碳交易在生物天然气产业中的作用与前景

Roles and Prospects of Emissions Trading System in biogas industry

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公司简介 Who we are

中创碳投 SinoCarbon

- **成立于2010 年7 月，注册资本3000万元**

Founded in July 2010, with a registered capital of 30 million RMB

- **在中国碳交易试点和全国碳市场建设领域为国际机构、中央和地方政府、企业客户提供服务**

Has been an active and dedicated institution supporting the establishment of carbon market in China both at national and pilot level since 2011. Clients include government Institutions both at central and local level, key emission industries and various international organizations and NGOs

- **总部北京，20余个省市分子公司，160名员工**

Based in Beijing, with 20 provincial offices and branches across China; 160+ employees

1. 全国碳市场最新进展

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The basic process of developing CCER project

气候变化
Climate change

南极冰川在融化
Melting of glaciers

图瓦卢:全球第一个因海平面上升而进行全民迁移的国家
Tuvalu: the first country to migrate because of the rise of sea-level

北极熊在2100年可能灭绝
Polar bears may be extinct in 2100

西班牙-严重干旱
Severe drought in Spain

巴拉圭·森林和草原大火
Paraguay: forest and grassland fires

我国应对气候变化的决心

China’s determination to deal with climate change

《中美元首气候变化联合声明》

<U.S.-China Joint Announcement on Climate Change>

率先批准《巴黎协定》 First adoption of <PARIS AGREEMENT>

- 中国计划2030年左右二氧化碳排放达到峰值且努力早日达峰

  “to achieve the peaking of CO2 emissions around 2030 and to make best efforts to the peak earlier.”

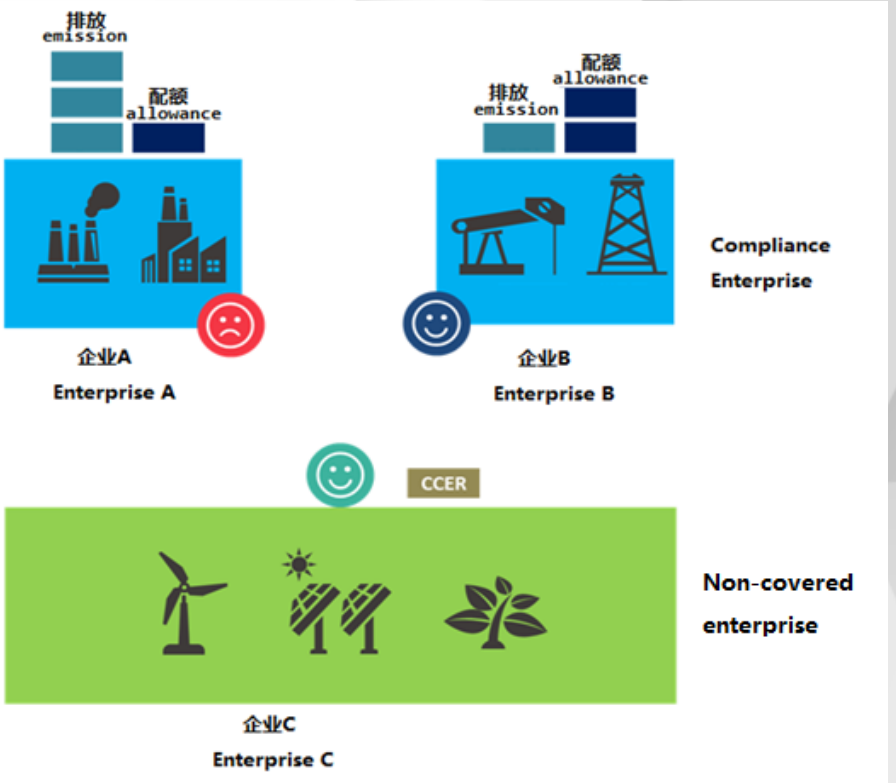
- 单位国内生产总值二氧化碳排放比2005年下降60%-65%

  “to decrease CO2 emissions per GDP by 60%-65% than in 2005”

- 在2030年非化石能源目标达到20%左右。

  “to increase the share of non-fossil fuels in primary energy consumption to around 20% by 2030”

