



# Methane to Markets

甲烷市场化合作  
伙伴计划

*Introduction to the Methane to Markets Partnership*

*甲烷市场化合作伙伴计划简介*

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**February 24, 2009**

**Sino-US New Energy Source Science & Technology Forum and  
Coal Mine Methane Utilization Conference**

**Jincheng, Shanxi Province, China**

**2009年2月24日**

**中美新能源科技论坛暨煤矿气回收利用会议**

**中国山西省晋城市**

# What is Methane to Markets? 什么是甲烷市场化合作伙伴计划？

- International public-private partnership (established 2004) to reduce greenhouse gas emissions by increasing the capture and use of methane. 国际公共兼私人合作组织，（成立于2004）目的在于通过提高甲烷的获得和利用来降低温室气体的排放。
- Estimated to reach 180 MMTCO<sub>2</sub>e\* reductions annually by 2015. 到2015年，预计减少甲烷年排放量达到180MMTCO<sub>2</sub>e.
- **OBJECTIVES: 目标**  
To advance the recovery and use of methane while:  
促进甲烷的回收和利用，同时
  - Enhancing economic growth 促进经济发展
  - Promoting energy security 促进能源安全
  - Improving local air quality and public health 改善当地空气质量和公共健康

\* MMTCO<sub>2</sub>e = million metric tonnes carbon dioxide equivalent  
MMTCO<sub>2</sub>e = 每百万公吨二氧化碳同等含量

# M2M Partners 甲烷市场化合作伙伴

- Currently 28 Partner governments 目前已有22个政府部门参加
- Represent more than 62% of global anthropogenic methane emissions 代表了全球62%以上的人为甲烷排放量
- Includes 9 of the 10 top methane emitting countries 包括10大甲烷排放国中的9个国家。

Argentina 阿根廷  
Australia 澳大利亚  
Brazil 巴西  
Canada 加拿大  
Colombia 哥伦比亚  
Chile 智利  
China 中国  
European Comm. 欧洲委员会  
Ecuador 厄瓜多尔  
Finland 芬兰  
Germany 德国



Korea 韩国  
Kazakhstan 哈萨克斯坦  
Mexico 墨西哥  
Mongolia 蒙古  
Nigeria 尼日利亚  
Pakistan 巴基斯坦  
Philippines 菲律宾  
Poland 波兰  
Russia 俄罗斯  
Thailand 泰国  
Ukraine 乌克兰

# Methane to Markets Partnership

## 甲烷市场化合作伙伴计划

- Encourages development of **cost-effective** methane recovery and use opportunities in
- 鼓励在以下领域发展节约高效的甲烷回收和利用项目



**Coal Mine** 煤矿



**Oil & Gas Systems**  
石油和天然气领域



**Landfills** 垃圾填埋



**Agriculture** 农业领域

# Economic and Energy Benefits

## 经济和能源利益

- Methane capture and use projects can facilitate economic development and improve local living conditions.
- 获取和利用甲烷可以促进经济发展，改善当地的生活水平。
- Mitigation makes methane available for local energy purposes, thereby strengthening energy security.
- 甲烷的应用能够促进当地的能源安全。
- Methane recovery and use results in improved worker safety in the coal mining sector.
- 甲烷的回收和利用可以使煤矿工人的工作更安全。

# Successful Partnership 成功的合作

- A complement to the Kyoto Mechanisms
  - Provides technical assistance and capacity building necessary for long-term project success.  
对京都机制的补充
  - 为长期项目的成功提供必要的技术援助和建设支持。
- Directly involves the private sector and financing organizations.
  - Over 800 “Project Network” members in the Partnership  
直接参与的私营公司和金融机构
  - 在我们的合作项目中有超过800名的成员。
- Successful engagement of key developing countries
  - Including China, India, Brazil, Mexico  
成功参与的主要发展中国家
  - 包括中国、印度、巴西、墨西哥
- Has held more than 40 meetings and workshops in 13 countries around the world.
- 已在全球13个国家举办了40多场会议和研讨会。



