



COALBED METHANE EXTRA

A publication of the Coalbed Methane Outreach Program (CMOP)

www.epa.gov/cmop



UNFCCC - 16th Conference of the Parties Convened in Mexico



On 29 November through 10 December 2010, the [United Nations Framework Convention on Climate Change \(UNFCCC\)](#) held the [16th Conference of the Parties \(COP16\)](#) in Cancun, Mexico.

The meeting began with a welcome ceremony where Patricia Espinosa Cantellano, Mexico's Foreign Relations Secretary and new President of the Conference, addressed the 192 delegates in attendance. The 11-day conference included sessions related to the Clean Development Mechanism, compliance under the Kyoto Protocol, and information on greenhouse gas inventories. The conference concluded with all nations agreeing to set a goal of limiting a rise in average world temperatures to below 2 degrees Celsius. Negotiators also agreed to create a Green Climate Fund to provide \$100 billion a year to poor nations by 2020 in an effort to protect tropical forests and share clean energy technology (a funding source for this fund has not been

identified). Additionally, negotiators tried to extend the Kyoto Protocol, which is set to expire in 2012, but there was no resolution.

The package of agreements (known as the "Cancun Agreements") included a call to establish a formal Technology Mechanism under the Convention, to catalyze the development, deployment and diffusion of climate-relevant technologies in developing countries. A call for an agreement on and development of new market mechanisms was also included, as well as a determination to avoid the emergence of a gap between the first and second commitment period of the Kyoto Protocol (due to expire in 2012). This is of significant concern to the private sector and carbon markets.

This year's conference (COP17) will take place in South Africa. A summary of the results of COP16 can be found [here](#).

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A New Look for GMI

Building on momentum surrounding the recent [Global Methane Initiative \(GMI\)](#) launch, the [Administrative Support Group \(ASG\)](#) recently unveiled a new "look" to brand and unify GMI's website and materials. The new look is built around a refurbished logo, which features the methane flame and sun rays, a new beginning for the program and methane's far-reaching potential for global change.

The ASG is redesigning many Partnership materials to reflect this new look. The former Methane to Markets website has now migrated to a new address: www.globalmethane.org. While this site has the same navigation and content as the previous site, it also features GMI's new logo and a dedicated GMI page, www.globalmethane.org/gmi, and refreshed fact sheets that highlight the Partnership's successes to date and GMI's newly expanded program areas (e.g., abatement, wastewater).

With these improvements in place, GMI is ready to move forward and fulfill its mission. Central to its progress are financial commitments from developed-country Partners and others to address climate change through GMI's methane mitigation efforts. The United States is pledging \$50 million over the next five years to support methane emissions reduction projects and technologies, and other developed-country Partners are considering similar pledges. For updates on GMI's progress and newly released materials, check the [website](#) often!



EPA News

EPA Seeks Public Comment on the 16th Annual U.S. Greenhouse Gas Inventory

The U.S. Environmental Protection Agency (EPA) is seeking public comment on the annual Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009 draft report. This report will be open for public comment for 30 days after the Federal Register notice is published.

The draft report shows that in 2009, overall greenhouse gas (GHGs) emissions decreased by 6 percent since 2008. This downward trend was attributed to a decrease in fuel and electricity consumption across all U.S. economic sectors. Total emissions from GHGs were about 6,640 million metric tons of carbon dioxide (CO₂) equivalent. Overall, emissions have grown by 7.4 percent from 1990 to 2009. Emissions in 2009 represent the lowest total U.S. annual GHG emissions since 1995.

The inventory tracks annual greenhouse gas emissions from 1990 to 2009 at the national level. The gases covered by this inventory include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The inventory also calculates carbon dioxide emissions that are removed from the atmosphere by "sinks," e.g., through the uptake of carbon by forests, vegetation, and soils.

This annual report is prepared by EPA in collaboration with experts from other federal agencies. After responding to public comments, the U.S. government will submit the final inventory report to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). The report will fulfill the annual requirement of the UNFCCC international treaty, ratified by the United States in 1992, which sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change.

More information can be found at: <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

New Tools and Resources from EPA's Coalbed Methane Outreach Program

New: Coal Mine Methane Recovery at Active U.S. Coal Mines: Current Projects and Potential Opportunities

CMOP has developed an online map and accompanying matrix, which provides information about current projects and potential opportunities to develop coal mine methane (CMM) recovery and utilization projects at active U.S. coal mines.

