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## Investment in Coal Mine Methane emission reduction and clean energy projects

对煤矿  
瓦斯减排和清洁能源项目的投资

Sino-USA New Energy Source Science and Technology Forum and Coal Mine Methane Utilization Conference, Jincheng  
February 24-27, 2009

中美新能源科学技术论坛和煤矿瓦斯利用大会，2009年2月24至27日于晋城





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## Sindicatum Carbon Capital (SCC)

### 辛迪克 碳资金 (SCC)

- Head office in London
- 伦敦总部
- Offices worldwide including Beijing and Taiyuan
- 遍及世界的分支机构，包括分别位于北京的中国总部和太原办事处
- A specialist developer of environmental and energy projects aimed at reducing greenhouse gas emission reductions
- 辛迪克是一家环境与能源项目开发的专业公司，致力于实现温室气体减排
- Principal finance house with substantial investment funds
- 作为一家大型金融机构拥有长期投资所需资金
- Identifies the optimum technical and engineering solution for each project and provides technical support to ensure project performance expectations are realised
- 为每个项目界定最佳技术工程方案并提供技术支持以确保达成项目的预期效果。
- Specialized, CMM engineering team assists its coal mining partners
- 北京公司的专业的国际化煤层气工程团队协助我们的煤矿业主开发和实施高质量的煤矿瓦斯利用项目





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## The Duerping project: a FIRST in China to introduce: SCC的实力之作

杜尔坪项目，在中国开创了以下几个第一：

- A “live” mine connection to a modern co-generation plant without use of a large, land consuming and costly gas holder
- 没有采用造价昂贵的瓦斯储气罐、由煤矿直接向电站供气的现代化的瓦斯发电兼余热利用的发电站
- CMM flaring to abate methane that cannot be utilised in the power generators
- 利用火炬清除发电机组未能全部利用的剩余瓦斯
- Full time international mining team collaborating with mines
- 专业的国际化煤矿团队全职与煤矿方面紧密合作提高瓦斯品质，确保项目安全、优质地运行
- A potential near-zero methane emissions coal mining concept demonstration project
- 一个煤矿瓦斯近零排放煤矿理念的示范项目
- Remote CDM and engineering telemetry, data collection and processing system (based on Formac’s Telgas system)
- 应用了远程CDM和工程遥感监测、数据采集和处理系统（基于Formac公司的Telgas系统）





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## The SCC “near-zero methane emissions mining” concept 辛迪克碳资金关于煤矿瓦斯近零排放的 理念

SCC believes that with a combination of proven technologies China can significantly reduce methane emissions from its coal mines, recovering energy where practicable and feasible by:

辛迪克相信通过结合使用一系列经证实的技术中国可以显著降低国内煤矿的瓦斯排放，通过以下方式尽可能地实现能源回收：

- Maximising gas drainage capture  
➤ 最大化瓦斯抽采率
- Optimising utilisation of the drained gas  
➤ 对抽采瓦斯进行最佳化利用
- Thermal destruction of surplus methane  
➤ 高温摧毁剩余瓦斯
- Exploiting waste heat  
➤ 余热利用
- Destroying the methane in the ventilation air – SCC is working with a leading manufacturer to build the worlds first VAM catalytic oxidation unit.  
➤ 消除乏风中的甲烷—辛迪克与世界领先的风排瓦斯设备制造商合作建立了世界上首座用于消除风排瓦斯的催化氧化装置。



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## Benefits to coal mines of GHG emission reduction projects 温室气体减排项目能为煤矿带来哪些利益



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## GHG mitigation projects offer real benefits to a coal mining business

温室气体减排项目会为采煤行业带来实实在在的效益

- Prepare for more stringent climate change regulatory environment post 2012
- 为2012年后应对更加严厉的气候变化相关的规章制度做好准备
- Maintain a viable coal business in a carbon sensitive world
- 在一个对碳排放日益敏感的环境中保持煤炭开采行业的繁荣。
- Demonstrate corporate social responsibility
- 展示企业的社会责任感
- Protect and enhance reputation
- 维护和提高企业声誉
- Reduce business risk
- 减少商业风险
- Add value to the business
- 增加主业价值





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## Coal mines benefit in a variety of ways from CMM power generation projects

### 煤层气瓦斯发电项目给煤矿带来了各种益处

- **Reduced power costs**
- 减少电费开支
- **Revenue from surplus power sold to the grid**
- 通过向电网售出多余电能而获得收益
- **Encourages more effective gas drainage**
- 促进瓦斯抽采效率的提高
- **Safer mining conditions**
- 更安全的煤矿作业环境
- **Reduced GHG emissions**
- 减少温室气体排放



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## Coal mines can benefit from VAM projects 煤矿可从风排瓦斯项目中受益

- Extra revenue stream from reduction of methane emissions
- 通过瓦斯减排带来的持续的额外收入
- Source of heat for hot water, heating buildings and shaft heating
- 产生的热能可用来烧热水、为建筑物供及为井下供热风
- Significant contribution to reduction of China's greenhouse gas emissions
- 对中国的温室气体减排事业做出卓越贡献



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## How does SCC work with coal mining companies to release carbon asset value?