- Over 750 attendees from 34 countries
- 有来自34个国家的750多个代表团参会
- High level participation
  - Minister Xie Zhenhua, Vice Chairman of NDRC opened the meeting
  - Co-hosted by NDRC and USEPA
  - Organized by CCII and Methane to Markets Partnership
- 出席的高层领导
  - 谢振华，NDRC（国家发改委）副主任启动了此次大会。
  - 由NDRC和USEPA（美国环保署）联合举办。
  - 由CCII（中国煤炭信息研究院）和甲烷市场化合作机构组织。
- International Methane Marketplace
  - 91 projects showcased – 20 in coal sector.
  - 39 private sector companies showcased technologies and services
  - 13 country booths
- 国际甲烷市场
  - 有91个项目参加展示 – 其中煤炭部门有20个项目。
  - 有39个私营公司展示他们的技术和服务。
  - 有13个国家的专业展台。
- Technical and policy sessions.
- 技术和政策研讨会。

国际甲烷项目合作大会暨展览会  
中国，北京  
2007年9月1日至10月30日



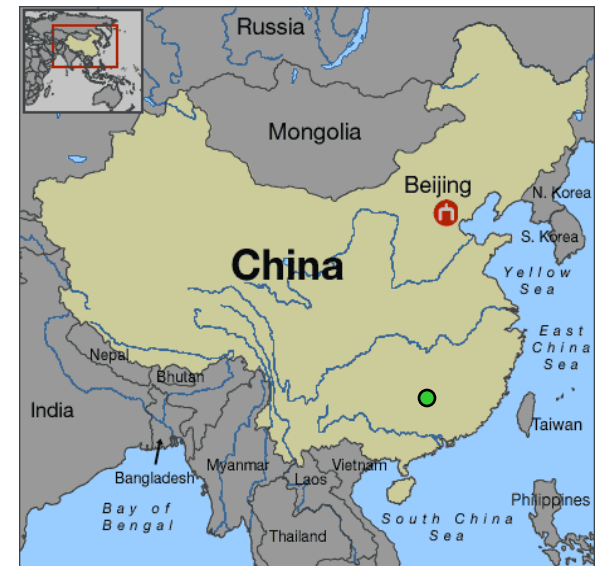
# Key Partnership Activities

## 主要合作计划

- Technical Assistance and Project Identification
  - Data collection
  - Assessment reports
  - Pre-feasibility studies技术援助和项目识别
  - 数据收集
  - 评估报告
  - 初步可行性研究
- Tool Development and Technology Transfer
  - Coal mine methane project global database工具发展和技术转让
  - 煤层气项目总数据库
- Training and Capacity Building
  - Clearinghouses / information centers
  - Training workshops
  - Study tours培训和建设
  - 净化和信息中心
  - 培训研讨会
  - 讲座

# Coal Sector Work 煤炭部门工作情况

- 17 countries on the Subcommittee led by chairs from China, India and the United States
  - 目前，分委会由17个国家组成，由来自中国、印度和美国的主席领导
  - Developed Coal Mine Methane Global Overview document with in-depth information on more than 30 countries
  - 煤层气的全球概况文件中包含了30多个国家的详细信息
  - World's largest CMM project (120 MW) at Sihe Mine, Jincheng Mining Group in China
    - Resulted from collaboration of multilateral groups including Asian Development Bank, World Bank, JBIC, and US Trade & Development Agency.
- 世界上最大的煤层气项目（120 MW）在中国晋城煤业集团寺河煤矿
- 是多边组织合作的结果，包括亚洲开发银行、世界银行和美国贸易和开发署。



# Coal Sector Work (2)

## 煤炭部门工作情况 (2)

### Project Development Support

- US EPA is supporting 3 major project feasibility studies at Chinese coal mines and several demonstration projects in China.
- US EPA has conducted a pre-feasibility study of ventilation air methane at Huainan coal mines.

