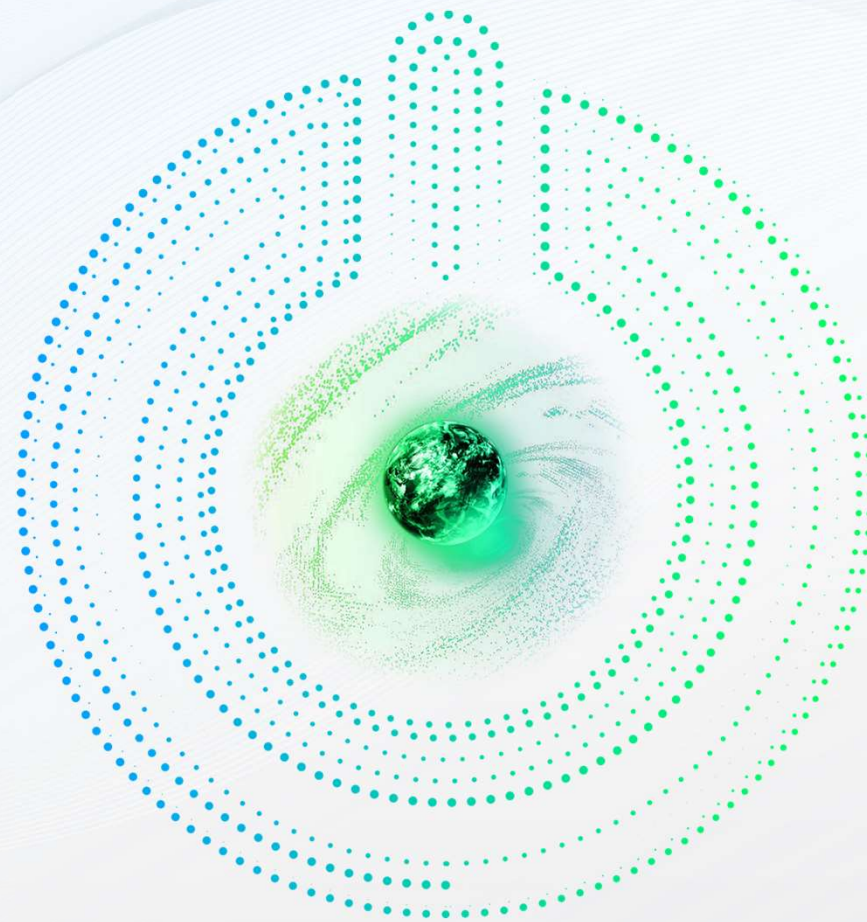


风电绿色金融
助力碳中和
Wind Power
Green Finance
Helps Achieve
Carbon
Neutrality



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PART 01

风电产业发展状况

Development of the Wind Power Industry

全球碳排放情况 Global Carbon Emissions



年排放量与累计排放量

Annual Carbon Emissions and Cumulative Carbon Emissions

年份 Year	指标 (亿吨) Index (100 million tons)	欧盟 EU	美国 US	印度 India	中国 China
1950	当年碳排放量 Current Annual Carbon Emissions	13	25	0.6	0.8
	累计碳排放量 Cumulative Carbon Emissions	656	920	20	19
2019	当年碳排放量 Current Annual Carbon Emissions	29	53	26	102
	累计碳排放量 Cumulative Carbon Emissions	2870	4102	519	2200

碳排放强度与人均碳排放量

Intensity of Carbon Emissions and Carbon Emissions Per Capita

年份 Year	指标 Index	欧盟 EU	美国 US	印度 India	中国 China
1970	碳排放强度 (千克/美元) Intensity of Carbon Emissions (kg/\$)	0.6	0.9	0.8	4.1
	人均碳排放量 (吨) Carbon Emissions Per Capita (tons)	8.6	20.6	0.3	0.9
2019	碳排放强度 (千克/美元) Intensity of Carbon Emissions (kg/\$)	0.2	0.3	0.9	0.9
	人均碳排放量 (吨) Carbon Emissions Per Capita (tons)	6.6	16.1	1.9	7.1

