mix – also face the highest congestion costs.

在德国、西班牙和荷兰等国，风能和太阳能在能源供应中占比高，可再生能源在整体能源构成里超过 30%。这些国家的电网需要承载大量间歇性的可再生能源电力，对输电网络提出了很高要求。但由于输电能力、储能设施等方面的限制，电力在传输过程中容易出现拥堵情况。

GERMANY 德国

2040

56.7 billion

2040

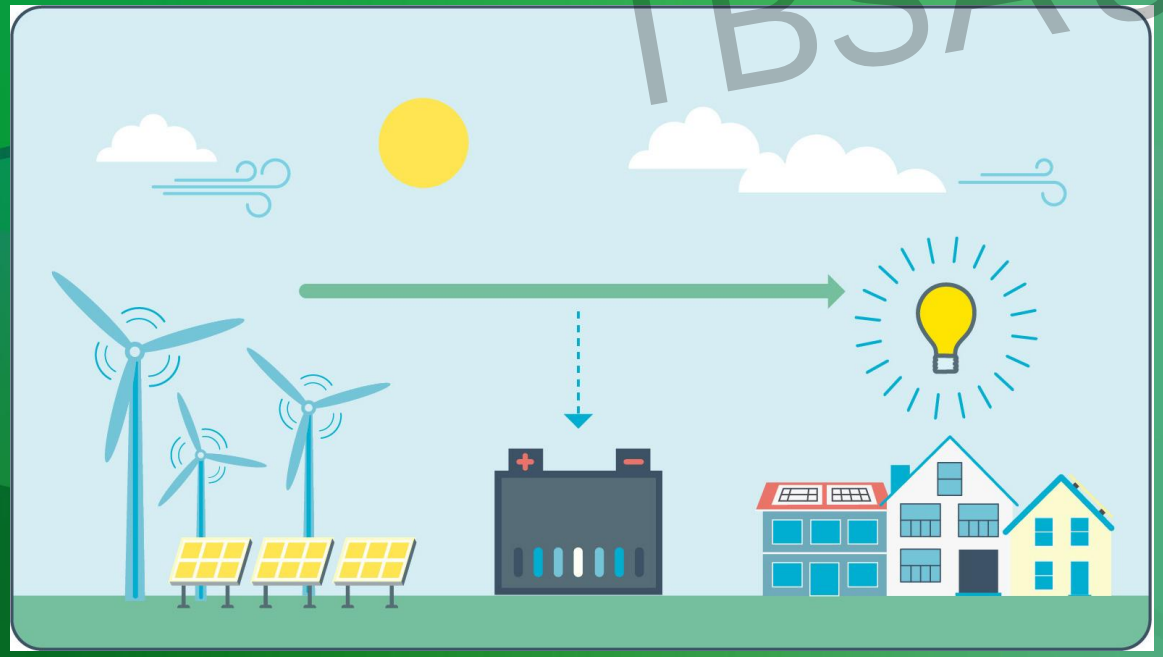
103%

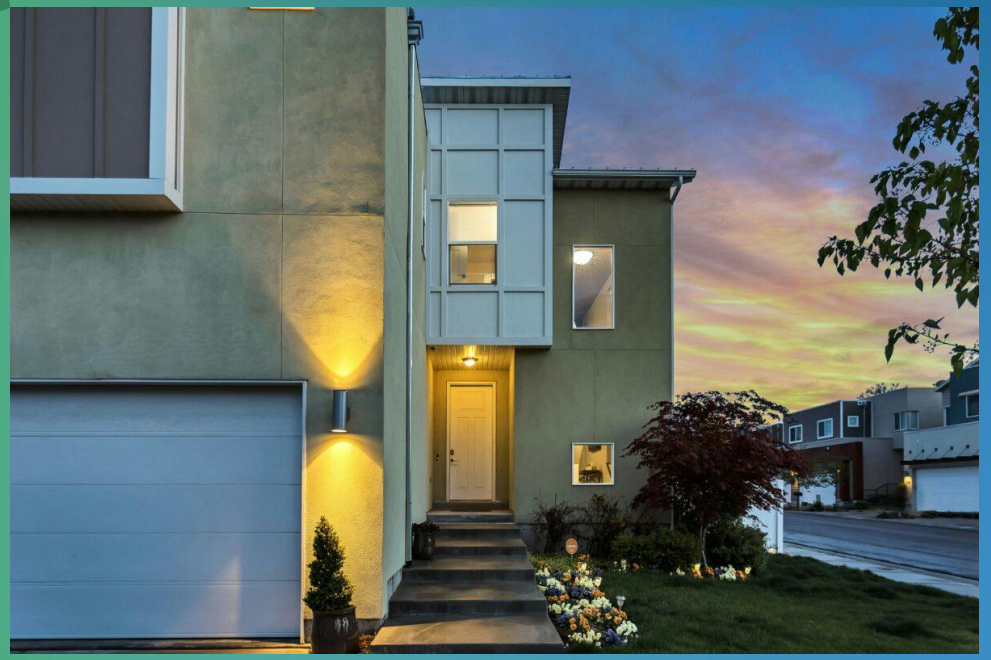
Storage’s Transformative Role

储能角色转变

Energy storage shifts from a “passive regulator” to a “core hub” for market reconstruction.
Actively balances supply and demand, relieving grid pressure.