The information presented is a condensed version of CMOP's report "Identifying Opportunities for Methane Recovery at U.S. Coal Mines: Profiles of Selected Gassy Underground Coal Mines 2002-2006" (PDF, January 2009, 207 pp, 1.6MB). The profiles are designed to help project developers perform an initial screening of potential projects.

The map and matrix can be found on the CMOP website at: <http://www.epa.gov/cmop/resources/map.html>

Updated: Coal Mine Methane Project Cash Flow Model Version 2.0

CMOP is proud to launch an updated version of the Coal Mine Methane Project Cash Flow Model. The web-based tool allows coal mine operators and owners, project developers, equipment vendors, and other interested parties to evaluate the financial viability of recovering and utilizing CMM at a specific U.S. site in one of eight ways.

Version 2.0 of the model upgrades the previous version by adding the capability to investigate the benefits of oxidizing methane in mine ventilation air in exchange for marketable carbon credits.

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GMI Updates

Global Methane Initiative (GMI) Side Event at COP 16, United Nations Climate Change Conference

On December 8, 2010, more than 60 people attended a GMI organized side-event in Cancun, Mexico. The event was hosted by Mexico's Ministry of Environment (SEMARNAT) and was introduced by SEMARNAT Undersecretary Sandra Herrera.

The session featured speakers from Mexico, Brazil, China and the United States, highlighting the successes of these important GMI Partner Countries. In addition, an overview was given on the importance of targeting methane and how GMI will build on the success of the Methane to Markets Partnership.

The GMI Project Network was also represented by a number of speakers who talked about technologies and projects in the Agriculture, Coal, Landfill and Oil and Gas sectors. The side event took place at the Green Solutions Center, a forum targeting private sector innovation and involvement in finding solutions to climate change.

[Event agenda and presentation on coal mine ventilation air methane \(VAM\)](#)

Updated Coal Mine Methane Country Profiles

On behalf of the Global Methane Initiative (formerly the Methane to Markets Partnership), EPA's Coalbed Methane Outreach Program (CMOP) has developed 37 comprehensive profiles that characterize the coal and coal mine methane sectors of 29 Global Methane Initiative partner countries and an additional eight coal-producing nations. The Executive Summary provides summary tables that include statistics on coal reserves, coal production, methane emissions, and CMM project activity.

Access the [Coal Mine Methane Country Profiles](#).

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CBM/CMM Events

Coal Seam Methane World Australia 2011

March 1-3, 2011

Brisbane, Australia

Website: www.terrapinn.com/2011/csm/

Ukrainian Energy Forum

March 1-3, 2011

Kyiv, Ukraine

Website: www.ukrainianenergy.com

7th Asia Gas Partnership Summit

March 2011

New Delhi

2nd Annual Unconventional Hydrocarbons Summit 2011

14-15 April 2011

Beijing, China

Website: www.uhsummit.com/e-Why.asp

China International Energy Congress and Exhibition 2011

June 9-11, 2011

Guangzhou, China

Website: www.enertechexpo.com/en/index.asp

Longwall USA 2011

June 21-23, 2011

Pittsburgh, USA

Website: www.mining-media.com/index.php/events/longwall.html

22nd World Mining Congress & Expo

September 11-16, 2011

Istanbul, Turkey

Website: www.wmc-expo2011.com

Low Carbon Earth Summit 2011

October 19-26, 2011

Dalian, China

Website: www.lcesummit.com/index.asp

AAPG 2011 International Conference and Exhibition

October 23-26, 2011

Milan, Italy

Website: www.aapg.org/milan2011



U.S. News

MSHA Releases Preliminary Findings on the Upper Big Branch Mine Explosion


On January 18, 2011, investigators from the federal Mine Safety and Health Administration (MSHA) presented their preliminary report on the explosion at the Upper Big Branch mine in West Virginia, to family members of the victims. The explosion at the Massey Energy operated mine killed 29 miners on April 5, 2010.

MSHA believes that methane seeping into the tailgate area near the long-wall miner was ignited by sparks coming from the shearer as it contacted sandstone rock that lies above and below the coal seam. The sparks were worse than usual, the investigators suggested, because some carbide-tipped teeth on the shearer were worn down to bare steel. Some of the water spraying nozzles situated just behind the shearer teeth, designed to suppress sparks from the shearer, were not working properly, the report concluded.

