

Accelerating Methane Mitigation Through Markets

Oil & Gas Subcommittee Webinar

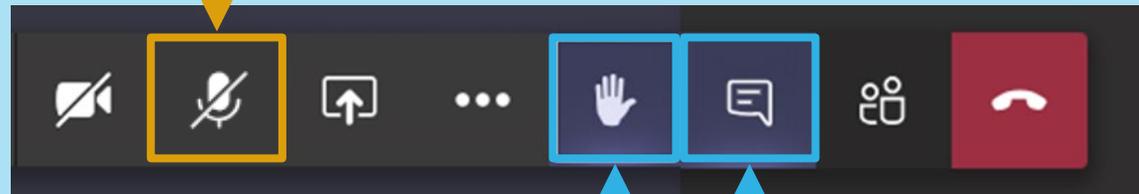
24 February 2021



Housekeeping – Tips for using Teams

Mute your microphone.

- Everyone should set the microphone to mute unless actively speaking.
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If available, use the “Raise your hand” button to be called upon to speak.

Or, enter questions using the “Chat” pane. Type “Raise My Hand” to be called upon to speak.

Help!

Need Help?

If you need help, please send an email to asg@globalmethane.org

Agenda

- **Welcome**
 - James Diamond, GMI O&G Subcommittee Co-Chair, Environment and Climate Change Canada (ECCC)
- **Introduction to Webinar and Speakers**
 - Katie Sullivan, Managing Director, IETA
- **Presentation: Project Development Insights and Observations**
 - Yvan Champagne, President, Bluesource Methane
- **Presentation: Methane Emissions Policy in Alberta**
 - Rob Hamaliuk, Executive Director - Climate Change Policy, Alberta Government
- **Presentation: Voluntary Carbon Market Signals**
 - Michael Cote, President, Ruby Canyon Environmental
- **Presentation: Upstream Emissions Reduction: *An opportunity for methane reduction projects in Oil & Gas worldwide***
 - Michiel ten Hoopen, Founding Partner and Managing Director, ClearBlue Markets
- **Presentation: Financing Greenhouse Gas Reduction Projects**
 - Jamie Callendar, Vice President, The Inlandsis Fund
- **Facilitated Discussion**
 - Katie Sullivan
- **Wrap up and Adjourn**

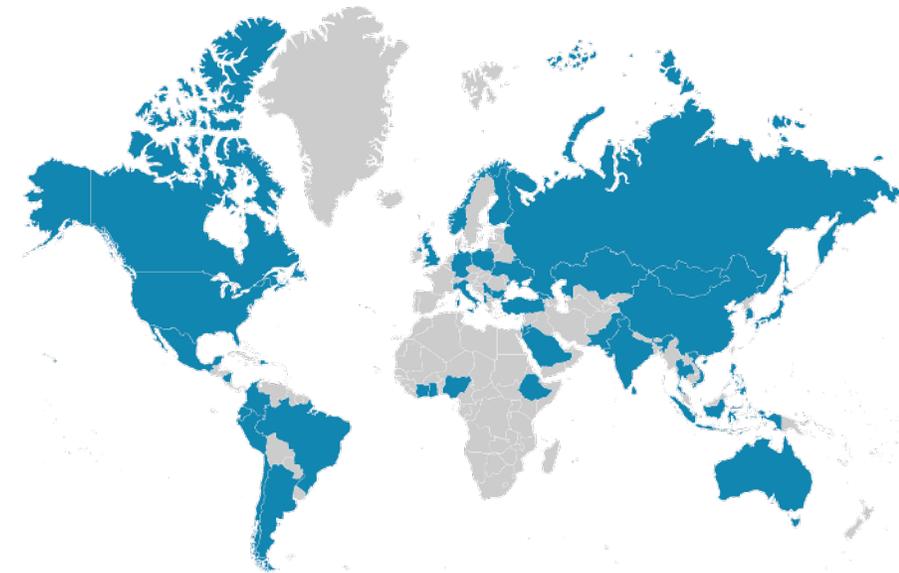
Global Methane Initiative (GMI)

GMI is an international public-private partnership focused on reducing barriers to the recovery and use of methane as a clean energy source.

- 45 Partner Countries
- 700+ Project Network members
- Strategic partnerships with international organizations focused on methane recovery and use