### 项目开发支持

- 美国环保署正在支持中国煤矿的三个主要项目的可行性研究和几个示范项目。
- 美国环保署已对淮南煤矿的甲烷通风情况进行了初步可行性研究。

### Training and Capacity Building

- US EPA supports China Coal Information Institute / China Coalbed Methane Clearinghouse; provided a grant to the Guizhou CMM Center; and funded an International Energy Agency study of coal mine methane in China
- Establishment of India Coal Mine Methane / Coalbed Methane Clearinghouse to facilitate and promote the development of CMM/CBM projects in India. Kickoff funded by US Trade & Development Agency, US EPA.

### 培训和建设

- 美国环保署支持建设了中国煤炭信息研究院和中国煤层气净化中心；为贵州CMM中心的建设提供保障，以及支持建设了一个国际能源机构以开展对中国煤层气的研究。
- 由美国贸易和开发署，美国环保署支持建设了印度煤层气信息和净化中心以促进印度CMM/CMB项目的发展。

### Addressing Financial Barriers

- US EPA is working with the UNECE to address financial barriers to CMM recovery and use in Russia and Eastern Europe.

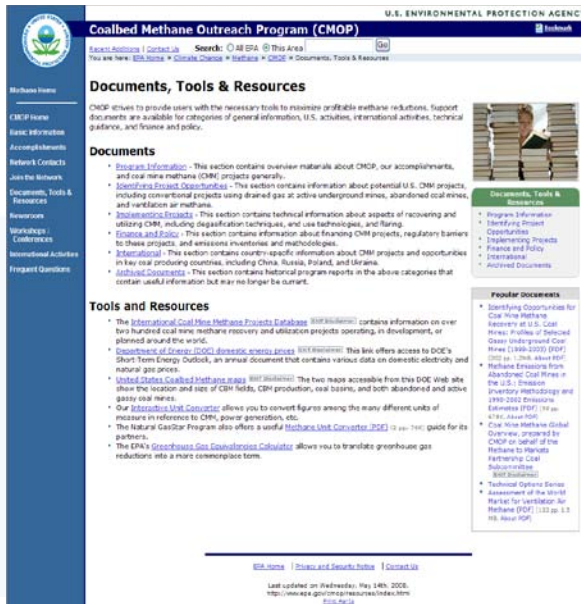
### 解决资金障碍问题

- 美国环保署正联合国欧盟经济委员会一起解决俄罗斯和东欧的CMM回收和利用项目的资金障碍问题。

# CMM projects globally

## 全球的CMM项目

- International CMM project database
  - Website: <http://www2.ergweb.com/cmm/index.aspx>
  - Database can be easily sorted, edited, input
- 国际CMM项目数据库
  - 网址: <http://www2.ergweb.com/cmm/index.aspx>
  - 数据库可以进行简单分类、编辑和输入



**Coalbed Methane Outreach Program (CMOP)**  
U.S. ENVIRONMENTAL PROTECTION AGENCY

Documents, Tools & Resources

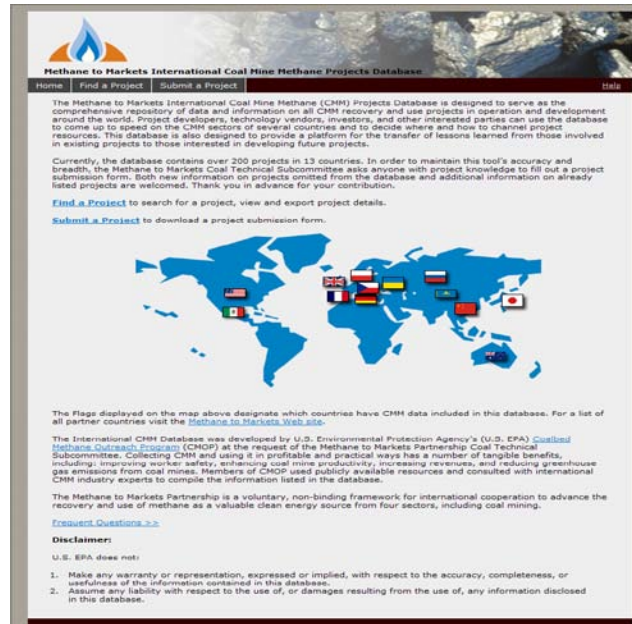
CMOP strives to provide users with the necessary tools to maximize profitable methane reductions. Support documents are available for categories of general information, U.S. activities, international activities, technical guidance, and finance and policy.