注：累计碳排放量根据1751年以来的数据计算

Note: Cumulative carbon emissions are calculated based on data since 1751

- 欧盟1979年实现了碳达峰（41亿吨），相应人均碳排放约9.9吨。美国在2005年实现碳达峰（61亿吨），相应人均碳排放约19.6吨。
The EU carbon emissions peaked (4.1 billion tons) in 1979, with corresponding carbon emissions per capita of about 9.9 tons. The US carbon emissions peaked (6.1 billion tons) in 2005, with corresponding carbon emissions per capita of about 19.6 tons.
- 欧盟、美国均将碳中和的目标时间定在了2050年，如果将达峰到中和定义为碳中和的下半场，就意味着欧盟碳中和的下半场长达71年，美国的下半场有45年，中国却只有30年，任重道远。
The EU and the United States have set 2050 as the target date to achieve carbon neutrality. If the goal set from peak to neutrality is defined as the second half of carbon neutrality, such goal may be reached within 71 years for the EU and 45 years for the United States, but only 30 years for China, which is still a demanding and arduous task.

在2019的当年排放量上，中国虽然超过了其他经济体，但欧盟、美国的工业化起步较早，累计碳排放量也更大。

While in 2019 China produced more carbon emissions than other global economies in terms of **current annual carbon emissions**, the cumulative carbon emissions of the EU and the United States are higher since they started industrialization earlier.

人均碳排放量看，中国是7.1吨，仍不足美国16.1吨的一半。对于各国协调应对碳中和目标时区分“共同但有差别”的责任非常重要。

In terms of **carbon emissions per capita**, China is 7.1 tons, which is less than half of the 16.1 tons of the United States.

It is important for countries to identify "common but differentiated" responsibilities when coordinating their responses to carbon neutrality targets.

中国碳中和目标：习近平主席提出中国二氧化碳排放力争于2030年前达到峰值，努力争取2060年前实现碳中和。

China's carbon neutrality target: President Xi Jinping has announced that China will strive to peak CO2 emissions before 2030 and achieve carbon neutrality before 2060.

绿色风电助力碳中和

Green Wind Power Helps Achieve Carbon Neutrality



中国八大重点行业排放

Emissions from Eight High-Emission Industries in China

- 根据中国碳核算数据库的数据，2000-2017年，全国碳排放量由30.03亿吨上升至93.39亿吨，电力、交通运输、石化、化工、建材、钢铁、有色、造纸这八大行业的碳排放占比由80%升至约88%，比例提升主要由电力、钢铁行业贡献。八大行业中，2017年碳排放占比由高到低依次是电力(主要是火电，44%)、钢铁(18%)、建材(13%)、交通运输(含航空，8%)、化工(3%)、石化(2%)、有色(1%)、造纸(0.3%)。
- According to the Carbon Emission Accounts and Datasets (CEADs), China's carbon emissions increased from 3.003 billion tons to 9.339 billion tons from 2000 to 2017, and the share of carbon emissions from the eight high-emission industries of power generation, transportation, petrochemicals, chemicals, building materials, steel production, non-ferrous metals and papermaking rose from 80% to about 88%, mainly contributed by power generation and steel production. Among these eight industries, the percentage of carbon emissions in 2017 in descending order is as follows: power generation (mainly thermal power, 44%), steel production (18%), building materials (13%), transportation (including aviation, 8%), chemicals (3%), petrochemicals (2%), non-ferrous metals (1%), and papermaking (0.3%) .