The methane blast at the coal face then ignited excessive levels of coal dust in the mine which propagated the explosion through the mine workings. Upper Big Branch is a gassy mine with many possible sources of methane and investigators are still working to pinpoint a specific source, although they see no evidence of a large methane inundation, which is the reason Massey Energy put forward as the cause of the explosion.

MSHA investigators note that they have not reached final conclusions and that their final report is 60 to 90 days from completion. Among other factors, investigators are still trying to determine whether the mine's ventilation system was working properly at the time.

Chicago Climate Exchange Closes Cap and Trade System, but Keeps Offsets

 The Chicago Climate Exchange (CCX) ended the second commitment period for emissions reductions for member companies on December 31, 2010, and did not begin a new cycle of commitment periods. Exchange trading in allowances (Carbon Financial Instruments or CFIs) to meet emission reduction commitments also ended as of December 31, 2010.

The end of mandatory CFI trading for member companies was announced in October 2010. CFIs once traded as high as \$7.50 per metric ton of CO₂-equivalent emissions, but the exchange trading price in December 2010 was just 5 cents and had been that low for more than a year.

In the CCX system, CFIs were both allowances and emissions offset credits. The generation of CFIs will continue as part of a strictly voluntary offset generation system.

CCX's 450 members achieved reductions of 700 million tons of greenhouse gas emissions over the seven-year life of the cap-and-trade program, 88 percent through direct industrial emission cuts and 12 percent through offsetting.

CCX has protocols for ten different emission reduction offset project types, including one for coal mine methane collection and combustion. The CCX subsidiaries European Climate Exchange (ECX) and Chicago Climate Futures Exchange (CCFE) continue unchanged. For more information see the [Chicago Climate Exchange](#) website.

Possible Abandoned Mine Methane Capture Project at Colorado Mine

The Colorado Independent newspaper reports that Holy Cross Energy, a Colorado electric co-op stretching from Aspen to Vail, is working with Denver-based Vessels Coal Gas to recover methane at Oxbow Mining's Sanborn Creek Mine in Gunnison County, Colorado. The mine was abandoned in 2003.

A Holy Cross Energy spokesman declined to provide more details on the project. Holy Cross CEO Del Worley told the Grand Junction Daily Sentinel that "it's really an outside developer that's looking to actually work with the coal company and gather the gas, and we would just be a purchaser of the power."

An official with the environmental group WildEarth Guardians, which has sued the federal government to compel either capture or flaring of methane from coal mines on public lands in Colorado, said the Holy Cross proposal caught the group by surprise. However, the project has stirred local interest. Auden Schendler, director of sustainability for Aspen Skiing Company - one of Holy Cross Energy's largest clients - welcomed the news. "We're intrigued by the potential of coal mine methane," Schendler said. "It's huge bang for the buck in terms of climate mitigation; it's cost effective and smart business; and it turns a negative into a positive while creating jobs. What's not to like?"

Vessels Coal Gas, Inc. is a Denver based company developing and operating coal mine methane producing properties in the Rocky Mountain and Appalachian coal basins. Vessels specializes in reducing methane emissions from active and inactive or abandoned coal mines. The reduction in methane emissions is achieved by treating the coal mine gas to produce a commercial natural gas product or to generate electricity and if that is not

U.S. News

Possible AMM Capture System, *from page 4*

feasible then conversion of the methane into carbon dioxide by flaring. Vessels earns revenue from the sale of the energy and the environmental attributes associated with the destruction of methane as a green house gas.

Tom Vessels, president and CEO of Vessels Coal Gas since 2003, said in an email to the Colorado Independent he would “not be able to provide confidential business details” about the plan. Vessels, who has more than 40 years of experience in the natural gas industry, currently operates a coal mine methane recovery facility in Cambria County, Pa., that’s been up and running since May of 2008.

According to the Vessels website, that plant has sold more than 330,000 Mcf (1,000 cubic feet) of commercial quality natural gas to Pittsburgh-based Peoples Natural Gas, producing more than 120,000 Verified Carbon Units (VCUs) of Carbon Emission Reductions (CERs). The company also installed an electrical generation unit to directly convert the gas into power.



