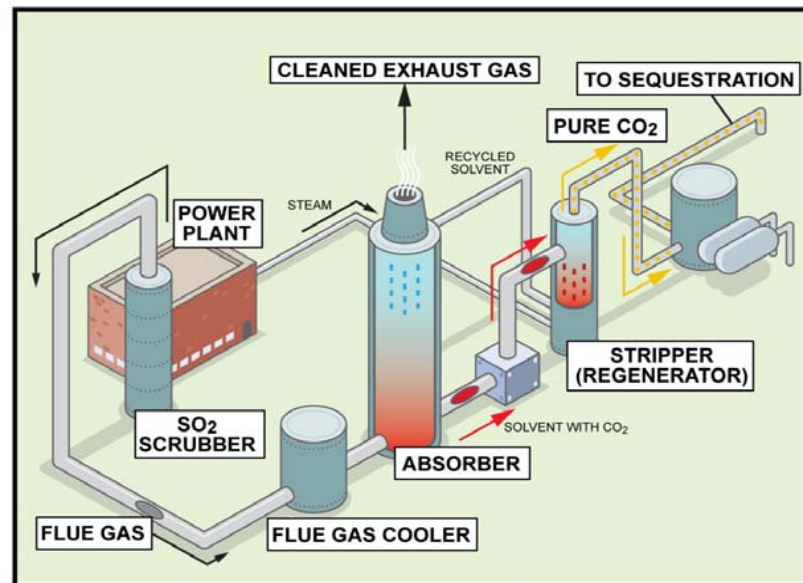


US-China Cooperation on Coal & Carbon

Fostering cross-border business partnerships to accelerate CCUS commercialization

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Clean Air Task Force is a non-profit organization dedicated to reducing atmospheric pollution through research, advocacy, and private sector collaboration.

MAIN OFFICE

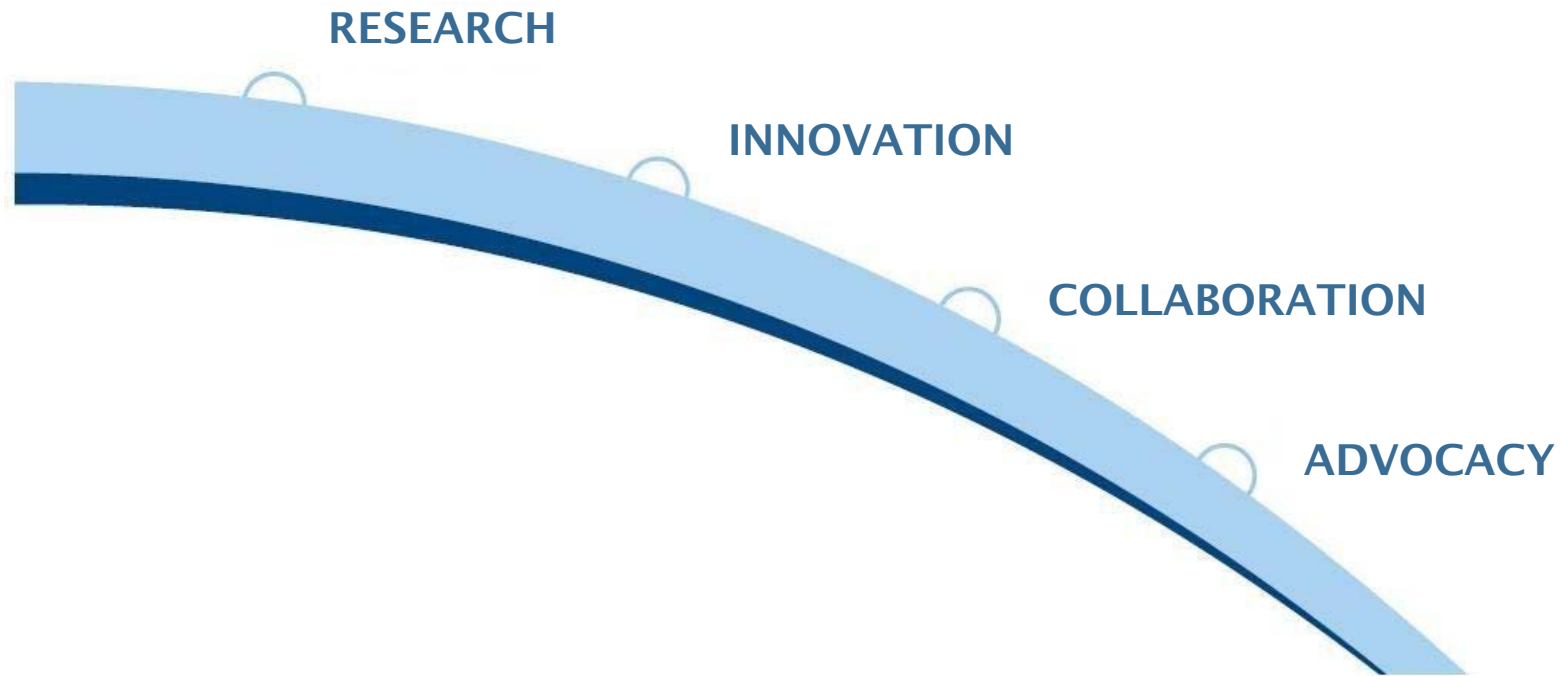
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OTHER LOCATIONS

