



## **Key Considerations for Financing Successful Programs**

### **Turkmenistan Symposium on Gas Systems Management: Methane Mitigation**

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# Agenda

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- Financing Emission Reduction Programs
- Methane to Markets Feasibility Studies
- Carbon Financing
- Financing Examples
  - Mexico
  - Columbia
  - Uzbekistan
  - Yemen
- Contact Information and Further Information

## Financing Emission Reduction Programs

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- Successful oil and natural gas emission reduction projects require sources of funding
  - Funding justified by value of avoided methane/carbon emissions
- Potential sources of funding
  - Methane to Markets feasibility studies
  - Development banks/ agencies
  - Carbon funds
  - Technology providers
  - Compliance buyers
  - Internally funded by company based on project profitability

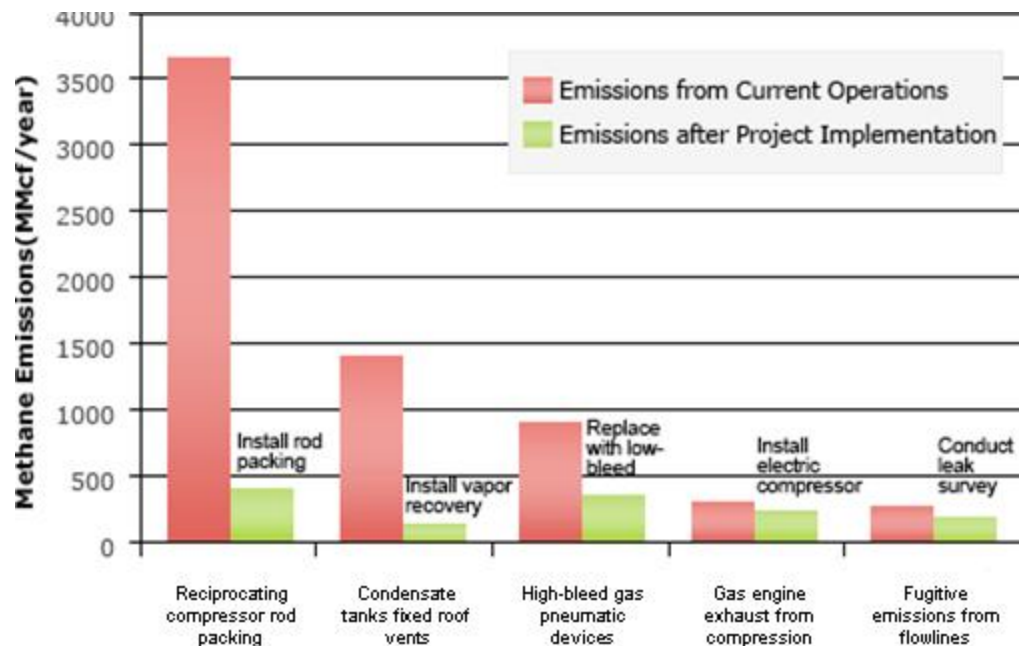
## Financing Emission Reduction Programs

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- Potential revenues of avoided emissions
  - On-site fuel gas value
  - Pipeline gas market value
  - Natural gas liquids value
  - Efficiency gains or avoided operating costs
  - Environmental compliance benefits
  - Carbon market value

## Methane to Markets Feasibility Studies

- EPA offers one-on-one technical assistance to partner companies in identifying and prioritizing cost-effective methane emission reduction opportunities
- Uses company-specific data
- Quantifies partners' methane emissions and identifies corresponding emission reduction opportunities
- Details economic and operational benefits of reduction technologies & practices



### Methane Emissions Source

(Illustrative purposes only)

Available on the web at: [epa.gov/gasstar/tools/partner-challenge.html](http://epa.gov/gasstar/tools/partner-challenge.html)