碳市场的基本原理
Principles of ETS



企业A：缺少2万吨配额

Enterprise A：lack of 20,000 tCO_2

企业B：富裕1万吨配额

Enterprise B：surplus of 10,000 tCO_2

企业C：具有1万吨CCER

Enterprise C：10,000 tCO_2 of CCER

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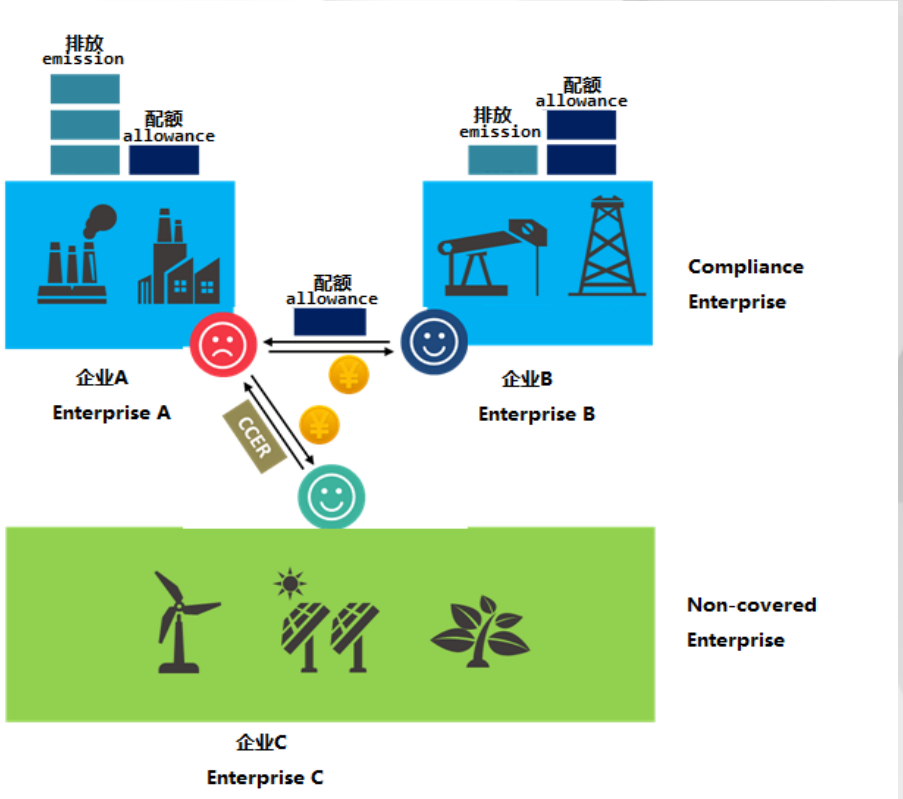

企业A从企业B购买1万吨配额（50万元）

Enterprise A buys 10,000 tCO_2 of allowance from Enterprise B

企业A从企业C购买1万吨CCER（15万元）

Enterprise A buys 10,000 tCO_2 of CCER from Enterprise C

企业A：履约成本65万元

Enterprise A: Cost 650,000 RMB

企业B：碳交易获利50万元

Enterprise B: Profit 500,000 RMB

企业C：碳交易获利15万元

Enterprise A: Profit 150,000 RMB

CCER项目是一种双赢的合作

CCER project is a win-win cooperation

- 买方（纳入企业）通过购买CCER降低履约成本

  Buyers (compliance enterprise) reduce compliance cost by purchasing CCER

- 卖方（未纳入企业）通过出售CCER获得额外收益，相当于通过市场手段为能够产生减排量的项目提供补贴。

  Sellers (non-covered enterprise) profit by selling CCER

中国碳市场进展

Overview of ETS Development in China

2013年~2016年："两省五市"碳交易试点期

- 试点地区：北京、上海、天津、重庆、深圳、广东、湖北

  7 ETS pilots in China: Beijing, Shanghai, Tianjin, Chongqing, Shenzhen, Guangdong province, Hubei province

- 7个试点交易配额1.2亿吨，成交额32亿元，价格10~140元/吨

  the cumulative trading volume in 7 pilots exceeds 120 million tCO_2, the cumulative trading value exceeds 3.2 billion RMB, carbon price ranges from 10 to 140 Yuan/tCO_2

- **全国CCER交易量0.5亿吨，交易额6亿元，价格8~20元/吨**

  The cumulative trading volumes of CCER exceeds 50 million tCO_2, transaction volume reaches RMB 600 million, with carbon price fluctuates from 8 to 20 Yuan/tCO_2

- 各试点也开展碳资产配额质押贷款、碳债券、碳基金等金融创新

  Carbon-financial products such as carbon allowance loans, carbon bonds, carbon fund has been tried in pilots.