Beijing, China
Brunswick, ME
Carbondale, IL
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Washington, DC

CATF approach

- CATF works to protect the Atmosphere through...



- 100% charitable funding ensures independence

The Climate/Coal Challenge

Coal will remain a significant source of GHG ...

- IEA, DOE EIA, PRC NDRC, and others project that coal will continue to be a key source of energy for years (particularly in China, India, US).
- Coal-fired power generation accounts for about 40 percent of man-made CO₂ emissions from energy use.
- Global warming cannot be seriously addressed without substantial reductions in CO₂ emissions from coal power within the next two decades.

... Unless we deploy CCUS technologies.

- Widespread deployment of **carbon capture, utilization, and sequestration (CCUS)** technology is essential to stabilizing the global climate.

What is “Clean Coal” in China?

- “Clean coal” in China is more than carbon capture, utilization and storage (CCUS)
- Rather: broadly reduced environmental impact from coal-based energy (improvements in process efficiency, conventional pollutant controls, fuel sourcing)

Reducing the Cost of CCUS

- Cost: biggest barrier to CCUS anywhere
 - China's near-term role?
 - Assisting in the development a global GHG reduction regime and helping to pay the premium on the transition to a low-carbon economy
- or*
- Accelerating the development and deployment of CCUS and other critical energy technologies

CCUS Opportunity Drivers in China

- Dynamic, rapidly expanding economy
- Government interest / support
- Project development is quick and inexpensive
- Relatively scarce oil, leading to interest in EOR

Key Barriers to CCUS in China

- Sequestration
 - Relevant expertise is scarce
 - Key geological data is closely guarded
- Collaboration between Chinese and Western firms can be difficult
 - Practical and cultural differences
 - Financial involvement of governments
 - Legal liability in US, intellectual property in PRC, etc

The Opportunity for Collaboration

- Energy companies in China and US have enormous experience and expertise working with coal, and are similarly motivated to develop technologies and techniques that will preserve a role for coal in a carbon-constrained world.
- China is the center of the coal gasification “universe” (~80 GW thermal today), and its companies can develop CCS projects quickly (1/3 to 1/5 the US time) and at substantially less cost.
- US is the world leader in geologic sequestration: it injects 30 million tons of CO₂ each year for enhanced oil recovery and is undertaking large-scale saline aquifer CO₂ injection projects.
- Investments by one country can reduce the cost of a technology worldwide, increasing the likelihood that CCS will be widely deployed in time to help avert the worst consequences of climate change.

Overview of CATF US/Asia CCUS Work

- CATF launched its international advanced coal technology/CCS business-to-business effort in 2007.
- CATF co-founded two related organizations to promote our work in Asia: the Asia Clean Coal Initiative (established 2007) and the Asia Clean Energy Innovation Initiative (established 2009)
- Result: several partnerships between innovative US/PRC energy companies, in which CCUS projects are being explored.
- Partnerships are changing attitudes.
- Potential partnerships are being explored in India and elsewhere.

ACCI

Asia Clean Coal Initiative

Premise

- Stabilizing global climate requires decarbonized coal.
- International business-to-business collaboration will reduce advanced fossil and CCS costs and accelerate deployment timelines.

Results

- Strong commercial interest
- Many JVs/MOUs

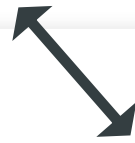


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Asia Clean Energy
Innovation Initiative

Launched in 2009 to apply ACCI's B2B-focused approach to renewables and advanced nuclear, in addition to low-carbon coal.





TPRI

THERMAL POWER RESEARCH INSTITUTE



Future Fuels