绿色风电助力碳减排

Green Wind Power Helps Reduce Carbon Emissions

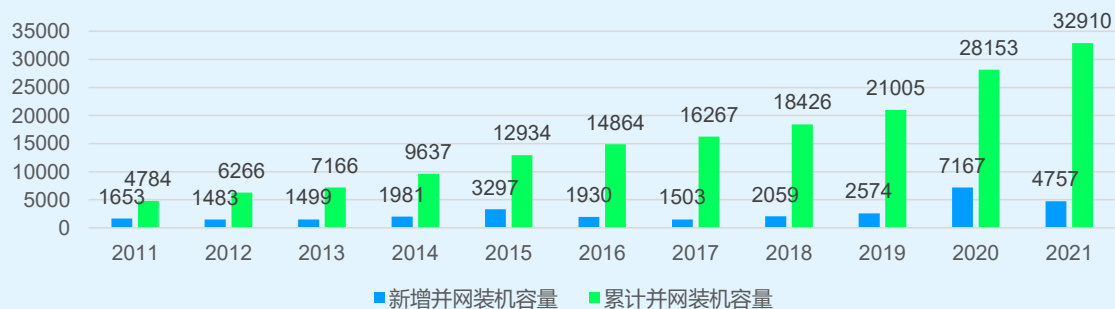
- 我国已将风电产业列为国家战略性新兴产业之一。风电作为最具潜力的电源形式，具有天然绿色的属性，不会产生任何碳排放。如果用风电替代火电，则可极大减少碳排放，助力“碳中和”目标实现。
- China has listed the wind power industry as one of the national strategic emerging industries. As the most promising form of power, wind power is naturally green and does not produce any carbon emissions. If wind power is used to replace thermal power, it can greatly reduce carbon emissions and help achieve the "carbon neutrality" target.

风电产业发展情况 Development of the Wind Power Industry

21.67%

近10年我国风力发电累计并网装机容量
年均复合增长率
CAGR of cumulative grid-connected installed wind
power capacity in China for the past 10 years

2011-2021年我国风电新增并网装机容量及累计并网装机容量
New and cumulative grid-connected installed wind power capacity
in China 2011-2021



New grid-connected
installed capacity

Cumulative grid-
connected
installed capacity

2021年
In 2021

中国风电新增装机规模
Newly installed wind
power capacity in China

其中陆上风电新增装机
Newly installed onshore
wind power capacity

海上风电新增装机
Newly installed
offshore wind power
capacity

4757万千瓦
47.57 Gigawatt

3067万千瓦
30.67 Gigawatt

1690万千瓦
16.90 Gigawatt

全国风电累计装机
Cumulative installed
wind power capacity

其中陆上风电累计装机
Cumulative onshore wind
power installed capacity

海上风电累计装机约
Cumulative offshore
wind power installed
capacity

3.29亿千瓦
329 Gigawatt

3.02亿千瓦
302 Gigawatt

2590万千瓦
25.90 Gigawatt

“十四五”规划指出 The Fourteenth Five-Year Plan states:

**2025年非化石能源占能源消费总量比重提高到20%左右。
The share of non-fossil energy in total energy
consumption will be increased to about 20% in 2025**

风电产业发展情况

Development of the Wind Power Industry

机遇 Opportunities

2020年9月，习近平主席在第75届联合国大会上宣布，中国二氧化碳排放力争于2030年前达到峰值，努力争取2060年前实现碳中和。
In September 2020, President Xi Jinping announced at the 75th session of the United Nations General Assembly that China will **peak its CO2 emissions by 2030 and will strive to achieve carbon neutrality by 2060.**

在气候雄心峰会上，习主席提出2030年风电、太阳能发电总装机容量将达到12亿千瓦以上。

At the Climate Ambition Summit, President Xi proposed that the combined installed wind and solar power capacity would **exceed 1,200 Gigawatt by 2030.**

挑战 Challenges

风电补贴退潮，原材料价格上涨，整体装机价格下滑
Wind power subsidy comes to an end, raw material price rises, and overall installed equipment sale price falls

自2021年1月1日开始，新核准的陆上风电项目全面实现平价上网，国家不再补贴。风电项目收益率下降，绿色行业短期发展面临挑战。

As of January 1, 2021, all newly approved onshore wind power projects were connected to the grid at market value without any subsidies from the State. Wind power project yields decreases, and the green industry faces short term challenges

风力发电行业投资规模大，属于资金密集型行业
The wind power business is capital-intensive and requires large scale investments

单个风电开发项目至少需要几个亿，甚至十几亿的投资规模，融资能力已经成为风电企业的核心竞争力。

The development of a single wind power project requires investment of a few hundred million yuan at the minimum, or even over a billion yuan, and the ability to secure financing has become the key competitive advantage for wind power companies.