中国碳市场进展

Overview of ETS Development in China

2017-2019年：全国碳市场试运行阶段 Launch of National ETS implementation

- 2014~2016年建设准备期，在试点的基础上设计全国规则；
  Release National ETS Regulations.
- 2017年开始，综合能耗在1万tce以上约7000家企业（钢铁、电力、化工、石化、建材、造纸、有色、航空）均须被纳入碳交易体系,**成为全球最大碳市场**；
- Enterprises of 8 sectors with annual energy consumption more than 10,000 tce will be involved into ETS.

2020年及以后：全国碳市场全面实施阶段 Fully implementation of National ETS

- 未来我国碳市场的交易量将在30亿-40亿吨/年，现货交易额最高有望达到80亿元/年
- 实现碳期货交易后，将高达4000亿元，**成为证券交易、国债之外第三大的大宗商品交易市场**。

- **国家发改委《碳排放权交易管理暂行办法》17号令；2015年1月10日开始实施**
  NDRC，"Interim Measures for the Management of Emissions Trading" N°17，put into effect from 01/10/2015
- **国务院《碳排放权交易管理条例》在审议中，预计明年尽快出台**
  The State Council "emissions trading regulations" under consideration, will come up next year

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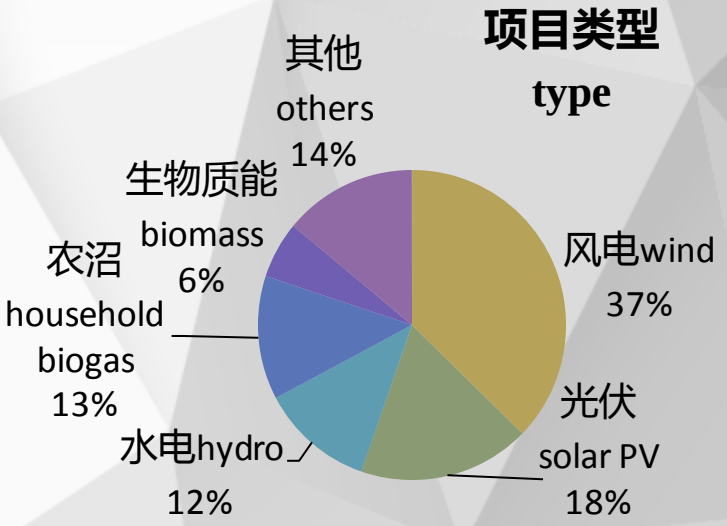
CCER项目开发现状

Update of CCER projects

备案项目



备案项目按类型数量分布（截止到2016年7月12日）

Issued CCER by project numbers(by 07/12/2016)

- 信息平台公布备案项目累计725个；Cumulative project : 725
- 从项目类型数量分布上来看，已备案项目中风电、水电、光伏发电及农村户用沼气项目最多

  Wind power, solar PV, hydropower and household biogas are the most popular project types

生物天然气CCER项目开发潜力较大

The potential of CCER projects of bio-natural gas

已有CCER方法学 Existing methodology	已有项目 Existing Project	项目进度 progress
利用粪便管理系统产生的沼气制取并利用生物天然气温室气体减排方法学 Production and utilization of biogas from waste gas produced by manure management system	1	开发中 ongoing
生物质燃气的生产和销售方法学 Production and sale of biomass gas	1	开发中 ongoing
交通运输中引入生物压缩天然气 Introduction of Bio-CNG in transportation applications	无 none	/
向天然气输配网中注入生物甲烷 Biogenic methane injection to a natural gas distribution grid	无 none	/
污水处理中的甲烷回收 Methane recovery in wastewater treatment	1	开发中 ongoing

生物天然气CCER项目开发筛选条件

Requirements for CCER project of biogas

项目开工时间 Starting date	• 农林相关的项目：2013年1月1日后开工的项目 Agriculture or forestry project: construction started after 01/01/2013 • 其他项目：2015年1月1日后开工的项目 Others : started after 01/01/ 2015
项目地域 location	• 中国境内，不限地域 Within the territory of China
减排量 Emission reduction	• 体量足够大，利润高large scale, high profit • 年减排量在2万吨以上可考虑开发 with annual reduction more than 20,000 tCO_2

如项目具有可用的方法学，可请专业公司进一步判断开发可行性

案例一：某动物粪便沼气提纯利用项目

Case 1:Purification and compression of biogas from excreta treatment

□项目活动Project activity

利用厌氧消化反应器处理养鸡粪便,并对沼气净化提纯压缩，供给车辆和工业用户替代传统压缩天然气作为燃料使用。

Treatment of chicken manure by anaerobic digestion, purification and compression of collected biogas. Supply vehicles and industrial users to replace the traditional compressed natural gas.