**Documents**

- Reports & Studies** - This section contains overview materials about CMOP, our accomplishments, and our mine methane (CMM) projects generally.
- Identification Project Opportunities** - This section contains information about potential U.S. CMM projects, including conventional projects using drained gas at active underground mines, abandoned coal mines, and ventilation air methane.
- Technical Guidance** - This section contains technical information about aspects of recovering and utilizing CMM, including degasification techniques, and use technologies, and flaring.
- Finance and Policy** - This section contains information about financing CMM projects, regulatory barriers to these projects, and emissions incentives and methodologies.
- International** - This section contains country-specific information about CMM projects and opportunities in key coal producing countries, including China, Russia, Poland, and Ukraine.
- Outreach Contacts** - This section contains historical program reports in the above categories that contain useful information but are no longer in current.

**Tools and Resources**

- The International Coal Mine Methane Projects Database** (PDF) contains information on over two hundred coal mine methane recovery and utilization projects operating, in development, or planned around the world.
- Department of Energy (DOE) Domestic Energy News** (PDF) - This link offers access to DOE's Short Term Energy Outlook, an annual document that contains various data on domestic electricity and natural gas prices.
- United States Coalbed Methane Maps** (PDF) - The two maps accessible from this DOE Web site show the location and size of CMM fields, CMM production, coal basins, and both abandoned and active gassy coal mines.
- Our International CMM Converter** allows you to convert figures among the many different units of measure in references to CMM, power generation, etc.
- The Natural GasStar Program** also offers a useful **Methane Unit Converter** (PDF) to use for its partners.
- The EPA's Greenhouse Gas Emissions Calculator** allows you to translate greenhouse gas reductions into a more comprehensive term.




**Methane to Markets International Coal Mine Methane Projects Database**

The Methane to Markets International Coal Mine Methane (CMM) Projects Database is designed to serve as the comprehensive repository of data and information on all CMM recovery and use projects in operation and development around the world. Project developers, technology vendors, investors, and other interested parties can use the database to come up to speed on the CMM sectors of several countries and to decide where and how to channel project resources. This database is also designed to provide a platform for the transfer of lessons learned from those involved in existing projects to those interested in developing future projects.

Currently, the database contains over 200 projects in 13 countries. In order to maintain this tool's accuracy and breadth, the Methane to Markets Coal Technical Subcommittee asks anyone with project knowledge to fill out a project submission form. Both new information on projects omitted from the database and additional information on already listed projects are welcomed. Thank you in advance for your contribution.

**Find a Project** to search for a project, view and export project details.

**Submit a Project** to download a project submission form.



The flags displayed on the map above designate which countries have CMM data included in this database. For a list of all partner countries visit the [Methane.to.Markets.Web.Site](http://Methane.to.Markets.Web.Site).

The International CMM Database was developed by U.S. Environmental Protection Agency's (U.S. EPA) **Coalbed Methane Outreach Program (CMOP)** at the request of the Methane to Markets Partnership Coal Technical Subcommittee. Collecting CMM and using it in profitable and practical ways has a number of tangible benefits, including: improving worker safety, enhancing coal mine productivity, increasing revenues, and reducing greenhouse gas emissions from coal mines. Members of CMOP used publicly available resources and consulted with international CMM industry experts to compile the information listed in the database.

