COAL MINE METHANE PROJECT OPPORTUNITY

On-site Heat Generation and Flaring at Yuzhno-Donbasskaya No. 3 Mine Donetskya Vugilna Energetichna Kompanya Vugledar, Donetsk, Ukraine

OVERVIEW OF COAL MINE METHANE PROJECT:

The Yuzhno-Donbasskaya #3 mine (South-Donbass) is located in the Mariynsky and Volnovakha districts, 50 kilometers southwest of the Donetsk Oblast capital. The South Donbass coal deposits are located in a strip along the southwest outskirts of the Donetsk Basin, surrounded by intense regional tectonics.

The mine's central suction system could potentially produce 35.6 - 57.7 m^3/min of usable methane, that is currently being vented into the atmosphere. The project envisions to improve the suction system, so that more methane is sucked rather than diluted in the ventilation, and then to utilize CMM from the suction system for onsite heat generation and flaring. Currently, three steam boilers, with an output of 25 t/h steam each, are fueled by coal. In addition, unutilized methane will be flared, which will require installation of a flare with a firing capacity of 5.0 MW. Switching boilers to CMM and flaring methane will save 733,291 metric tons of CO_2 equivalent ($MTCO_2E$) in methane emissions. (As an alternative to flaring, combined heat and power (CHP) facility could be installed, with 2 MW in electric capacity, allowing the mine to sell electricity or use it on-site).

ESTIMATED ANNUAL EMISSION REDUCTIONS: 147,000 $MTCO_2E$

PROJECT DETAILS

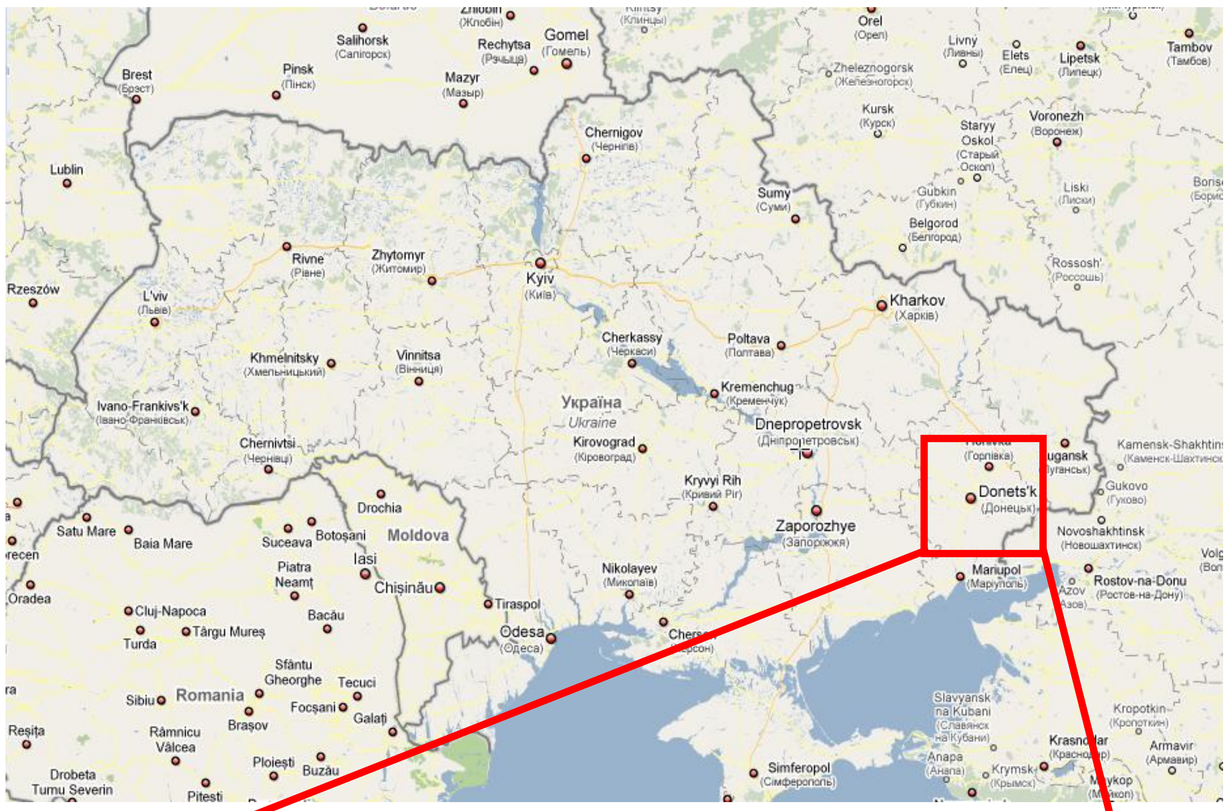
- Name of Project: Onsite heat generation and flaring
- Name of Mine: Yuzhno-Donbasskaya No. 3
- Type of Ownership: Private
- Type(s) of assessments performed: Technical study for UNFCCC (Joint Implementation)
  - When performed: 2008
  - By whom: Carbon-TF B.V. and Eco-Alliance LLC