□基准线情景Benchmark situation

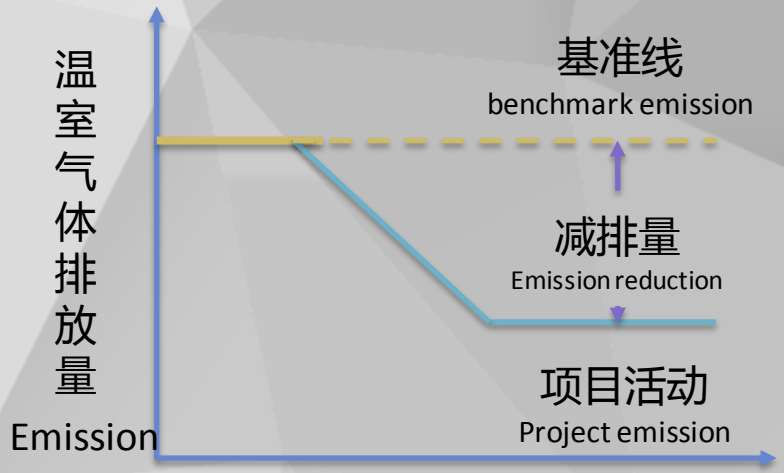
采用开放式厌氧塘处理动物粪便；
车辆和工业用户使用传统压缩天然气。

Using open anaerobic pond to deal with animal waste;
Vehicles and industrial users use conventional compressed natural gas.

□减排机理Emission reduction principle

减少厌氧塘处理的CH_4和N_2O排放；
减少传统压缩天然气燃烧产生的CO_2

Reducing CH_4 and N_2O emissions from anaerobic ponds;
Reducing CO_2 in combustion process of conventional compressed natural gas



减排量 $ER_y = BE_y - PE_y - LE_y$

Emission Reducation $ER_y = BE_y - PE_y - LE_y$

项目收益成本分析
Analysis of project cost and revenue

项目基本参数Project basic parameters

- 日均存栏肉鸡700万只 7 million chickens slaughtered daily
- 每年预计产生1,386万m^3生物天然气 13.86 million m^3 of natural gas is generated each year
- 每年CCER减排量约12万吨 annual emission reduction of about 12 million tCO_2

CCER收益成本分析Analysis of CCER cost and revenue

- 每年CCER收益约为120万元（按照10元/吨CCER的价格估算）The annual CCER return is approximately RMB 1.2 million (estimated at RMB10 / tCO_2 CCER)
- 每年CCER开发成本约15万左右CCER development costs about 150 thousand per year
- **每年CCER净收益预计100万元左右**（可持续申请21年）Annual CCER net income is expected to be around RMB 1 million (sustainable application for 21 years)

案例二：某生物燃气集中供气站项目

Centralized Biogas supply station

减排机理Emission reduction principle

通过采用可再生的生物质废弃物生产生物质燃气，替代原天然气用于园区企业供热，从而减少二氧化碳的排放。

Using renewable biomass to produce biomass gas, replacing the original natural gas for industrial heating, thereby reducing carbon dioxide emissions.

项目基本参数Project parameters

- 年废弃物消耗10万吨annual waste consumption of 100,000 tons
- 年供气量约1.9亿Nm^3 annual supply of about 190 million Nm^3
- 每年CCER减排量约 5 万吨Annual emission reduction of about 50,000 tons

CCER收益成本分析CCER Revenue Cost Analysis

- 每年CCER收益约为50万元annual CCER revenue is about RMB 500,000
- 每年CCER开发成本约15万左右CCER development costs about 150 thousand per year
- 每年CCER净收益为35万元左右（可持续申请21年）Annual CCER net income of about 350 thousand (sustainable application for 21 years)