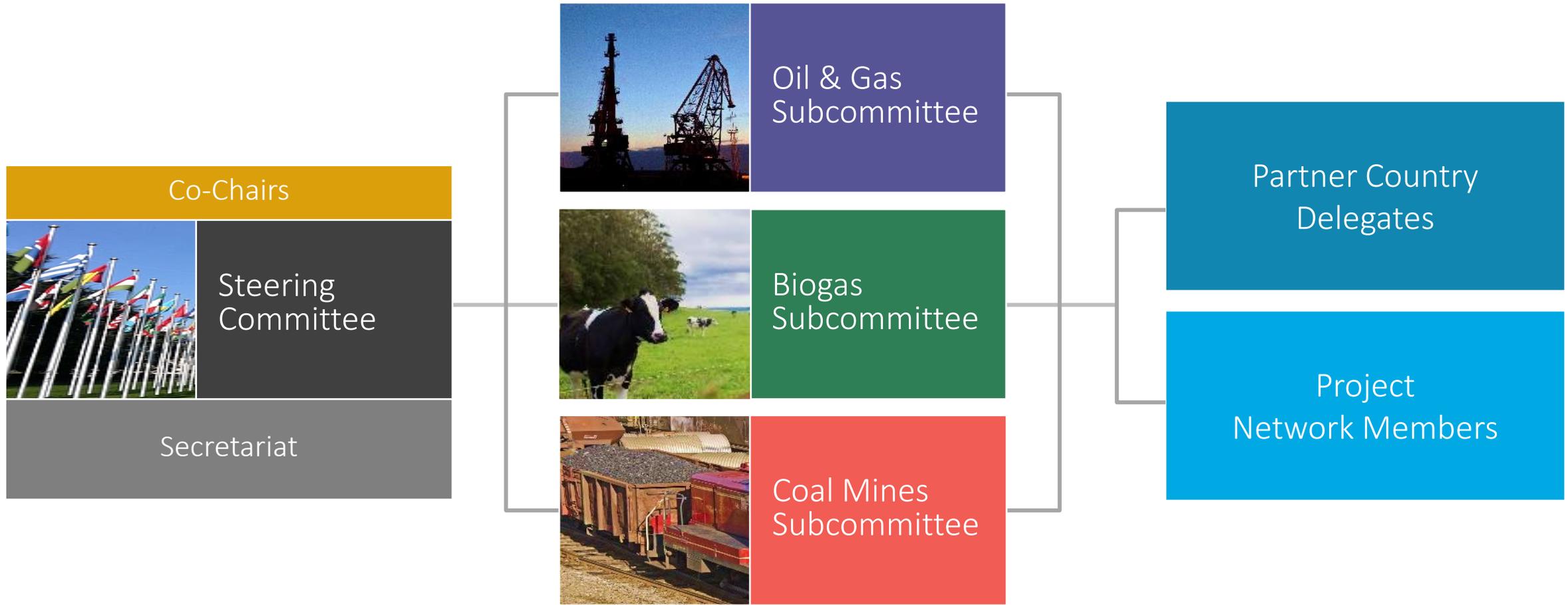
UNECE



GMI Partner Countries represent approximately 75% of the world's man-made methane emissions.



Organizational Structure



Recovering and Using Methane in Sectors Targeted by GMI

Estimated Global Man-made Methane Emissions by Source¹



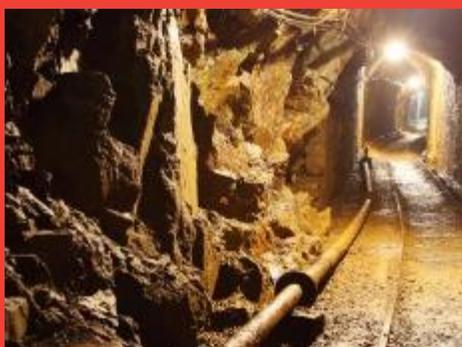
Oil & Gas Sector

Methane emissions from oil and natural gas systems result from both normal operations and system disruptions. These emissions can be cost-effectively reduced by upgrading technologies or equipment, and by improving operations.



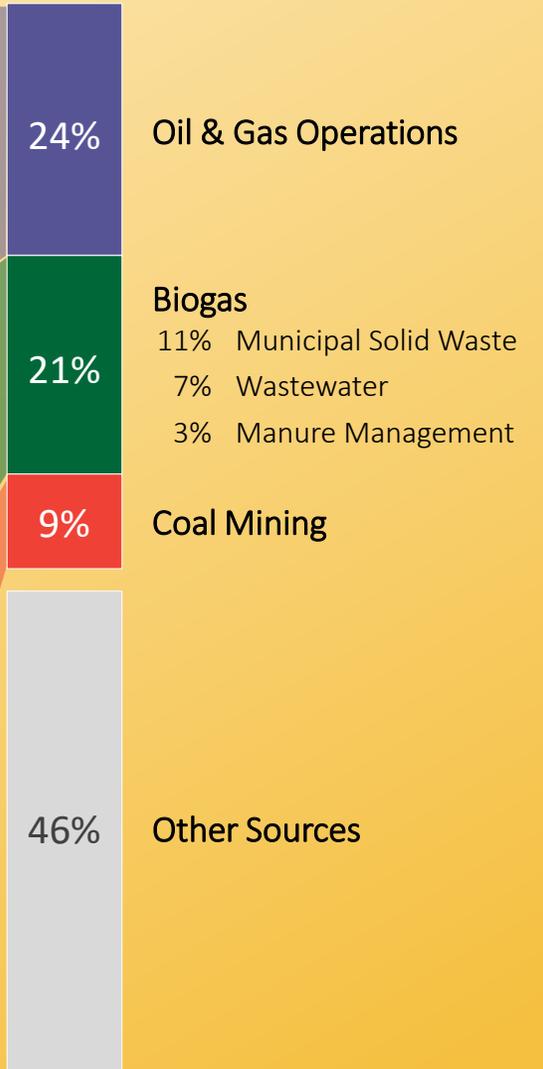
Biogas Sector

Biogas produced from the anaerobic digestion of organic material or emitted directly from landfills can be treated to create pipeline-quality natural gas, used as a cooking fuel, used to generate electricity, and captured on-site to provide heat and power.



Coal Mines Sector

Removing fugitive methane gas from underground coal mines and using it in profitable and practical ways can improve worker safety, enhance mine productivity, increase revenues, and reduce greenhouse gas emissions.