储能从“被动调节者”转变为市场重构的“核心枢纽”。
主动平衡供需，缓解电网压力。





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02

Breaking the Deadlock: The Time-Space Restructuring Capability of Energy Storage
如何破局---储能的时空重构能力

The Time-Space Restructuring Capability of Energy Storage

The systemic value of energy storage technology is reflected in three major dimensions:
储能技术的系统性价值体现在三大维度：

01 Market Stability 市场稳定性

Not just an “energy storage/charging” –a core hub for regulating supply-demand balance.绝非简单的“能量存取”工具，而是调节供需平衡的核心枢纽。

205% storage capacity increase by 2030 to limit price fluctuations within ±30%.
2030 年前储能容量需提升 205%，以控制电价波动在 ±30% 以内。

02 Energy Security 能源安全性

Becomes a “strategic buffer” for stable renewable supply post-regional conflicts.区域冲突后成为新能源稳定供应的“战略缓冲”。

Storage+interconnectors protect the pan-European grid from crises (e.g., French nuclear outages).
储能 + 互联器抵御区域危机（如法国核电故障），保障全欧电网安全。

03 Green Economic Growth 绿色经济增长

European market to exceed €200B by 2030, creating 100,000+ jobs.2030 年欧洲市场规模预计超 2000 亿欧元，创造数十万岗位。

Spain’s Power-to-X technology triples value by converting solar to green hydrogen.西班牙通过 Power-to-X 技术将光伏转化为绿氢，价值跃升 300%。

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03

The Collaborative Evolution of European Energy Storage Policies
欧洲储能政策体系的协同演进

The Collaborative Evolution of European Energy Storage Policies
欧洲储能政策体系的协同演进

2010–2020: Subsidy-driven growth in renewable installations.

2010-2020年以补贴推动新能源发展；

2021-2025: Policies focus on mandatory energy storage configuration, such as the EU's REPowerEU policy, which mandates storage for renewable projects and makes grid dispatch dependent on storage.

2021-2025年政策转向强制配置，例如欧盟REPowerEU政策要求新能源项目强制配套储能，电网调度开始依赖储能；

2026-2035: Energy storage will become central to the grid, with market mechanisms taking the lead.

2026-2035年储能将成电网核心，市场机制主导。

Policy Impact Examples + Technology-Policy Synergy
案例 + 政策技术协同

EU's REPowerEU policy could shorten grid connection time by 40%.

欧盟 REPowerEU 政策若实施，可缩短风光并网周期 40%。

Germany's fee removal boosts storage project value by 19%.

德国取消电网双重收费，使储能项目净现值提升 19%。

Chinese liquid cooling tech enables 70℃ operation, driving down storage costs.

中国液冷技术让储能系统在 70℃ 沙漠环境稳定运行，降低成本。

Technological innovation becomes a "secret weapon" for stable prices.

技术创新成为稳定电价的“秘密武器”。

Chinese storage systems gain 38% market share in Europe in three years.

中国储能系统在欧洲市占率三年跃升 38%。

Proves the cycle: Good tech attracts capital, capital drives better tech.

印证“好技术吸引资金，资金催生更好技术”的良性循环。

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04

How does Energy Storage Define Europe's Energy Future?
储能如何定义欧洲的能源未来?

Goal by 2035: A “smart, flexible, autonomous” power system.

欧洲2035 目标：构建“智能、灵活、自主”的电力体系。

Future Deployment Plan

欧洲未来发展计划

By 2030, a further 128 GW/ 300 GWh of electrochemical storage is expected to be added to European grids.

最新报告显示，到 2030 年，欧洲电网预计还将新增 128 吉瓦 / 300 吉瓦时的电化学储能。

128 GW/300GWh

by 2030

added to European grids

electrochemical storage

Future market: No longer just “having” storage–relying on it as a core foundation.