Cambria 33 Gas Plant



Cambria 33 Dehydration and Sulpha Treatment

Vessels recently completed development of the only methodology for verifying CERs from abandoned coal mines using the Clean Development Mechanism of the United Nations Kyoto Protocol. The methodology is registered with the Voluntary Carbon Standard (VCS) and went through the VCS double approval process, being first validated by the Norwegian Foundation, Det Norsk Veritas (DNV) and then by First Environment Inc.

This methodology, approved in July 2010, provides specific revisions to the UNFCCC approved consolidated methodology ACM0008, "Consolidated methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction through flaring or flameless oxidation." The revision includes the addition of project activities at abandoned/decommissioned coal mines, with the exception of flooded abandoned mines. The revisions to ACM0008 also include clear definitions of relevant terms – abandoned mine methane (AMM), flooded mine, and venting mine – to help assess project eligibility. The methodology provides an approach to determine the quantity of methane released to the atmosphere by an abandoned mine in a given year utilizing a hyperbolic emission rate decline curve.

Verdeo Lists Largest CMM Abatement Project with the Climate Action Reserve

Verdeo Group, Inc. has listed with the Climate Action Reserve (CAR) what will be the largest coal mine methane (CMM) abatement project undertaken in the U.S. Verdeo is financing the project and leading development efforts in partnership with CONSOL Energy, Inc.

The project will abate ventilation air methane (VAM) exhausted from a ventilation shaft at the McElroy mine in West Virginia, one of the largest underground coal mines in the U.S. The project will permanently reduce approximately 380,000 metric tons of carbon dioxide equivalent (tCO₂e) on an annual basis when it becomes operational in the latter half of 2011.

For more information, see the detailed report on the McElroy Mine project in the [Summer 2010](#) issue of CBM Extra.



CBM/CMM News

ESSAR Oil Starts Gas Production from Raniganj CBM Block

Essar Oil announced in January that it had started gas production from its Raniganj CBM block in West Bengal with peak output expected in 2-3 years. "Essar has begun production and sale of CBM gas," Essar Oil COO Prem Sawhney said, speaking at the 9th Petro India conference held in New Delhi.

The company is producing 90,000-100,000 standard cubic meters per day (scmd) of CBM with peak output projected to be 3.5 million standard cubic meters per day (mmscmd) by the 4th quarter of 2012. Production from the block is expected to last 15 years. Current production is sold to a local fertilizer plant at USD 4.2 per million British thermal units.

Essar Oil is investing USD 300 million with plans to drill 500 CBM wells over the next 2-3 years. The company signed production sharing contracts (PSCs) for four CBM blocks awarded by the Indian Government during the fourth CBM bidding round concluded in July 2010. Essar now has the rights to drill wells in a total of five CBM blocks in India.

The Raniganj block in West Bengal has estimated in-place resources of 4.6 trillion cubic feet (tcf) and recoverable resources of around 1 tcf. Another of Essar's PSCs, the Rajmahal block in Jharkhand province, has calculated in-place resources of 9.5 tcf, with recoverable resources of 4.7 tcf.

Sawhney said that five CBM blocks, all operated by different companies, - Raniganj East, Raniganj South, Jharia, Sohagpur West and Sohagpur East - are currently producing 0.15 mmscmd and output is expected to reach 7.4 mmscmd by 2013. To date, the Indian government has awarded 32 CBM blocks, holding a

potential 62 Tcf of CBM reserves, to various operating companies.

Source: [India Telegraph](#), [India Economic Times](#)

Two Methane Explosions at Colombian Coal Mines

Two methane explosions, less than a week apart, at coal mines in Colombia have killed a total of 26 miners.

Twenty-one miners were killed on January 26, 2011, when a build up of methane exploded at the La Preciosa mine in the Sardinata municipality in northeastern Colombia. This follows the deaths of 6 other miners in a similar accident at the mine in October 2010.

On February 1st, a further 5 miners were killed in an explosion at the La Escondida mine in the central province of Cundinamarca. It is not known if methane detectors were in place, but both mines appear to have had inadequate ventilation measures to control methane build up in the workings.

Colombian President Jaun Manuel Santos has called for a "massive reinforcement" of mine safety measures and has called for a detailed review of all the regulations concerning coal mines and their enforcement. Mines Minister Carlos Rodado pointed to a lack of resources and said the government must radically rethink its oversight of the industry.