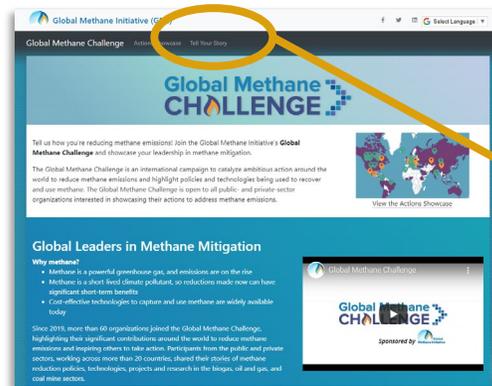


¹ U.S. EPA, *Global Anthropogenic Emissions of Non-CO₂ Greenhouse Gases: 1990–2030*

Global Methane Challenge



- The Global Methane Challenge is still open!
- Launched in 2019 to raise awareness and catalyze ambitious action to reduce methane emissions



Submit your story at
globalmethane.org/challenge/

Global Methane Initiative

Accelerating Methane Mitigation Through Markets

Project Development Insights and Observations
Bluesource Methane

February 24, 2021



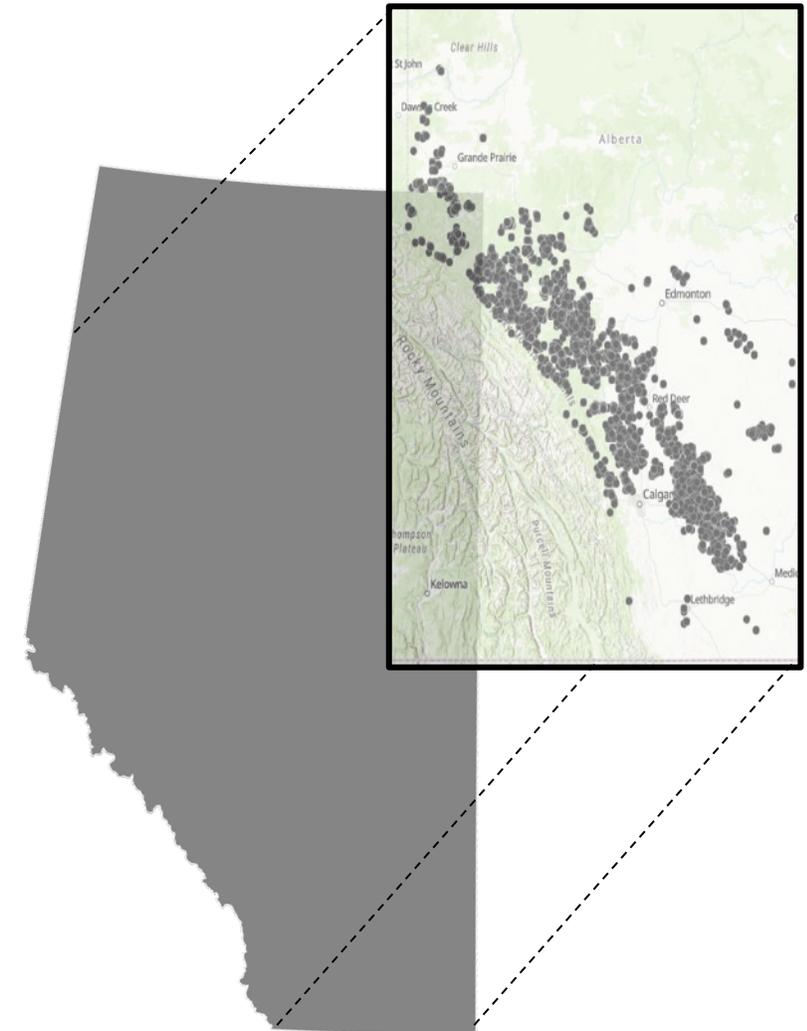
1. Overview of Bluesource and Bluesource Methane
2. Key Metrics and Results
3. 6 Key Insights

- Bluesource is one of North America's largest carbon and environmental market firms
 - 20 years of experience in over 200 projects
 - 150 Million tonnes of reduction created
 - Environmental Finance's Best Project Developer for North American Markets for last 6 years
- Bluesource Methane is a wholly-owned, special purpose vehicle (SPV) created by Bluesource to tackle and accelerate methane reductions in the oil & gas sector in Alberta and beyond

BLUESOURCE METHANE PROGRAM



- In past 38 months:
 - We have inventoried over 60,000 gas-driven pneumatic devices across Alberta
 - Replaced, removed or retrofitted over 11,000 high-bleed devices for 35 oil & gas producers
 - Will generate ~3 million tonnes CO₂e of reductions by Q4, 2022
- Made possible by well-designed regulations with early-action provisions, carbon finance and markets
 - Regulations with clear timelines providing a “stick”
 - Alberta compliance market for offset credits, strong price signal, offset protocol for controller retrofits, and early-action period providing a “carrot”
 - Working with technology, EPC and oil & gas service partners, Bluesource provided full-service solution to producers (capital, inventory and installation services, project management, logistics, data management, GHG quantification, marketing, contracting and sales), accelerating and pulling forward reduction activities



PROGRAM EXPANSION



Bluesource currently applying learnings from initial program to new methane reduction programs:

- Electric, renewable and hybrid-powered chemical injection pumps
- Electric, renewable and hybrid-powered instrument air systems
- Vent gas conservation and combustion
- International project expansion outside of Canada



- 1. Quick wins.** In jurisdictions with upstream oil & gas sectors, methane reductions are one of the fastest and largest opportunities for immediate, high-quality, measurable GHG reductions.
- 2. Canadian Market Template.** Canada has provided a template to the world on how you catalyse and accelerate methane reductions in the oil & gas sector
 - Combination of defined regulatory timeline (stick) with early-action incentive (carrot)
 - Carbon market and infrastructure to enable carbon finance and project developers to deploy capital and accelerate uptake

- 3. Power of the Positive Price Signal.** Oil & gas sector understands markets and responds better to a positive price signal (revenue) than a negative signal (tax). To mobilize sector and ***accelerate*** reductions, markets can be a valuable tool.
- 4. Get the Oil & Gas sector in the tent.** Markets invite the oil & gas sector to become part of the solution and open a pathway to a lower carbon future for the oil & gas sector. Unlocking and guiding the human capital, ingenuity, risk-taking, and capital allocation expertise of the sector towards emission reduction solutions gets us there further, faster.