MINE INFORMATION

- Mine owner: Donetskya Vugilna Energetichna Kompanya
- Percent ownership: 100%
- Parent company: State
- Status and type of mine: Active, underground
- Mining Method: Longwall

PROJECT FINANCES

- Projected capital costs: US$2,341,000 (1,738,500 EUR)
- Projected operation and maintenance costs for fully implemented project: US$108,000 (80,000 EUR)/year



Location Map

HISTORICAL AND PROJECTED MINE DATA

HISTORICAL COAL PRODUCTION AND METHANE EMISSIONS*

YEAR	2000	2001	2002	2003	2004	2005	2006*	2007*	2008	2009	2010	2011
Coal (Million tonnes/yr)	1.273	1.569	1.51	1.289	1.19	1.266	1.2	1.2	0.7	0.796	0.502	0.757
Methane (Mm^3/yr)												
Emitted from ventilation system(s)	12.31	31.23	49.66	46.97	53.75	47.97	35	32.9	35.3	29.96	22.6	22.6
Liberated from drainage systems	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	7.9	5.57	3.94	5.52
Vented to atmosphere	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	7.9	5.57	3.94	5.52
Total Methane Emissions	15.21	34.13	52.56	49.87	56.65	50.87	37.9	35.8	43.2	35.53	26.54	28.12

*ESTIMATED

PROJECTED COAL PRODUCTION AND METHANE EMISSIONS*

YEAR	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal (Million tonnes/yr)	0.912	0.97	1.1	1.2	1.335	1.4	1.46	1.54	1.59
Methane (Mm^3/yr)									
Emitted from ventilation system(s)	25.76	50.89	57.51	44.54	49.56	51.97	54.19	57.14	59.03
Liberated from drainage systems	4.78	7.53	8.34	18.2	20.24	21.22	22.14	23.34	24.1
Vented to atmosphere (drainage)	4.78	7.53	8.34	0	0	0	0	0	0
Total Methane Emissions	30.54	43.36	49.17	44.54	49.56	51.97	54.19	57.14	59.03