The Methane to Markets Partnership is a voluntary, non-binding framework for international cooperation to advance the recovery and use of methane as a valuable clean energy source from four sectors, including coal mining.

**Frequent Questions >>**

**Disclaimer:**

U.S. EPA does not:

- Make any warranty or representation, expressed or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this database.
- Assume any liability with respect to the use of, or damages resulting from the use of, any information disclosed in this database.

# The Future of Methane to Markets

## 甲烷市场化的将来

- Growing interest in accelerating global methane efforts due to impacts in the Arctic and near-term benefits of methane reductions.
- 由于甲烷的减少带来的短期利益和对北极的良性影响，将促进全球对于甲烷利用兴趣的日益增长。
- Terms of Reference to be renewed in 2010.
  - Opportunities to expand scope and commitments (financial, policies, enhanced monitoring and reporting)
  - Possible linkages to a post-2012 agreement2010年将更新授权调查范围。
  - 扩大范围和承诺的机会（金融、政策、加强的控制和报道）
  - 对2012年以后协议可能的链接。
- Next Events:
  - M2M Steering Committee will meet in September or October 2009 to discuss future directions.
  - Coal Subcommittee meeting: October 12, 2009, Geneva
  - Partnership Expo planned for spring 2010 in New Delhi, India.
- 近期事件:
  - M2M 指导委员会将于2009年9月或10月召开会议讨论甲烷应用未来的发展方向。
  - 煤炭分委会会议: 将在2009年10月12日于日内瓦召开
  - 甲烷应用项目合作大会暨展览会计划于2010年春天在印度新德里举行。

# Conclusions总结

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- Coal mine methane projects have multiple benefits:
  - Environmental, energy security, economic
- 煤层气项目包含多重利益：
  - 环境和能源安全，经济方面的利益
- Global CMM project opportunities abound
  - Especially at underground mines

全球CMM项目存在大量的机遇

  - 尤其对于地下矿井
- China faces unique opportunities and challenges for CMM project development and carbon financing
- 中国的CMM项目的发展和资金问题面临着独特的机遇和挑战
- There are tools and resources available to help understand and assess project opportunities
- 有工具和资源可以帮助我们理解和评估项目的发展机会