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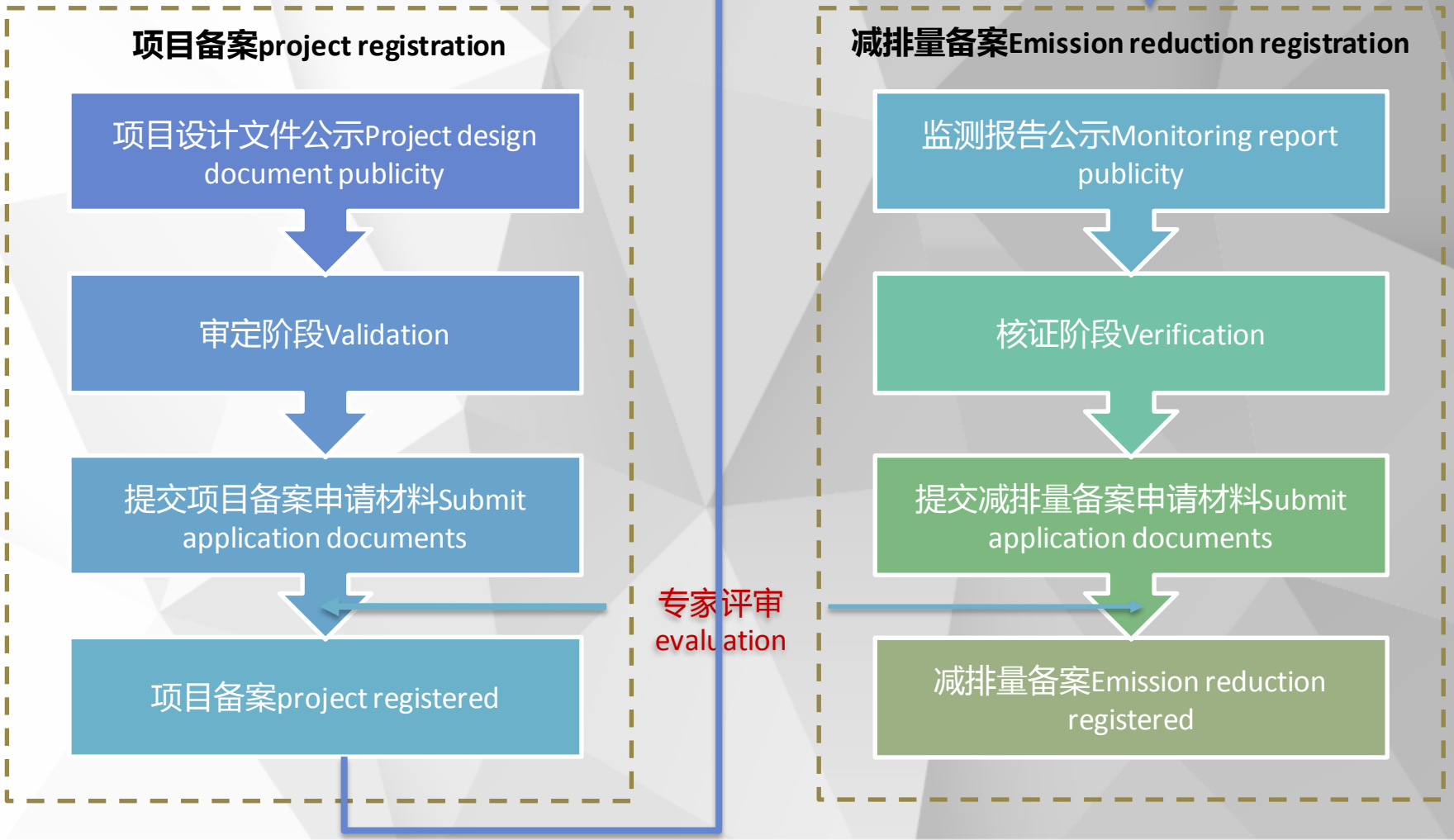

CCER参与机构
participants of CCER

项目业主（PP）	• 项目实施方 Project owner
咨询机构(Consultant)	• 协助业主编制项目设计文件、监测报告 Assist to prepare the project design documents and monitoring reports
第三方审定与核证机构（DOE）	• 审定（Validation）、核证（Verification）
省级发改部门 Local DRCs	• 初审CCER备案申请的材料完整性和真实性 first check of the completeness and authenticity of the application documents
国家主管机构部门（NDRC）	• 最高决策机构，指定实施细则、方法学、委任DOE、批准项目及减排量备案… Highest decision maker of implementation details, methodology, DOE, approval of projects, emission reduction filing …

更多CCER相关资料参见

See more about CCER:

http://cdm.ccchina.gov.cn/ccer.aspx

谢谢！

周红明

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