"We need to bolster human, technical and financial resources because we only have 16 people to monitor the 3,000 thousand mines currently being operated and the 3,000 others in exploration," Rodado said.

As one of the world's largest coal suppliers, Colombia accounts for 7% of world coal exports. But most of this coal is produced from open-cast mines. There are no coal mine methane drainage projects in the country.

CNOOC Expands CBM Resource Stake

China National Offshore Oil Corp (CNOOC), China's third largest oil producer, inked a deal at the end of 2010 to purchase a 50 percent stake in China United Coalbed Methane Co for 1.2 billion yuan (\$181 million).

China United Coalbed Methane Co has 27 coal seam gas blocks in China with an annual output of more than 200 million cubic meters and CNOOC's purchase of the 50% stake brings proven reserves of 50 billion cubic meters.

CNOOC had previously said that it was looking to expand its coalbed methane business and that it was considering using unconventional gas resources in the northern province of Shanxi to supply regional clients in the form of pipeline gas, compressed natural gas, or liquefied natural gas.

Earlier in December, CNOOC said it would spend \$50.46 million to acquire 50 percent of the exploration rights in five Australian coal seam gas blocks owned by Exoma Energy Ltd, marking its second foray into Australia's unconventional gas market.

Source: [Reuters](#)

Kazakhstan CMM Project Moves Ahead

GE Energy has been awarded an order for one of its J420 Jenbacher gas engines to power the first Kazakh CMM project at the Arcelor Mittal Lenina Mine in Temirtau. The purpose of this project is to demonstrate the environmental, safety and economic benefits of CMM utilization to other mining operations in Kazakhstan.

Source: [GE](#)

New Publications

U.S. Government's Methane to Markets Partnership* Accomplishments Report—2010

(* Now known as Global Methane Initiative - GMI)

This report summarizes the contributions of participating U.S. government agencies and highlights their 2009 projects and activities. The report was developed collaboratively by EPA, the U.S. Department of State, the U.S. Agency for International Development, the U.S. Department of Energy, the U.S. Department of Agriculture, and the U.S. Trade and Development Agency.



Highlights from the report show the United States:

- Provided \$10.5 million in fiscal year (FY) 2009. Since the Partnership's inception in November 2004, the United States has committed approximately \$50.5 million to support a range of projects. When fully implemented, these projects will deliver estimated annual emission reductions of approximately 61 MMTCO₂E.
- Leveraged approximately \$387 million in private and public sector contributions from FY 2005 - FY 2009.
- Is supporting cooperative agreements for methane capture and use projects in multiple Partner Countries. In 2010, during the fourth Methane to Markets \$5 million grant solicitation, EPA received 115 proposals for work in 23 different countries. When awarded, these projects will contribute to the more than 300 Partnership methane emission reduction projects in 18 Partner Countries around the world.

The [full report](#) (32pp, 3.9 MB) can be found on EPA's [GMI website](#) along with highlights of projects from the [coal mining sector](#) (4pp, 277KB).

U.S. EPA Coalbed Methane Outreach Program (CMOP) - New Documents Online

EPA's Coalbed Methane Outreach Program (CMOP) has posted several new documents online:

CMOP has launched five full-scale feasibility studies of coal mine methane recovery and utilization projects at Chinese coal mines. The studies assess the technical and economic viability of implementing methane recovery and utilization projects,

with detailed findings and project implementation recommendations compiled in comprehensive final reports. The latest study, completed by Raven Ridge Resources is:

Feasibility Study of CMM Utilization for Guizhou Nengfa Power Fuel Development Co., Ltd. Linhua Mine, located in Guizhou Province.

This [document](#) (100 pp, 4.6 MB) is available in both English and Chinese. (December, 2010)



Executive Summary of the Feasibility Study for CMM Drainage and Utilization at Liuzhuang Coal Mine, Huainan Coal Field.

This [Executive Summary](#) (8 pp, 367 KB) is now available in Chinese. (December, 2010)

Both of these documents can be found on the CMOP website on the "[China International Activities](#)" page.

Ventilation Air Methane Utilization Technologies flyer.

CMOP has also updated the [VAM Utilization Technologies flyer](#) (4 pp, 254 KB). This document can be found on CMOP's website [VAM page](#). (December 2010)

