# Prefeasibility Study Training by GMI

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Advanced Resources International, Inc.

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Global Methane Initiative

# 3 Options to Evaluate the Technical and Economic Feasibility of a Coal Mine Methane (CMM) Project

| | Option | Characteristics | Benefits | Limitations |
|---|---|---|---|---|
| 1 | **Desk Study**<br>First order analysis based on limited data | • Basic assumptions<br>• Simple financial modeling | • Eliminates projects with no clear chance of success early at low cost and effort | • Positive results are far from conclusive |
| 2 | **Prefeasibility Study**<br>More detailed analysis with site-specific information | • More detailed review of gas resources<br>• Review of gas drainage<br>• Gas production forecast<br>• More thorough financial analysis | • Conclusions are more defensible than a desk study<br>• Although relatively detailed, costs are still significantly less than a feasibility study<br>• Supports further investigation through a full feasibility study | • Not an investment grade document<br>• Dependent on data provided by 3rd party |
| 3 | **Feasibility Study**<br>Detailed analysis sufficient to support project financing | • Thorough report investigating the economic and technical feasibility of project development | • "Investment grade" document for 3rd party finance<br>• Some data obtained during course of study through original investigation | • Expensive |

# GMI Support for Feasibility and Prefeasibility Studies

| | |
|---|---|
| 1 | Desk Study |
| 2 | Prefeasibility Study |
| 3 | Feasibility Study |

EPA and GMI have directly or indirectly supported the development of about

**50**

**CMM feasibility and prefeasibility studies**

in

**11 countries**

- Identify potential projects while evaluating their technical and economic feasibility
- Initial focus on full feasibility studies
- Since 2011, shift to prefeasibility studies
  - More effective use of resources
  - Broader range of project types
  - More countries


epa.gov/cmop/international-activities

EPA-supported prefeasibility studies prepared on behalf of the GMI Coal Mines Subcommittee



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# What Were Some Lessons Learned?

- Gained valuable experience and insight by working with mine owner/operators and project developers to prepare prefeasibility study reports, but also in reviewing prefeasibility studies prepared by others
- Have found that preparers' definition of a prefeasibility study is exceptionally broad and sometimes does not meet general criteria for such studies
- Inadequate analysis and poor preparation may result in rejection of potentially feasible CMM projects

# Developing Two Online Training Courses for Prefeasibility Studies

Course 1

**Prefeasibility Study Training for Methane Drainage and Use at Working Mines**

Course 2

**Prefeasibility Study Training for Methane Recovery and Use at Abandoned Mines**

- Assist project developers, mining company management, and others with understanding:
  - process to initiate, complete and deliver a thorough and defensible prefeasibility study
  - technical, market and financial data and analyses appropriate for a prefeasibility study
- Self-directed, interactive, web-based training courses, freely available to the public on the GMI website
- Developed in English, but open to offers to translate into other languages, starting with Chinese



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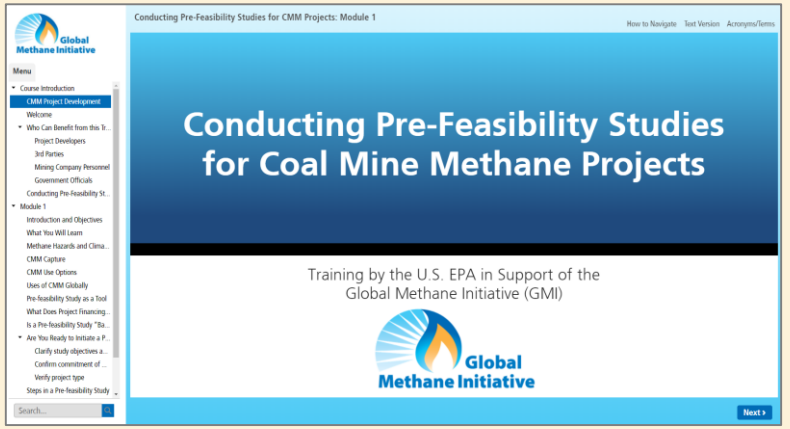
# Prefeasibility Study Training for Methane Drainage and Use at Working Mines

- Covers all aspects of a prefeasibility study: from CMM resource assessment to financial analysis
- Originated from a course delivered to the China International Center of Excellent in 2018
- Incorporates principles from UNECE Best Practice Guidance

| Module | Topic |
|---|---|
| 1 | Introduction and Objectives |
| 2 | Mine Background Information and Evaluation |
| 3 | Resource Assessment |
| 4 | Improvements to Gas Drainage |
| 5 | Identifying Benefits of Improvements |
| 6 | Gas Production Forecast |
| 7 | Market Analysis, Risk Analysis, and Financial Analysis |
| 8 | GMI Pre-feasibility Study: Case Study – Liulong Mine, China |

First 3 modules are available on GMI's website
globalmethane.org/training




Full course to be available this spring!

Will feature a case study as the 8th module

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# Prefeasibility Study Training for Methane Recovery and Use at Abandoned Mines

- Covers all aspects of a prefeasibility study: from Abandoned Mine Methane (AMM) resource assessment to financial analysis
- Incorporates principles from UNECE AMM Best Practice Guidance
- Complete course expected this summer

| Module | Topic |
|---|---|
| 1 | Introduction and Objectives |
| 2 | Information and Data Acquisition |
| 3 | Resource Assessment |
| 4 | Gas Production Forecasts |
| 5 | Mine Closure Design |
| 6 | Market, Financial, and Risk Analysis |
| 7 | GMI Pre-feasibility Study |

Will feature case studies in the 7th module

First modules expected to be posted to GMI website this spring




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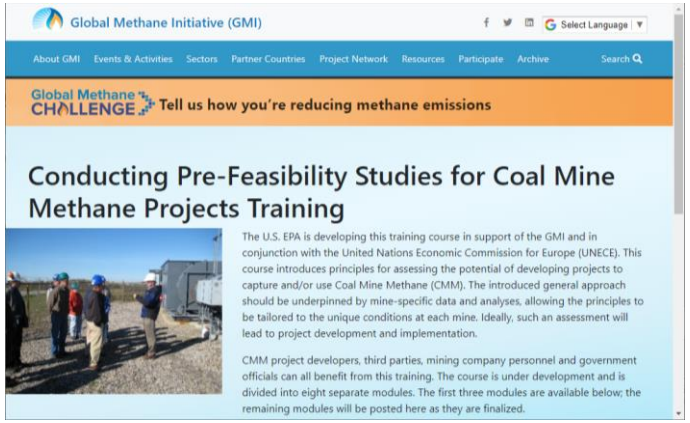
# Summary

- The goal of the GMI training courses is to introduce users to the principles for completing a thorough and technically sound study
- Students will identify:
  - **data needs** for technical and financial analyses
  - **methods** to assess methane resources
  - **criteria** to evaluate effectiveness of methane drainage and benefits to improvements to drainage (for working mines)
  - **options** and **benefits** of forecasting gas drainage from working and abandoned mines
  - **considerations** for evaluating markets and project risks
  - standard **metrics** for financial analyses

Please access existing training modules at: https://www.globalmethane.org/training/coalminetraining.aspx



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# Thank You

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