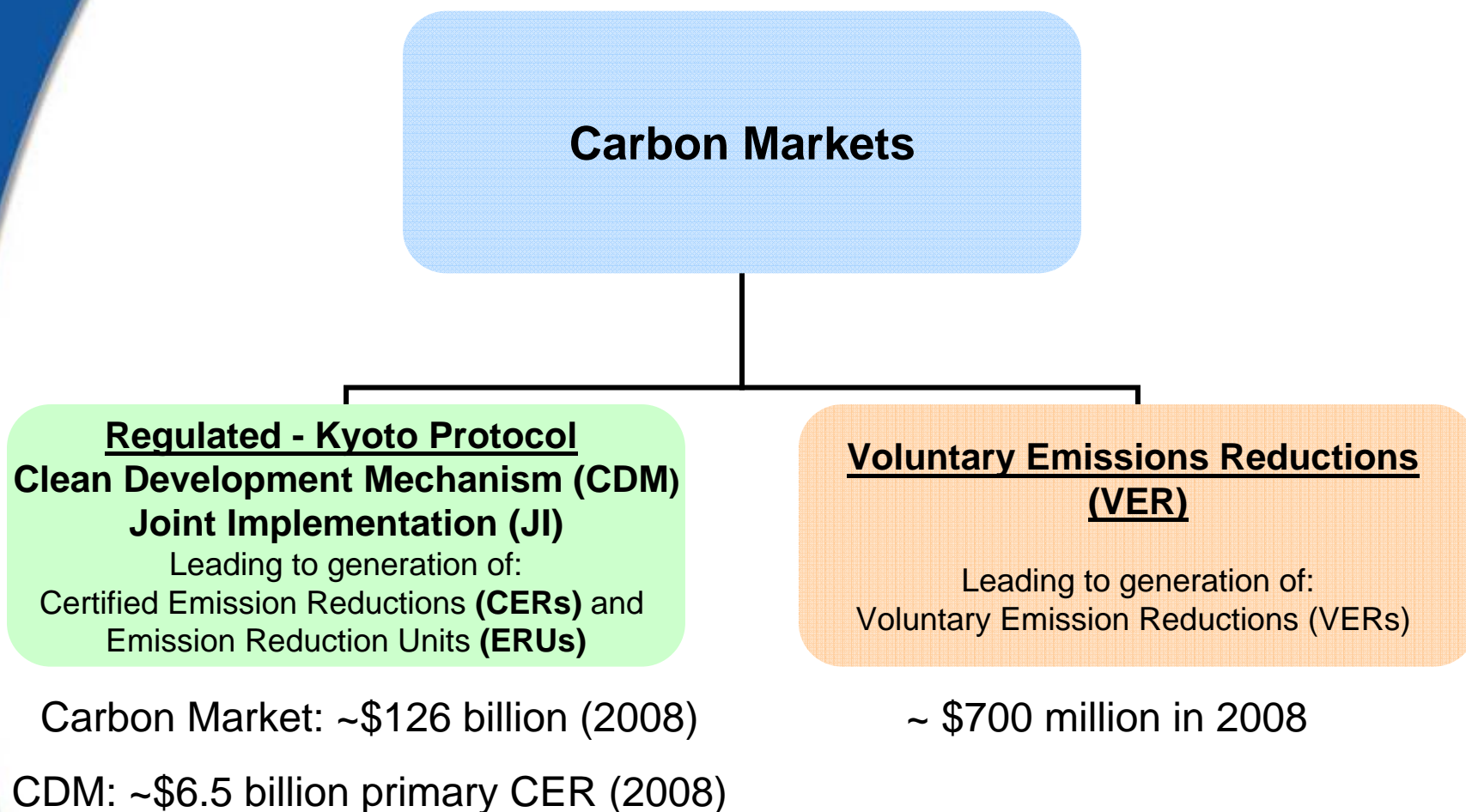
# Methane to Markets for Turkmenistan

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## Feasibility study process and timeframe

- Initial meeting with EPA
- Refine/agree to scope and anticipated timing (1 to 2 weeks)
- Data collection (2 to 3 weeks)
- Data review (1 week)
- Analysis and report development (2 to 3 weeks)
- Present study findings
- Follow-up with company, and next steps