5. **Methane is methane.** Atmosphere doesn't distinguish between biological and fossil methane molecules. If the objective is to *accelerate* methane emission reductions, we'll go further, faster if oil & gas methane reductions receive equitable treatment from regulators and markets.

6. **Markets *accelerate* climate literacy.** Financial imperative provides incentive to acquire and build institutional climate knowledge and literacy. *Accelerating* and broadening climate literacy in emissions-intensive sectors *accelerates* climate impact.

THANK YOU



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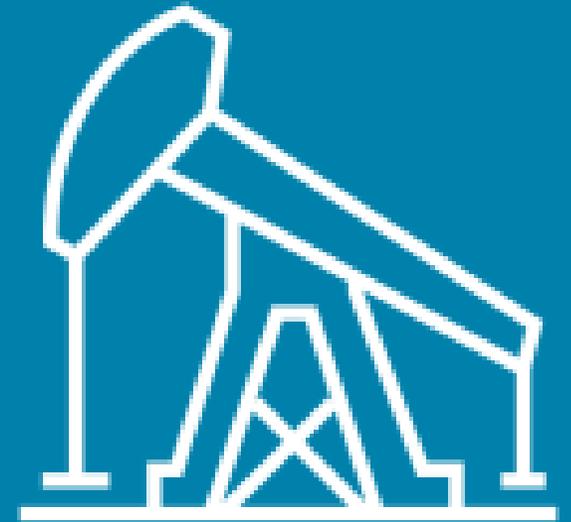


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Methane Emissions Policy in Alberta