**Xie xie! Thank you!谢谢!**

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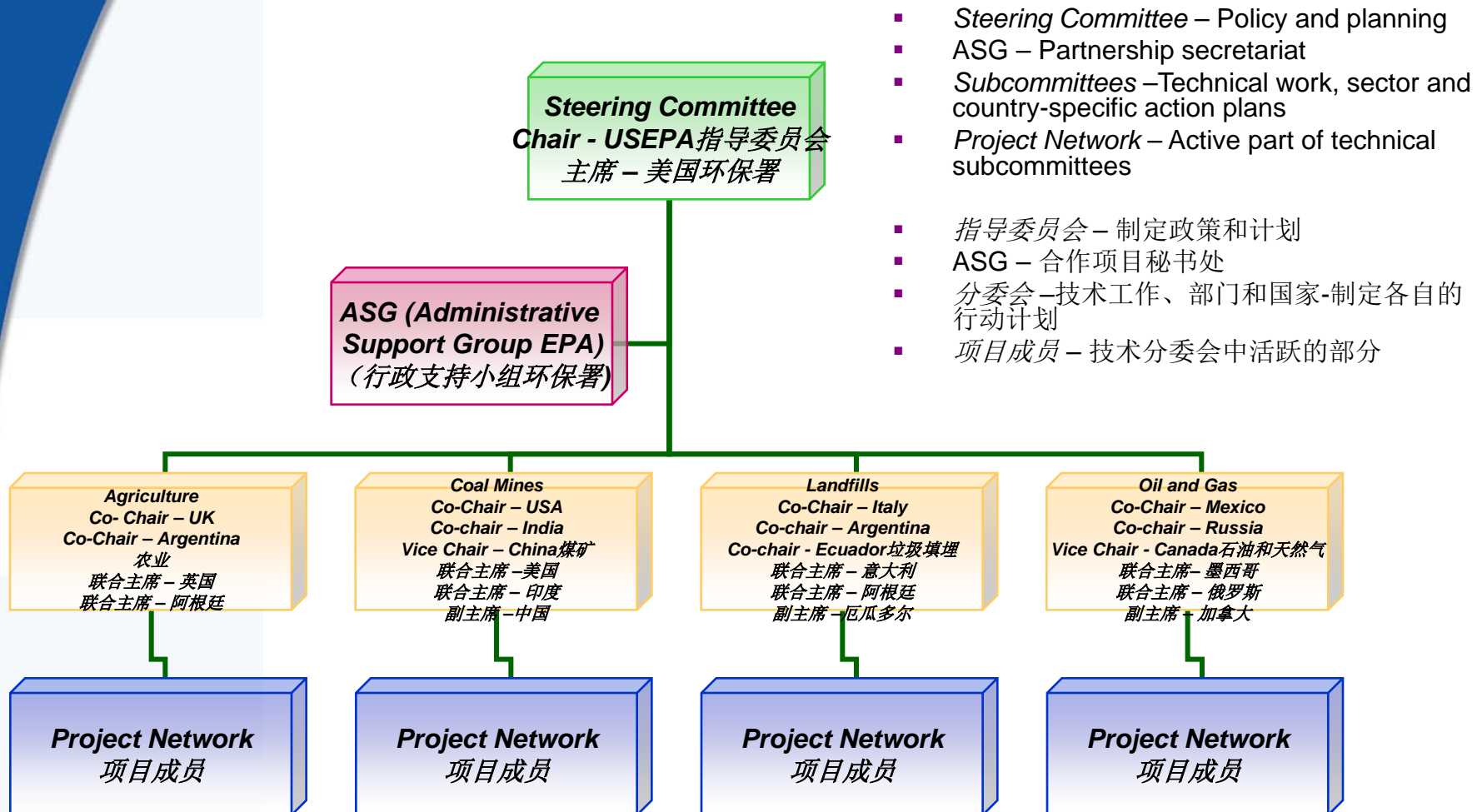
# US EPA activities to support CMM Development in China

## 美国环保署支持中国CMM发展的活动

- Full-scale feasibility studies underway
  - Songzao coal basin, Chongqing
  - Liuzhuang Coal Mine, Anhui Province
  - Hebi coal basin, Henan Province全面进行可行性研究的项目
  - 松藻煤盆地，重庆
  - 刘庄煤矿，安徽省
  - 鹤壁煤盆地，河南省
- Other pre-feasibility and feasibility studies
  - Ventilation air methane mitigation technology at Tiefa mines (Australia CSIRO)
  - Study of power generation with low-quality methane (CCII)
  - Technical evaluation of degassing CMM in advance of mining in southern Shanxi province (Virginia Tech University)
  - Pre-feasibility study of VAM oxidation in Huainan, China (USEPA)其他进行初期和中期可行性研究的项目
  - 铁发矿区甲烷通风减排技术（澳大利亚CSIRO）
  - 低质量甲烷发电研究（CCII）
  - 山西省南部煤矿CMM排放的技术评估（弗吉尼亚科技大学）
  - 中国淮南矿井甲烷通风氧化初步可行性研究（美国环保署）
- Capacity building
  - Support for China Coalbed Methane Clearinghouse (CCII)
  - Guizhou Province – Guizhou International Cooperation Center for Environmental Protection
  - Shanxi Province – promotion of mine-mouth CMM power plants (Jackson Hole Center for Global Affairs)
  - Barriers at national, provincial level, including Sichuan province (IEA)
- 生产建设项目
  - 对中国煤层气净化中心的支持（CCII）
  - 贵州省 – 贵州环境保护国际合作中心
  - 山西省 – 对煤矿坑口CMM电厂的支持（杰克逊侯全球事务中心）
  - 国家和省的资金问题的解决，包括四川省（IEA）