智慧能源 Intelligent Energy	智慧水务 Intelligent Water System	智慧农业 Intelligent Agriculture
智慧运营 Intelligent Operation	智慧健康 Intelligent Healthcare	

金风科技 Goldwind

- 国内最早进入风力发电设备制造领域的企业之一，已发展成为国内领军和全球领先的风电整体解决方案提供商。As one of the pioneering Chinese companies that manufacture wind power generation equipment, Goldwind has grown into a leading provider of complete wind power solutions in China and worldwide.
- A+H股上市公司。A+H share public listed company
- 2021年公司国内新增装机容量达11.38GW，国内市场份额23.92%，连续十一年排名全国第一；全球新增装机容量12.04GW，全球市场份额12.14%，全球排名第二。In 2021, the newly installed capacity of Goldwind in China reached 11.38GW, with a market share of 23.92%, ranking first in the Chinese market for 11 consecutive years. The newly installed capacity of Goldwind worldwide reached 12.04GW, with a global market share of 12.14%, ranking second in the world.

金风碳中和园区 Goldwind Carbon Neutral Park

- 金风园区3000+人，建筑面积超过9万平方米。The Goldwind Park holds over 3,000 people with a floor area of over 90,000 square meters.
- 金风园区是集可再生能源、智能微网、智慧水务、绿色农业和运动健康等功能于一体的绿色园区生态系统。The Goldwind Park is a green ecosystem that integrates renewable energy, intelligent micro-grid, intelligent water system, green agriculture and sports & health facilities.
- 2021年1月28日，中国首个可再生能源“碳中和”智慧园区认证仪式在金风园区内举行，北京绿色交易所向金风亦庄园区颁发了碳中和证书。On January 28, 2021, the certification ceremony for China's first renewable energy "carbon neutral" smart park was held at the Goldwind Park, and China Beijing Green Exchange awarded a carbon neutral certificate to the Goldwind Park.

PART 02

金风绿色金融实践

Goldwind Green Finance Experience

金风绿色金融输出信用助力绿色产业链 Goldwind Green Finance Supports the Green Industry Chain



金融支持不足，融资困难 Inadequate financial support

- 规模小，实力弱
Small and weak bargaining position
- 商业信用（交易对手）无法传导
Counterpart creditworthiness cannot be properly measured
- 银行看重主体信用，对项目现金流关注度小
Banks pay more attention to borrower creditworthiness but less attention to project cash flow
- 企业数量众多，银行融资边际成本高
Large number of industry players and high bank financing cost

金融支持力度大，融资需求满足度高 Strong financial support and financing needs are met

- ✓ 电力央企、设备制造商实力强，信用度高
SOE power companies and equipment manufacturers are creditworthy
- ✓ 电网公司是国家基础设施，隐含了政府信用
Grid companies as national infrastructures with implicit government support
- ✓ 在行业内具有核心竞争优势
Core competitive advantage in the industry

风力发电是实现碳达峰、碳中和目标的重要举措。而在风电行业中，风机整机制造企业处于产业链的核心位置，对行业发展起着至关重要的作用。金风绿色金融通过输出核心企业信用，助力风电产业链实现碳中和目标。
Wind power is key to achieve the goal of carbon peaking and carbon neutrality. In the wind power industry, the wind turbine manufacturers are at the core of the industry chain, playing a vital role in the development of the industry. Goldwind Green Finance provides confidence in the market and helps the wind power industry chain to achieve its carbon neutrality goal

绿色债券 Green Debt

- 累计发行债券、中票、ABS等合计16
Total number of issuance of bonds, medium-term notes, ABS, etc.: 16

绿色信贷 Green Credit

- 银行长期借款余额约244亿元
Long-term bank loans outstanding is approximately RMB 24.4 billion
- 银行短期借款余额约4.7亿元
Short-term bank loans outstanding is approximately RMB 470 million

绿色基金 Green Fund

- 参与出资设立深圳柏纳启航新能源产业基金
Participated in the establishment of Shenzhen Bornard Qihang New Energy Industry Fund
- 参与出资设立三峡清洁能源股权投资基金
Participated in the establishment of Three Gorges Clean Energy Equity Investment Fund