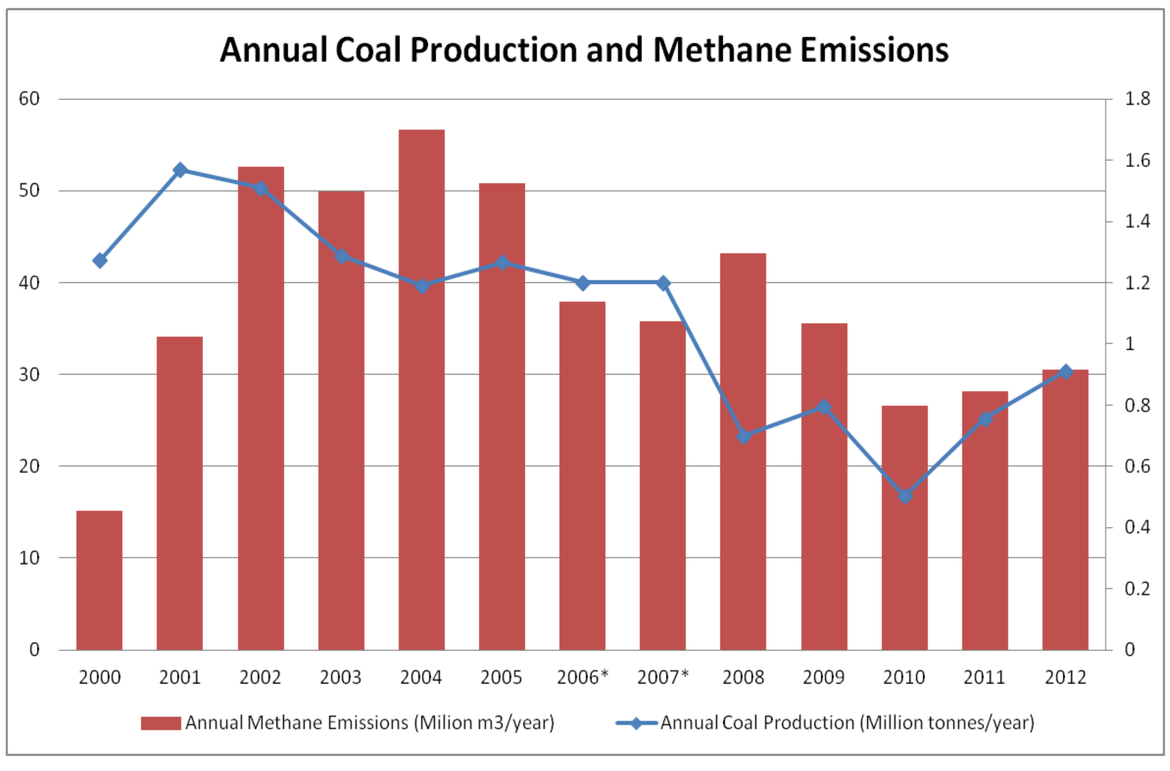
*ESTIMATED

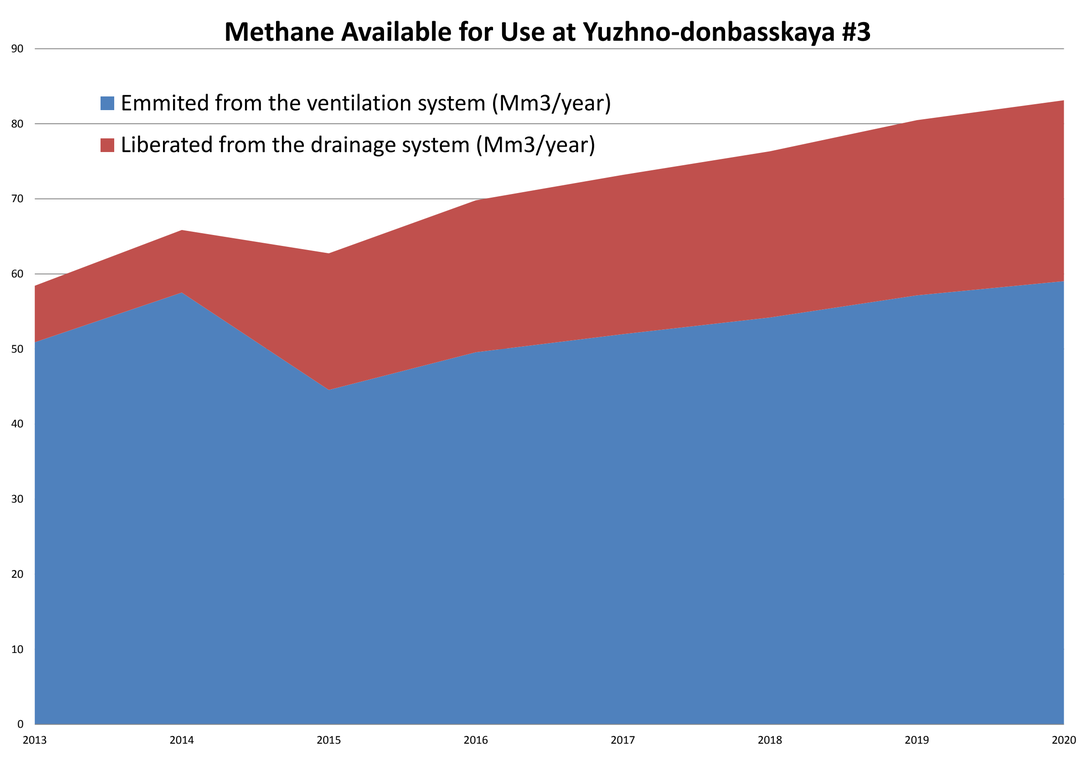
GREENHOUSE GAS EMISSION REDUCTIONS

TOTAL VOLUME OF METHANE EXPECTED TO BE RECOVERED/UTILIZED

YEAR	2013	2014	2015	2016	2017	2018	2019	2020
Total methane recovered and utilized (Mm^3 CH_4/year)	0	0	18.2	20.24	21.22	22.14	23.34	24.1