Regulations, markets, pricing and programs

Robert Hamaliuk, Executive Director Air and Climate Policy
February 24, 2021



Alberta

Alberta's Methane Emission Reduction Approach

Base-level Regulatory
Requirements - Backstop



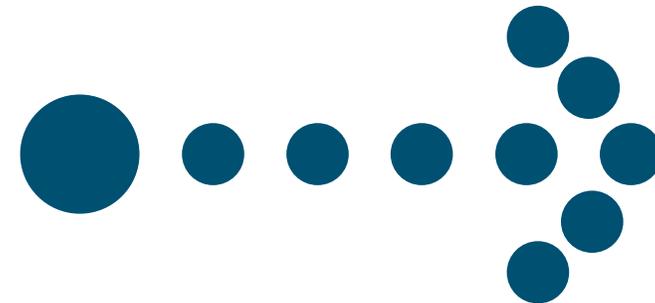
Market-based
Pricing Tools



Programming and Direct
Funding

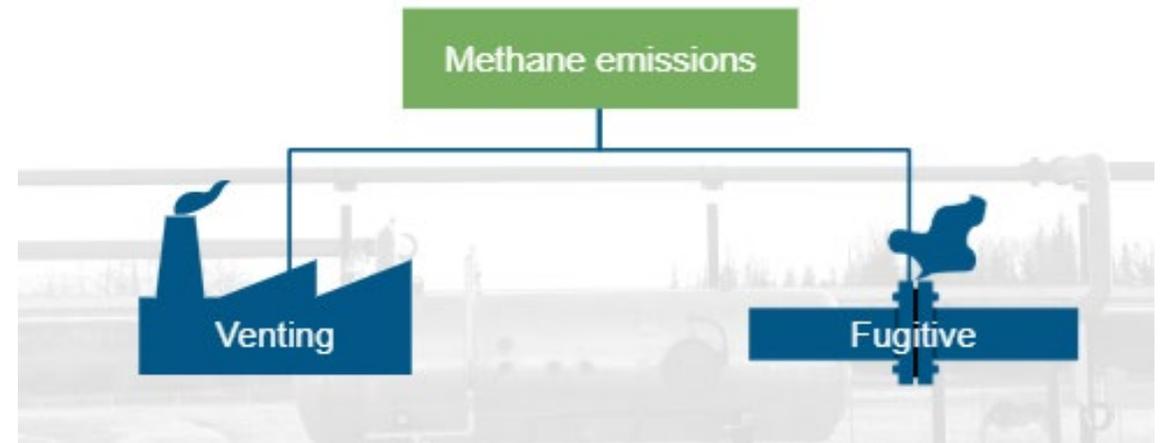


45%
Methane
Reduction

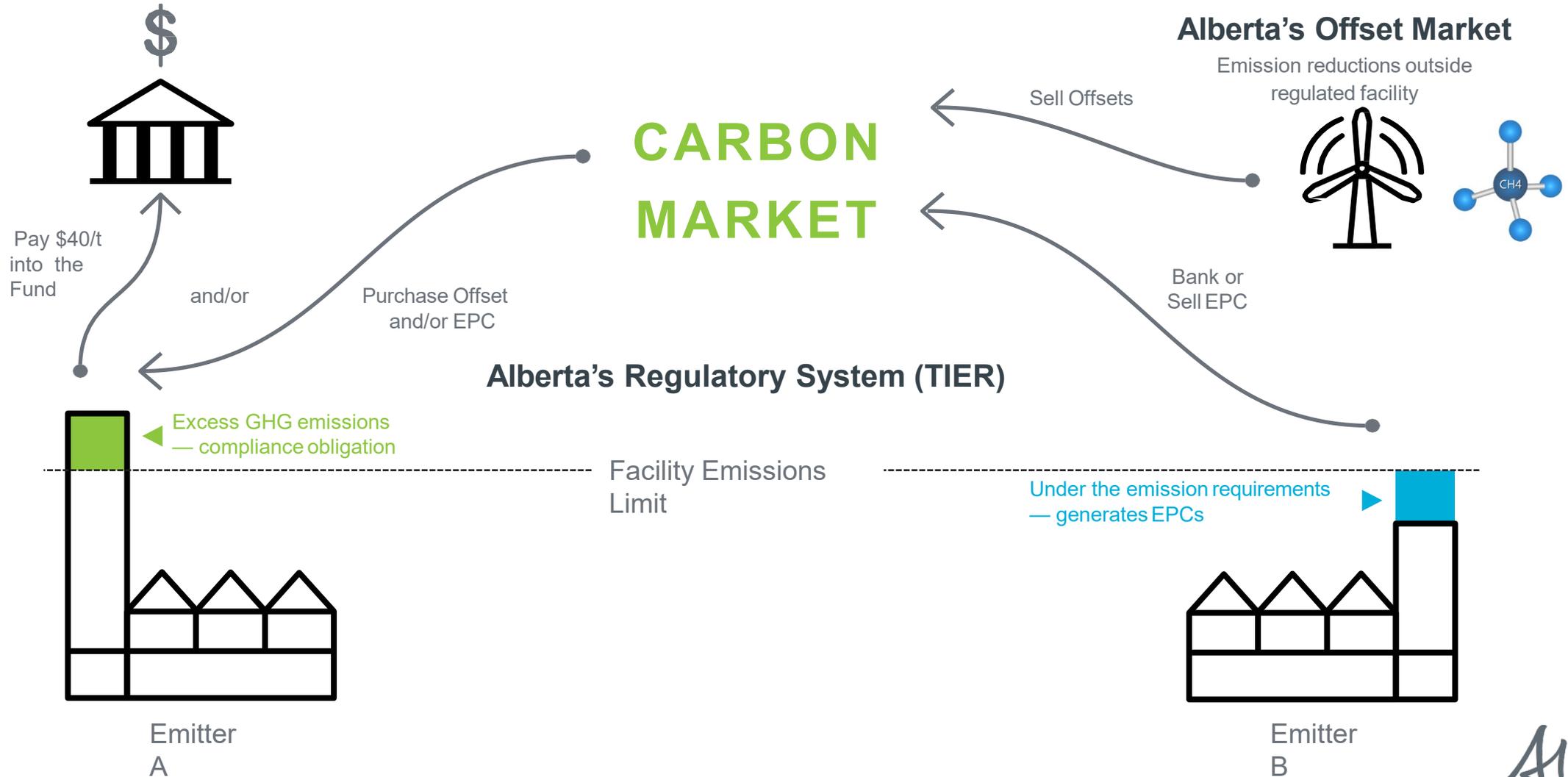


Methane Regulation (2020)

- Address the primary sources of methane emissions from Alberta's upstream oil and gas industry:
 - fugitive emissions and venting, which includes emissions from compressors, pneumatic devices, and glycol dehydrators.
 - The requirements also focus on improved measurement, monitoring, and reporting of methane emissions.



TIER – Cornerstone of Alberta Policy



Programming and Direct Funding

- Government recently announced \$750M in investment from the TIER Fund into emission reducing projects and technology
 - \$52 million in 2020 to fund methane reduction projects and quantification or leak detection technologies.
- Industry is voluntarily funding methane reduction research through coordinated approach via the Petroleum Technology Alliance of Canada (PTAC)



Voluntary Carbon Market Signals

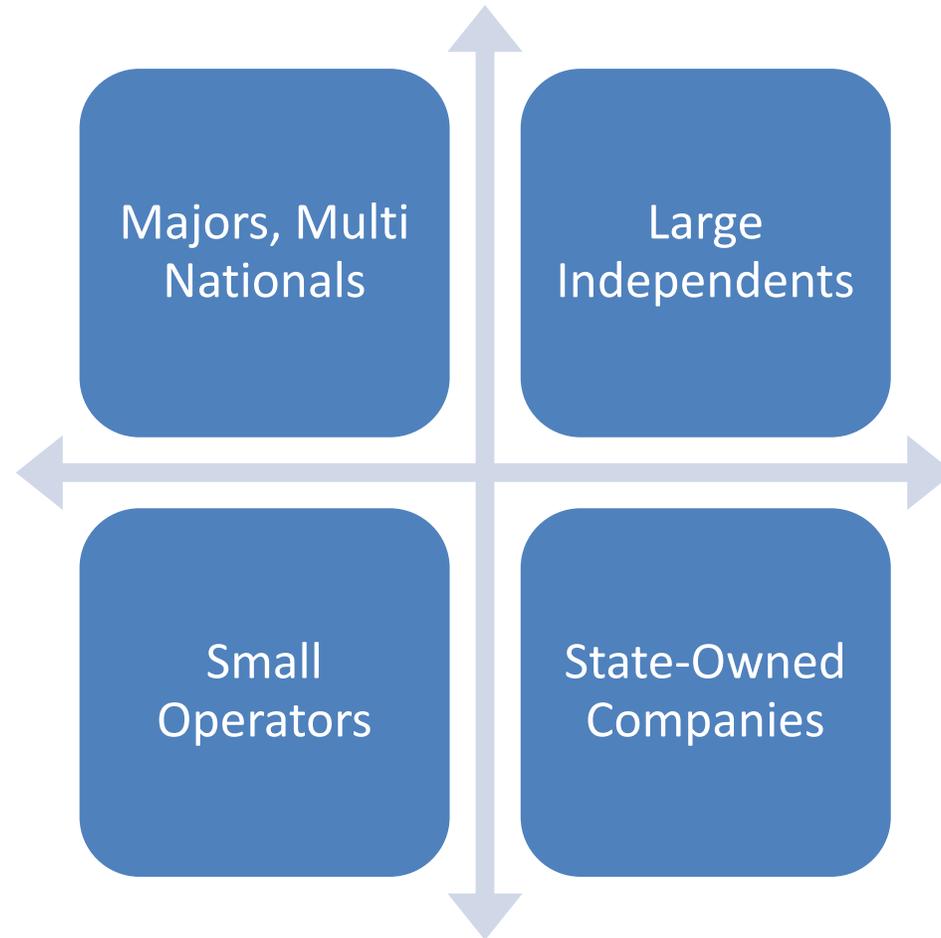
GMI Oil & Gas Subcommittee Webinar: Accelerating Methane Mitigation Through Markets