绿色租赁 Green Lease

- 天信租赁累计为30多位客户，超80个项目提供融资租赁服务
Tianxin Leasing has provided financial leasing services for more than 30 clients and over 80 projects
- 合计签订融资租赁合同总额超120亿元
Total amount of signed financial leasing contracts exceeds RMB 12 billion

金风阿根廷HELIOS项目绿色银团贷款 Goldwind Argentina HELIOS Project - Green Syndicated Loan



「中资企业首次以SOFR计价的美元绿色银团贷款 First SOFR-based USD green syndicated financing by a Chinese company

No.3

项目全面建成后，金风将成为阿根廷市场上第三大风力发电公司
Goldwind will become the 3rd largest wind power company in Argentina upon Project Completion

- 2022年2月28日，新疆金风科技股份有限公司与西班牙桑坦德银行有限公司、中信银行（国际）有限公司、中国银行股份有限公司签署阿根廷Helios风电项目2.7亿美元绿色银团贷款协议。
On February 28, 2022, Xinjiang Goldwind Science & Technology Co., Ltd signed the US\$270 million green syndicated loan agreement for the Helios wind power projects in Argentina with Banco Santander S.A., China CITIC Bank International Limited and Bank of China Limited.
- Helios风电项目群是近几年中资企业在阿根廷投资体量最大的风电项目群，总装机容量 354.6 MW。
The Helios wind power project is the largest wind power project invested by Chinese companies in Argentina in recent years, with a total installed capacity of 354.6 MW.
- 项目位于阿根廷风力最大的地区，具备良好的风资源条件。
The project is located in the windiest area of Argentina with good wind resource conditions.
- 五个项目预计每年为阿根廷提供 16 亿千瓦时的绿色能源，为中国与拉美国家绿色“一带一路”添砖加瓦。
The five projects are expected to provide Argentina with 1.6 billion kilowatt-hours of green energy per year, contributing to the Green Belt and Road Initiative between China and Latin America.

碳中和ABS Carbon Neutral ABS

国开证券-金风科技应收账款 1-4 期绿色资产支持专项计划

China Development Bank Securities - Goldwind Receivables Green Asset Backed Special Program (1-4 Series)

资产支持证券采取分期发行方式
The ABS is issued in series

发行总额不超过
The total amount will not exceed

20亿元
RMB 2 billion

发行期数不超过
The total number of series will not exceed

4期
4 Series

(专项用于碳中和)
(For carbon neutrality purpose)

国开证券-金风科技应收账款第 1 期绿色资产支持专项计划

China Development Bank Securities - Goldwind Receivables Green Asset Backed Special Program (1st Series)

品种 Type	优先 A 级资产支持证券 Senior Class A ABS	次级资产支持证券 Subordinated ABS
简称 Short Name	GC 金风 1A	GC 金风 1C
规模 (人民币元) Size (RMB)	475,000,000.00	25,000,000.00
面值 (人民币元) Par Value (RMB)	100.00	100.00
评级 Rating	AAA_{sf}	—
票面利率 Coupon Rate	4.4%/年 4.4% per annum	—
起息日 Interest Commencement Date	2021 年 5 月 10 日 May 10, 2021	2021 年 5 月 10 日 May 10, 2021
预计到期日 Expected Maturity Date	专项计划设立日届满2年后的第三个季度的对应日 (若该日为非工作日则为该日后的第一个工作日) The third quarterly date after the 2 nd anniversary of the establishment date of the Program (or the first business day after such day if such day is not a business day)	专项计划设立日届满3年后的对应日 (若该日为非工作日则为该日后的第一个工作日) The 3rd anniversary date of the establishment date of the Program (or the first business day after such day if such day is not a business day)

碳中和ABS Carbon Neutral ABS

资产支持证券采取分期发行方式
The ABS is issued in series

发行总额不超过
The total amount will not exceed

20亿元
RMB 2 billion

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4期
4 Series

(专项用于碳中和)
(For carbon neutrality purpose)

国开证券-金风科技应收账款第1期绿色资产支持专项计划
China Development Bank Securities - Goldwind Receivables Green Asset Backed Special Program (1st Series)