# Carbon Financing

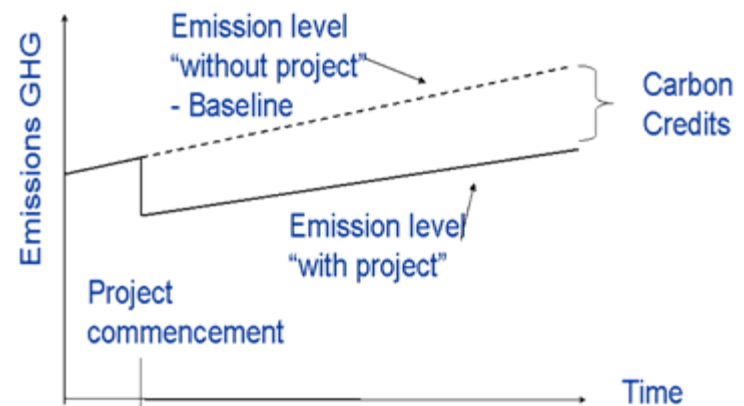


# CDM: What is it?

## Under CDM:

- Eligible projects generate CERs:
  - 1 CER for 1 tonne CO<sub>2</sub>e
  - 21 CER for 1 tonne methane
    - Where 1 tonne methane ≈ 1.47 Mcm
- Projects are eligible if “additional”
  - “Additional” means that the project’s emission reductions would not be done without carbon financing
- CDM methodologies:

An approved CDM methodology defines the standards for a project description, boundaries, measurements, and monitoring



# CDM Methodologies

- Project methodology for oil and natural gas methane emissions reductions
  - AM0009 -“Recovery and utilization of gas from oil wells that would otherwise be flared”
    - 24 projects (India, Indonesia, Iran, Nigeria, Qatar, Vietnam, Azerbaijan, Mexico), 7 projects registered
  - AM0023 -“Leak reduction from natural gas pipeline compressor or gate stations”
    - 5 projects (Georgia, Armenia, Mexico, Uzbekistan), 1 project registered
  - AM0037 -“Flare reduction and gas utilization at oil and gas processing facilities”
    - 6 projects (India, Equatorial Guinea, United Arab Emirates), 2 projects registered
  - Develop new methodology

## Feasibility Study and Carbon Credits Example Mexico

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- Wet seals substitution with dry seals in gas compressors, AM0023
- Estimated tCO<sub>2</sub>e/year reductions: 90,728
- Project status: under evaluation for registration
- Methane to Markets feasibility study led to a CDM project to reduce centrifugal compressor seal methane emissions. CO2 Global Solutions International S.A. (Spain) supplying capital to perform the project, and thus gaining the rights to sell the carbon credits

## Feasibility Study and Company Funded Example Colombia

- Utilization of vented and flared associated gas
- Estimated tCO<sub>2</sub>e/year reductions: 80,000 plus recovery of 360 thousand barrels condensate/year
- Project status: implemented
  
- Location identified by Occidental Petroleum for Methane to Markets pre-feasibility study which led to implementation based on economic performance
  - 14 months simple payback
  - 87% internal rate of return (IRR)

Available on the web at: [methanetomarkets.org/documents/events\\_oilgas\\_20081203\\_oilgas-5Dec08\\_Ravishankar.pdf](http://methanetomarkets.org/documents/events_oilgas_20081203_oilgas-5Dec08_Ravishankar.pdf)  
Economic data available on the web at: [epa.gov/gasstar/documents/international\\_presentation.ppt#468,15](http://epa.gov/gasstar/documents/international_presentation.ppt#468,15), Case Study 4: Analysis of Methane Recovery from Colombia Tank Battery, slide 15

## Project Financing with Carbon Credits Example Uzbekistan

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- Leak reduction from natural gas pipeline compressor or gate stations, AM0023
- Estimated tCO<sub>2</sub>e/year reductions: 527,500
- Project status: under evaluation for registration
- Project coordinated by United Nations Development Programme to fund efforts in country towards its Millennium Development Goals. Fortis Bank (Belgium) supplying capital to perform the project, and thus gaining the rights to sell the carbon credits

# Project Financing with Carbon Credits

## Example Yemen

- Recovery and utilization of associated gas from basement wells in the Kharir Field (Block 10), AM0009 version 4
- Estimated tCO<sub>2</sub>e/year reductions: 410,446
- Project status: under evaluation for registration
- Project developed to minimize gas flaring and expand electricity generation capacity to meet the electricity supply deficit in the country is the first CDM project in Yemen. Total Exploration & Production (Yemen) and Total Gas & Power Limited (United Kingdom) supplying capital to perform the project, and thus gaining the rights to sell the carbon credits

## Contact Information and Further Information

- More detail is available on these practices and over 80 others online at:  
[epa.gov/gasstar/tools/recommended.html](http://epa.gov/gasstar/tools/recommended.html)
- For further assistance, direct questions to:

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