February 10, 2021



RUBY CANYON ENVIRONMENTAL

Wide Range of Oil & Gas Companies



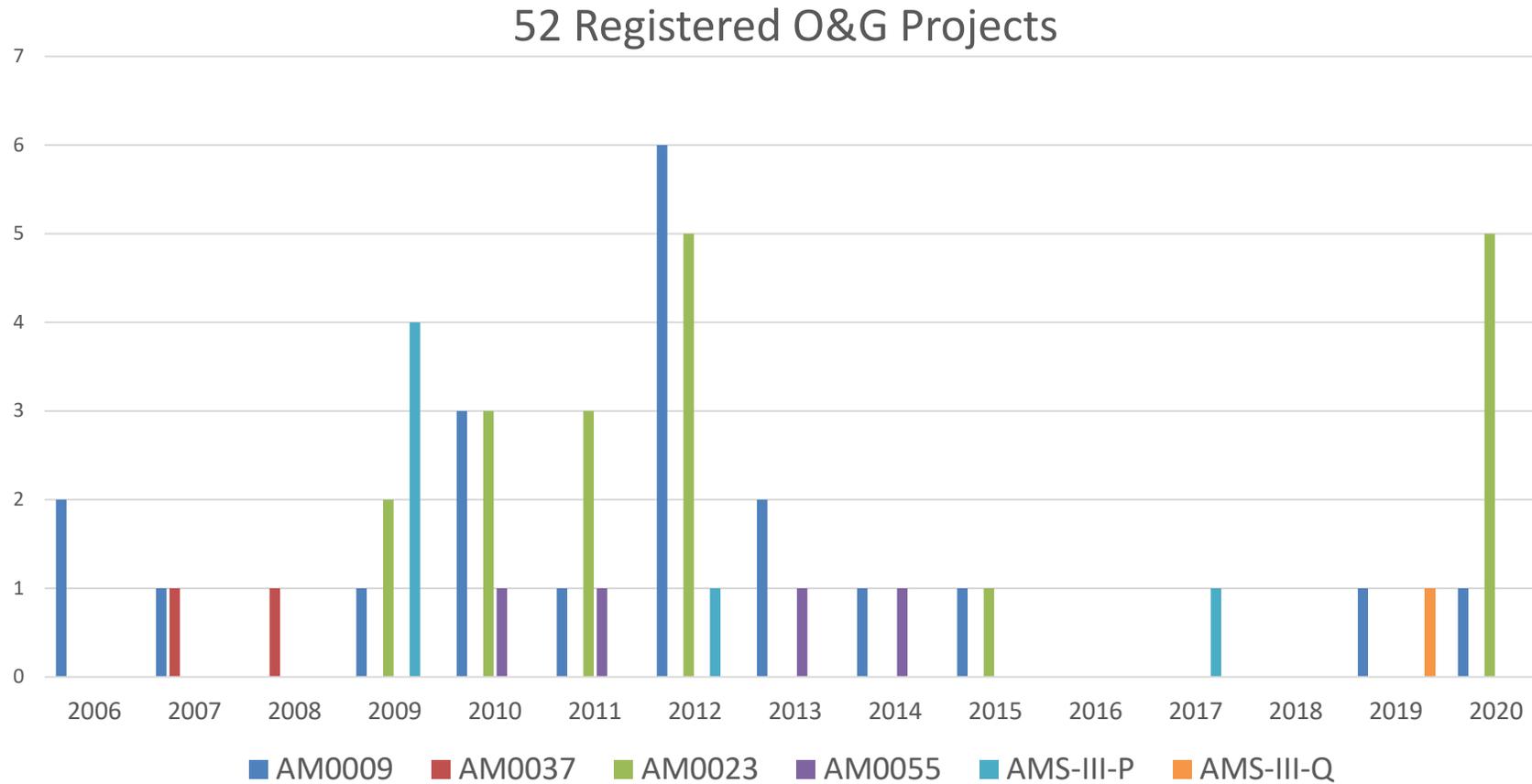
Targeted Opportunities in the U.S.

- Larger O&G Companies:
 - Reducing methane emissions largely business as usual or best practices for many companies
 - GHG inventories, sustainability goals, climate action plans, emissions targets
- Smaller O&G Companies
 - 9000 independent O&G producers
 - Many are single play, domestic focused
 - Fewer sustainable practices in place
- Service Companies
 - Bundle emission reductions with project activities and technologies

Existing Offset Project Protocols

Protocol	Title	Limits
CDM AM0009	"Recovery and utilization of gas from oil fields that would otherwise be flared or vented", Version 7.0	Associated gas or lift gas sent to gas pipeline > 1 mmM3/day capacity
CDM AM0037	"Flare reduction and utilization of gas from oil wells as a feedstock, Version 3.0	Associated gas used as a feedstock on chemical process
CDM AM0055	"Recovery and utilization of waste gas in refinery or gas plant", Version 2.1	Waste gases recovered from refinery or gas plants used in same facility for process heat
CDM AMS-III-P	"Recovery and utilization of waste gas in refinery facilities", Version 1.0	
CDM AMS-III-BI	"Flare gas recovery in gas treating facilities", Version 1.0	Off-spec gas from gas processing facilities sent to pipeline
CDM ACM0012	"Waste energy recovery", Version 6.0	Converting waste energy sources to useful energy (electricity, mechanical, thermal), but no pipeline sales
CDM AMS-III-Q	"Waste energy recovery", Version 6.1	
CDM AM0023	"Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities", Version 4.0	Advanced LDAR