COAL PRODUCTION AND METHANE EMISSION CHARTS





MARKET ANALYSIS / DEMAND ANALYSIS

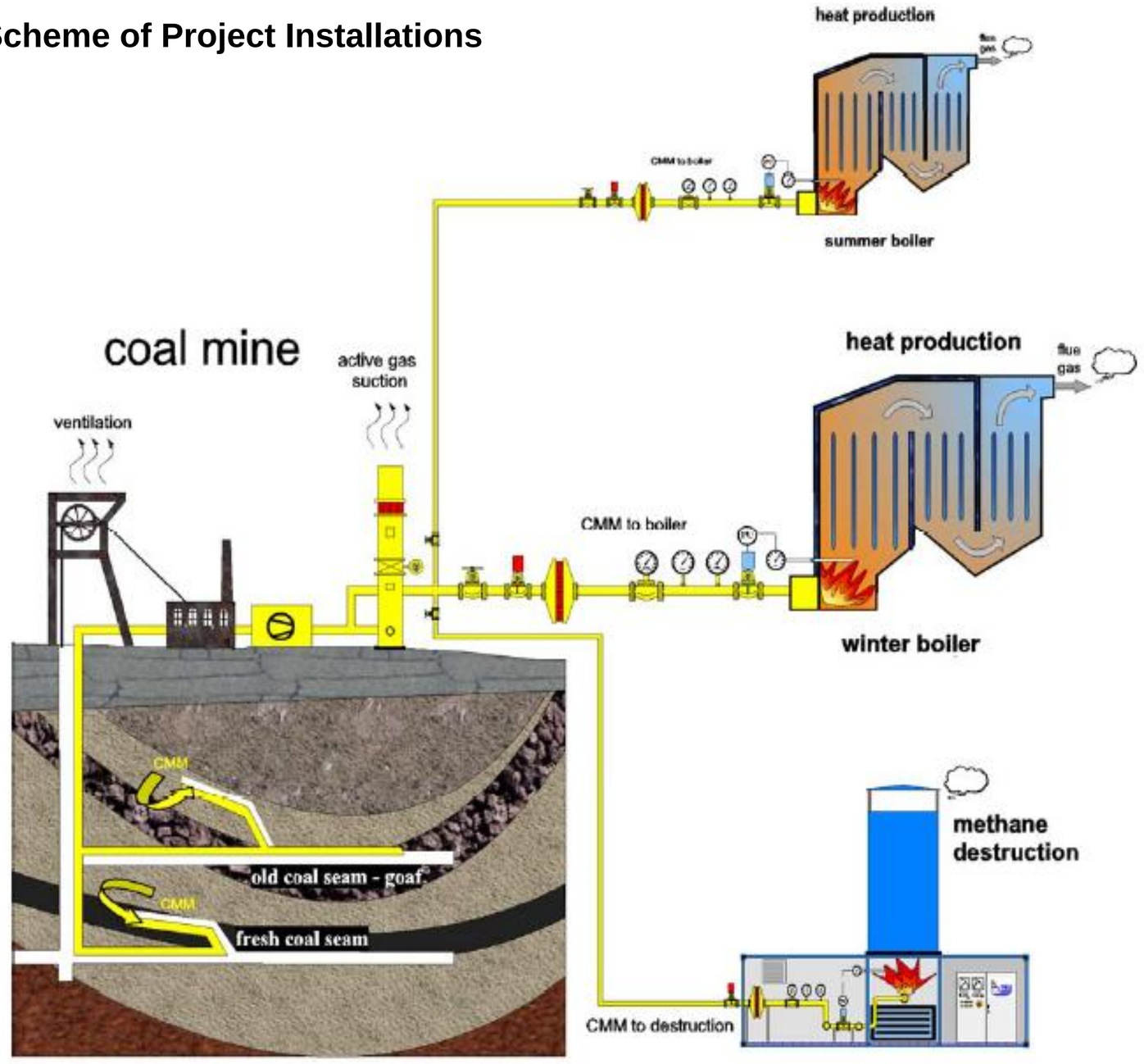
The recovered methane will be either consumed on site to meet heat demand or, otherwise, flared. Because heat demand is higher in the winter months, about 80% of CMM will be utilized by the boiler over the winter period. The rest will be flared. In the summer, about 75% of the recovered CMM will be flared. The project expects that 11.3 million m^3 of methane will be consumed annually.

TYPE(S) OF ASSISTANCE SOUGHT

- Financial Assistance
  - Capital investments and operation and maintenance costs
- Technical Assistance
  - Technical support and training

PROPOSED TECHNOLOGIES

Scheme of Project Installations



Source: UNFCCC. Project 0147 : CMM utilisation for heat generation and flaring – "Pivdennodonbaska No 3"

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