未来电力市场：从“拥有储能”到全面“依赖储能”，视其为核心基石。

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05

EAEST's Core Values
欧洲储能行业协会的核心价值

EAEST's Core Values

欧洲储能行业协会的核心价值

EAEST 定位

EAEST is deeply involved in and shaping the future of the European energy storage market, driving change through its three core functions:

EAEST，是储能行业的“战略中枢”，正深度参与并塑造欧洲储能市场的未来，并通过三大核心职能引领变革：

The Strategic Hub of the Storage Industry
储能行业的战略中枢

Shaping Market Rules
塑造市场规则

Uses authoritative reports and think tank research to influence policy optimization.
通过权威行业报告与智库研究，推动政府优化政策导向。

Building Ecosystems
构建生态体系

Connects China-Europe resources to deploy lab technologies in the European market.
精准对接中欧资源，推动储能技术落地欧洲市场。

Driving Market Transformation
驱动市场变革

Facilitates Sino-European exchanges and creates tailor-made plans for enterprises.
促进中欧项目交流，为政企量身制定发展计划。

EAEST's Main Functions

欧洲储能行业协会的主要功能

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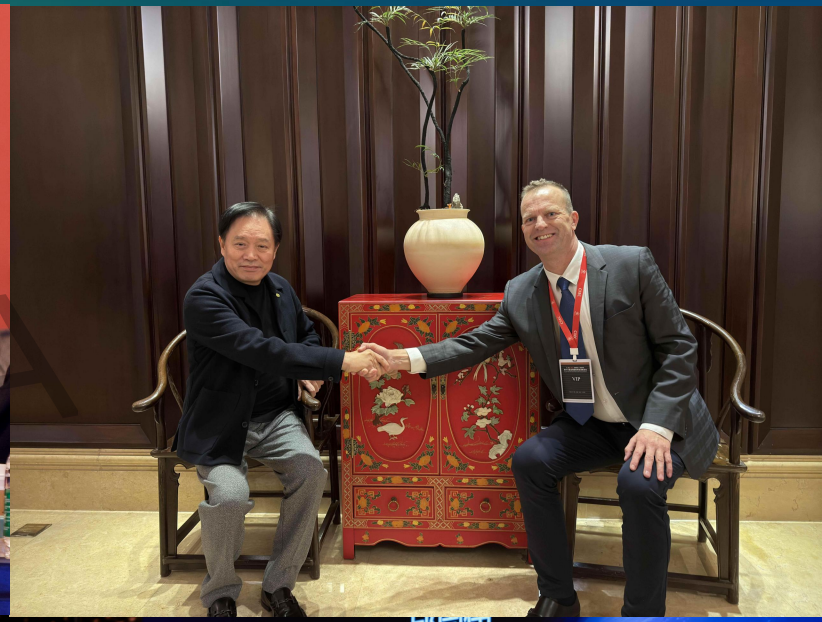
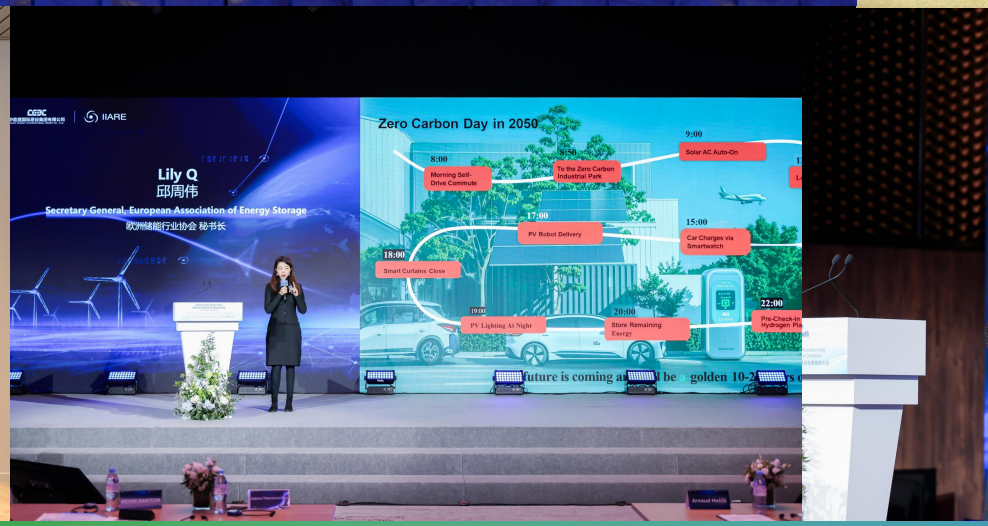
欧洲储能行业协会的主要功能





EAEST's Main Functions

欧洲储能行业协会的主要功能

The reshaping of the European electricity market is a systemic project of "storing, adjusting, and earning."

At EAEST, we're proud to be a bridge between markets, technologies, and people. Let's keep moving forward – together – toward a smarter, greener, more resilient energy future.

欧洲电力市场的重塑是一项"存得住、调得动、赚得到"的系统性工程。EAEST很自豪能成为连接市场、技术与人们的桥梁。让我们携手共进，朝着更智能、更绿色、更具韧性的能源未来不断前行。

International platform

跨国合作平台

Match Making

供需双方的精准匹配

Think Tank& Innovations

行业报告与智库研究

Experts

专家服务

Trade Shows

展会会议

Supply Chain

供应链

Tour&Visit

商务考察&游学培训

OUR CALL 我们的呼吁

EAEST invites global partners to co-build a smart, resilient, and fair energy future.

EAEST愿与全球伙伴携手，共建智能、韧性、公平的能源未来。

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