Registered O&G Projects Using CDM Protocols



New Protocol Considerations

- More Universally Applicable Flare Protocol
 - Include multi-project activities and all waste gas sources
 - Use performance standards and benchmarks
- Consider CO₂-based protocols that indirectly lead to methane emission reductions
 - Shut in oil & gas wells, retire mineral development
 - LCA-based emission avoided
- P&A orphaned wells
 - Move high methane emitters to top of the list

Renewed Interest in O&G Sector Projects in 2021

- Key Drivers
 - Low oil & gas prices
 - Increase corporate ESG scores
 - Investor influence
 - Carbon neutrality goals
 - State Regulation
- Understanding Carbon Market Rules
 - Eligibility, applicability, additionality
 - Quantification

Contact Information



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Upstream Emission Reductions

An opportunity for methane reduction projects in Oil & Gas worldwide

Global Methane Initiative Webinar
Accelerating Methane Mitigation Through Markets

Wednesday February 24, 2021

Michiel ten Hoopen



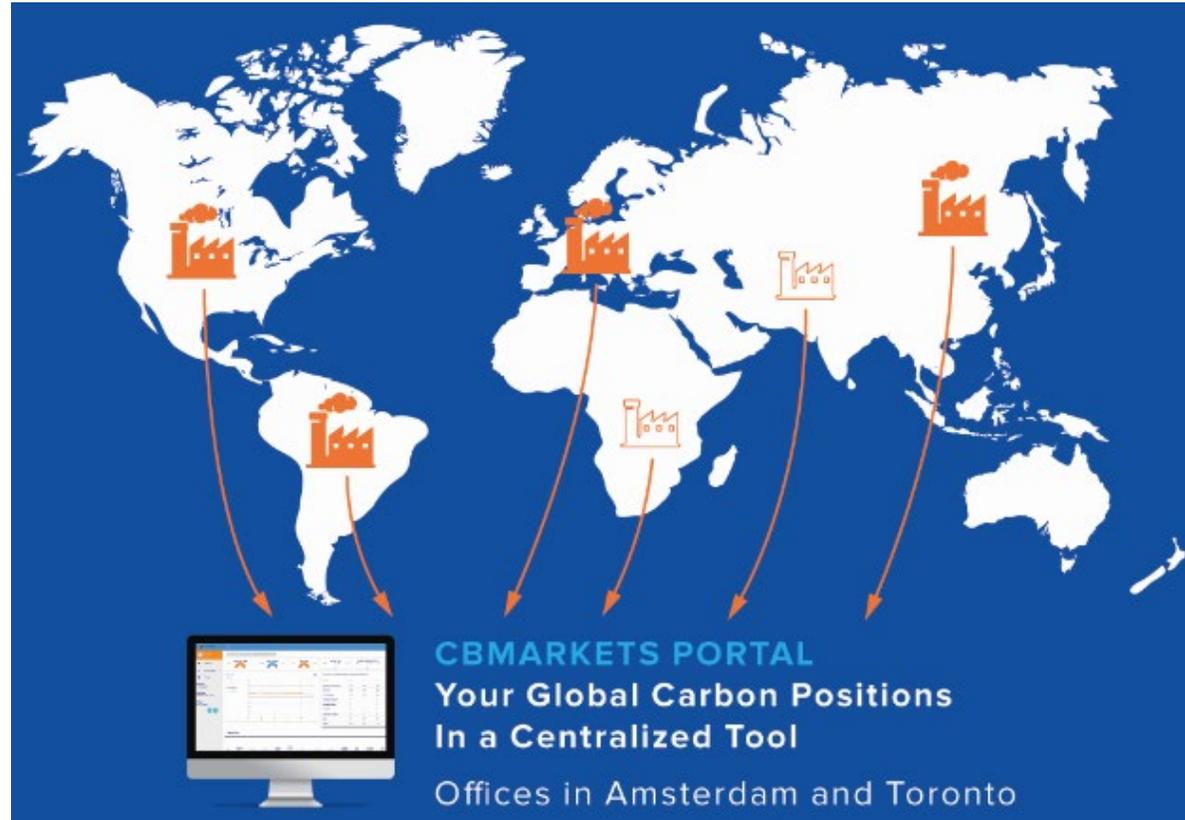


About ClearBlue

Capabilities and Presence

Carbon Programs

- EU-ETS
- CORSIA
- UNFCCC CDM/Art. 6
- UERs
- Voluntary offsets (VCS/ACR/GS)
- WCI
- Federal Backstop
- Ontario
- Alberta TIER



Fuel Standards

- LCFS (California)
- CFS (Canada)
- LCFRR (British Columbia)
- FQD

Energy Programs

- C2E
- RECs



**Compliance Strategy / Trading and Optimization / Offset Development,
Sourcing, Marketing / Risk Management / Market Analysis**



Upstream Emission Reductions

A Global Offset Market Under the EU Fuel Quality Directive

We source UERs for our client VARO Energy in Europe



FQD

The EU Fuel Quality Directive (FQD) sets a 6% CO₂ reduction obligation as of 2020

Applies to all fuels sold for road transport

An EU directive, *not* harmonized among the EU Member States

6% reduction can be achieved with:

Biofuels, electricity, e-fuels...

Upstream Emission Reductions (UERs) – using offsets to reduce the overall cost of compliance

UERs

Offset projects in upstream Oil & Gas (methane reduction, renewable, energy efficiency) – prior to the refinery!