# M2M Partnership Organization

## 市场化合作伙伴计划组织机构



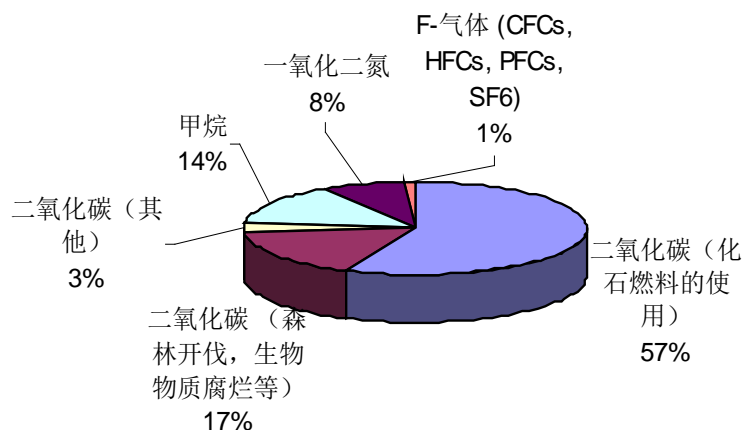
- *Steering Committee* – Policy and planning
  - ASG – Partnership secretariat
  - *Subcommittees* – Technical work, sector and country-specific action plans
  - *Project Network* – Active part of technical subcommittees
- 指导委员会 – 制定政策和计划
  - ASG – 合作项目秘书处
  - 分委会 – 技术工作、部门和国家-制定各自的行动计划
  - 项目成员 – 技术分委会中活跃的部分

# Methane as a Greenhouse Gas

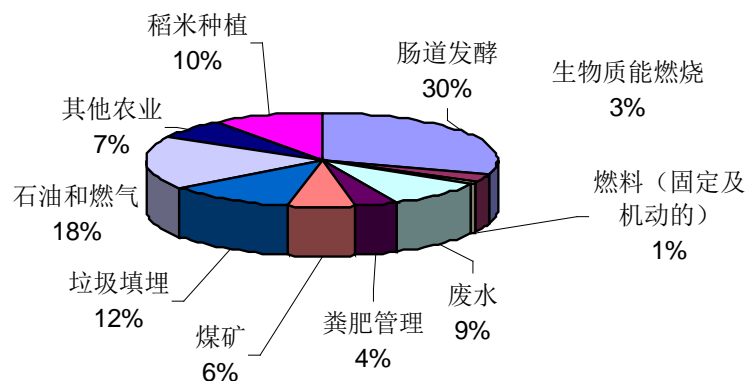
## 甲烷是一种温室气体

- The 2nd most important GHG, accounting for ~18% of total radiative (climate) forcing, or about one-third of that of CO<sub>2</sub>. (IPCC)
- 甲烷是第二大温室气体，占总的辐射（气候）排放的18%或者占人为CO<sub>2</sub> 排放的三分之一。（IPCC）
- A potent greenhouse gas (GHG) with 100-year global warming potential (GWP) of 23 and atmospheric lifetime of ~12 years
- 甲烷是潜在的温室气体（GHG），在全球100年变暖的潜力指数为23，大气生命周期为~12年。

Global Anthropogenic GHG Emissions by Gas (2004)  
全球人为排出的GHG (2004)