### SCC如何与煤矿合作释放碳资产价值？

- ✓ Undertakes, arranges and pays for all CDM procedures – develops new methodologies if required. No cost to mine owner
- ✓ 承担、安排和支付所有CDM程序所需相关费用—必要时还会开发新的方法学。煤矿业主不需承担任何花费。
- ✓ Audits gas drainage methods and systems at the mine, prepares strategy and timetable for increasing quantities and quality of gas captured.
- ✓ 到煤矿审核瓦斯抽放方法和抽采系统，为提高抽采瓦斯的质量和气量准备方案和
- ✓ 时间表。
- ✓ Provides gas management software and training
- ✓ 提供瓦斯管理软件和培训
- ✓ Designs and orders CMM power generation system including generators, mine owner prepares the site. Range of attractive commercial options.
- ✓ 设计和订购煤矿瓦斯发电系统，包括发电机组，煤矿业主准备场地。大量有吸引力的商业选择。
- ✓ **No risk to the coal mine owner**
- ✓ 对煤矿业主来说没有任何风险





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## Constraints on carbon financing 制约碳融资的一些因素

**Investors like SCC are very particular which projects they choose to invest in due to:**

像**SCC**这样的投资方对项目的选择是非常挑剔的，这归因于：

- Kyoto uncertainty as 2012 approaches – outcome of international negotiations likely to dependent strongly on US-Sino thinking
- 伴随着2012年的迫近，京都议定书的不确定性也随之增加-国际谈判的结果似乎非常倚重美国和中国的态度。
- Collapse in CER price – but hopefully there will be some recovery soon
- CER价格急挫-但希望价格很快会有一些程度的回升
- Scarcity of capital so only makes sense to invest in the best projects – least risk, robust commercial structure
- 由于资金短缺，所以只挑选最佳项目来投资成为明智的选择-即风险最小、商业结构较好的项目
- Increasing complexity and rigor of the CDM process and overstretched audit and approval entities prolonging the CDM cycle and increasing the time elapsed between capital expenditure and start of revenue flows
- CDM程序的日益复杂化和的严格性以及任务繁重的审定和批准实体拖延了CDM周期，也拉长了从资金投入开始到开始获得收益的时间。





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## Projects proposed by Jincheng municipality 晋城市政提议的项目

### **Abandoned mine methane – production of gas from depleted coal seam gas reservoirs 废矿瓦斯-产自废弃煤层的瓦斯气**

- Concept of Abandoned Mine Methane (AMM) in China studied in a Sino-UK technology transfer project and a UK government FCO AMM capacity building project
- 废矿瓦斯（AMM）的概念研究在中国起源于一个中英技术转让项目和另一个英国外交部的废矿瓦斯能力建设项目
- No approved CDM methodology
- 尚无已经批准的CDM方法学
- Declining source so less attractive for investment than CMM on a working mine
- 对投资者来说，逐渐减少的瓦斯气源使这类项目相对于正在开采煤矿的煤矿瓦斯项目处于劣势
- Large number of small operations - large numbers of mine entries to seal and extensive pipe work network so costly
- 涉及大量的小规模措施，包括密封大量的矿井入口、将瓦斯管路与抽采系统连接以及瓦斯运输工作，需要高昂费用
- Due to development time requirements and Kyoto future uncertainty does not make commercial sense for an investor to pursue
- 由于所需的开发时间和京都议定书的不确定性使这类项目对投资者来说失去商业意义。



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## Projects proposed by Jincheng municipality 晋城市政提议的项目

### **CMM power generation – power generation and flaring of unused gas to maximise destruction** 煤矿瓦斯发电-发电和火炬燃烧未能使用的剩余瓦斯实现最大化地减排

- Established methodology
- 已经有适用方法学
- Standard CDM model with methane destruction and fuel switch emissions mitigation
- 标准CDM商业模式，包括瓦斯清除和燃料替代减少排放
- Needs scale and diverse revenue stream to be attractive for investment
- 需要具有一定规模和多种的收益渠道模式来吸引投资

### **Use of CBM for DME synthesis** 使用煤层气合成二甲醚

- Will require new methodology
- 需要新的方法学
- High investment cost compared with established methane uses
- 同已知瓦斯利用方法相比需要高昂的投资费用
- Market unknown
- 市场前景未知
- Unlikely to be attractive for investment
- 对投资者来说不太可能有吸引力



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**Thank you**

**非常感谢**

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