推广对象 Target Investor	由合格投资者认购 Qualified institutional investors
托管银行 Custodian	上海浦东发展银行股份有限公司乌鲁木齐分行 Shanghai Pudong Development Bank Co., Ltd. Urumqi Branch
登记机构 Registrar	中国证券登记结算有限公司上海分公司 China Securities Depository and Clearing Co., Ltd. Shanghai Branch
流动性安排 Trading Arrangement	通过上海证券交易所固定收益证券综合电子平台进行转让 The Shanghai Stock Exchange's Integrated Electronic Platform for Fixed Income Securities

风电公募REITs Wind Power REITs



投资循环 Investment Cycle

通过将风电场等重资产装入REITs上市，由REITs平台保留资产管理权，投资者进行投资，原资产持有人获得资金后进行新的电厂投资、孵化，产生的资产再装入REITs，形成投资循环。

The Investment Cycle consists of the following steps:

- First, Goldwind creates REITs which own a group of wind farms
- Second, Goldwind arrange for the listing of the REITs. The REITs platforms shall retain asset management rights
- Third, after investors invest in the REITs, the original assets' owners will use the funds they received from REITs to further invest in building new wind farms
- Lastly, there will be a new set of assets derived from such new set of wind farms. The newly derived assets will be used to form a new set of REITs, which will be listed.

项目名称 Project Name	项目容量 Project Capacity	总投资 Total Investment	2020年 发电小时数 Power Generation Duration in 2020 (in hours)
Project I	100MW	9-10亿元 900 million – 1 billion RMB	2500-2600
Project II	49.5MW	6-7亿元 600 – 700 million RMB	3100-3200
Project III	18MW	1-2亿元 100 – 200 million RMB	2600-2700

本公募REITs拟采用三个风电场资产入池。项目初始总投资16-19亿元，自2016年起开始陆续并网，一般运营期限为20年。

The REITs may consist of three wind farms, and the initial project investment amount is around 1.6 -1.9 billion RMB. The wind farms are connected to the power grid from 2016 with an expected operating term of 20 years.

以上数据仅为预估值，不代表最终发行结果
The above data are estimates only and does not represent the final structure

PART 03

促进绿色金融发展建议

Promoting the Development of Green Finance

金融支持风电绿色发展

How to support Wind Power Green Finance



建立绿色认证体系 Establish Green Certification System

完善绿色标准、认证、标识体系，促进国际合作和互认。推动国内国际绿色低碳贸易规则、机制对接。

- Perfect Green standard, certification and recognition systems
- Promote mutual recognition of international standards and cooperation

Promote alignment of China's and international Green-Low-Carbon Trade practices

完善绿色金融市场体系 Improve the Green Capital Market Approach

建议推进政府和社会资本合作，完善绿色金融市场体系，推动绿色金融工具创新，加快建立统一规范的多层次绿色金融市场体系。

Further cooperation between the Government and Private Capital sectors to:

- Refine the green capital market
- Encourage innovation in Green financing methods
- Facilitate the establishment of a unified, standardized and multi-layered Green Capital Market approach

金融机构加大创新力度 Financial Institutions to propose more Innovative Financing Methods

建议金融机构加大创新力度，通过创新金融工具，解决绿色投融资所面临的期限错配、信息不对称、产品种类单一等问题。金融支持打造绿色产业链。

- Financial institutions should become more innovative to resolve challenges encountered by Green-investment and Green-financing, such as term mismatch, information asymmetry, limited selection of financial products, etc.
- Create a Green industrial chain with proper financial support

鼓励绿色行业技术创新 Promote Technological Innovations In Green Industry

建议通过绿色金融鼓励绿色技术创新，鼓励绿色发展基金、政府引导基金等，促进绿色产业发展和成果转化，为绿色发展奠定技术创新的动力。

- Encourage Green technological innovation, Green Development Fund, Government Incentive Fund, etc. through Green Financial Services
- Further the development and technological transformation in Green sectors
- Utilize continuous innovation in technology as the foundation for future Green development

Thank you!

谢谢