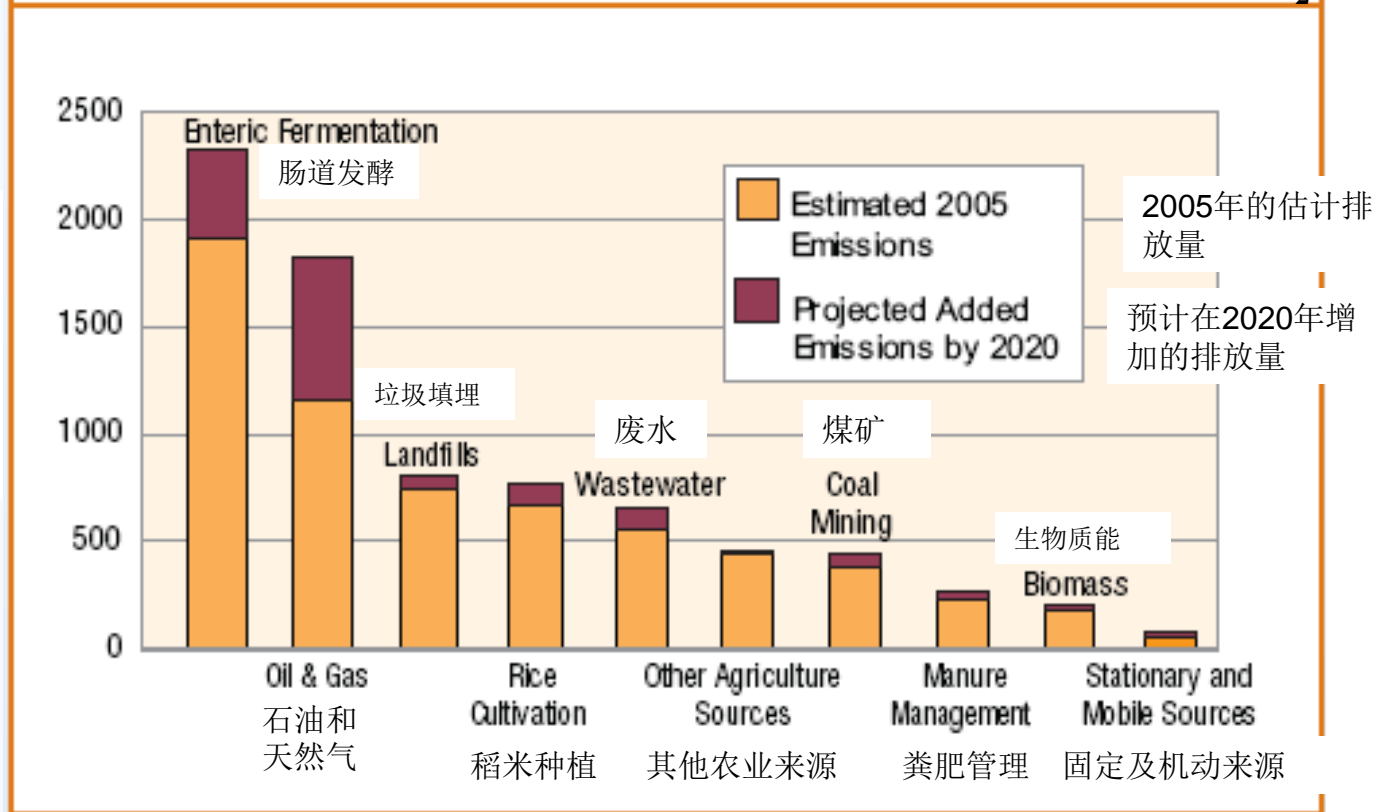
Estimated Global Anthropogenic Methane Emissions by Source (2005)  
全球人为甲烷排放来源 (2005)



# Projected Methane Increase to 2020 预计到2020年增加的甲烷排放量

**Global anthropogenic methane emissions are projected to increase by 23 percent to 7,904MMTCO<sub>2</sub>E by 2020**

到2020年，全球人为甲烷排放量预估增加23%，达到79亿4百万MTCO<sub>2</sub>E



# Sources and Strategies are Country-specific 不同国家比较

Methane Emissions for Selected Countries (2005)  
所选国家的甲烷排放量 (2005)