Can be from any country in the world and no link to physical crude sales to Europe is needed

Vintage year needs to match compliance year (reduction achieved in 2020 used for obligation in 2020)

Banking into the next year is not allowed!



UER “systems” vary by EU Member State

3 different “systems” for UERs among EU countries

	German UERs	FQD-ISO based (UK,...)	CERs (NL, BE)
Crediting period	1 year offsetting period only! (but possibly use in other countries afterwards)	Refer to methodology used	7 years with renewal or 10years
Methodology	Approved CDM meth only	Internationally recognized methodologies	Approved CDM meth only
Other requirements	Allows very different project types (avoided flaring, EE, renewable)	Most projects use avoided flaring	Avoided flaring requirement (BE requires AM0009 only)
Additionality	Very strict, submission (“pre-approval”) by German government prior to investment decision – plus additionality based on CDM rules	Similar to CDM rules, no need to prove prior consideration	Follow additionality tool and broader rules on additionality in CDM
Accreditation for Validator/Verifiers	ISO plus German accreditation	ISO accreditation	CDM accreditation
Validation / verification	Separate entity for validation and verification (possible exception for small projects)	Validation and verification can be done by same auditor (UK also requires assurance statement as third step)	Separate entity for validation and verification for large scale projects, same for small scale projects
Approval	German government approves itself	The auditor (UK relies on assurance statement by auditor)	CDM Executive Board
Creation/submission of UERs	Germany has its own registry (also allows for other EU governments to open account to cancel and export UERs)	The assurance statement is the basis for getting UERs in the UK	The CDM has registry where UERs are created, these can be transferred to national government account (NL, BE, LUX) or voluntary cancellation in UN registry (Czechia)

German market by far the highest value per tCO₂

Germany maintains the use of UERs, possibly until 2030 – has usage cap of 1.2%

Some major EU countries have not yet introduced their rules on the use of UERs

The UK appears to end the use of UERs as of this year (Brexit)



Potential for methane reduction projects

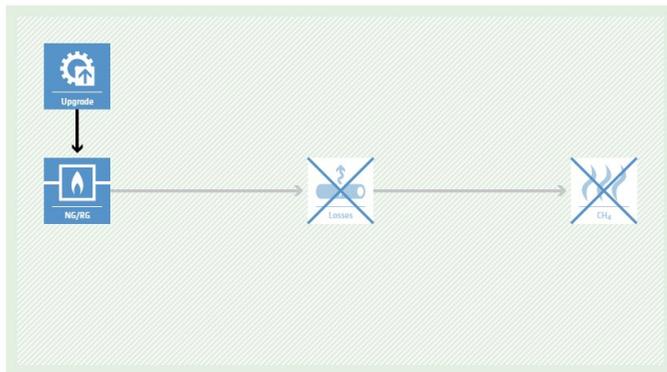
CDM - **AM0009** “Recovery and utilization of gas from oil fields that would otherwise be flared or vented”

Is the most common UER project type (avoided flaring of associated gas)

Not allowed to calculate with methane GWP for avoided venting

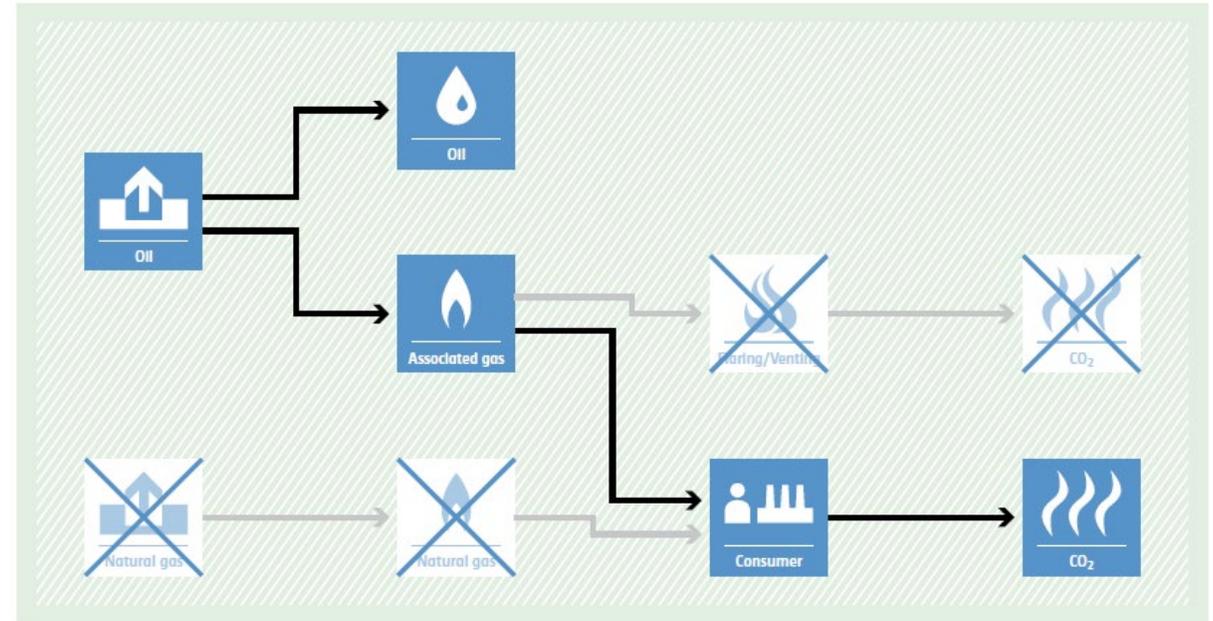
Use AM0037 when associated gas is utilized as a feedstock

- CDM - **AM0023** “Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities”



Emission reductions in AM0023

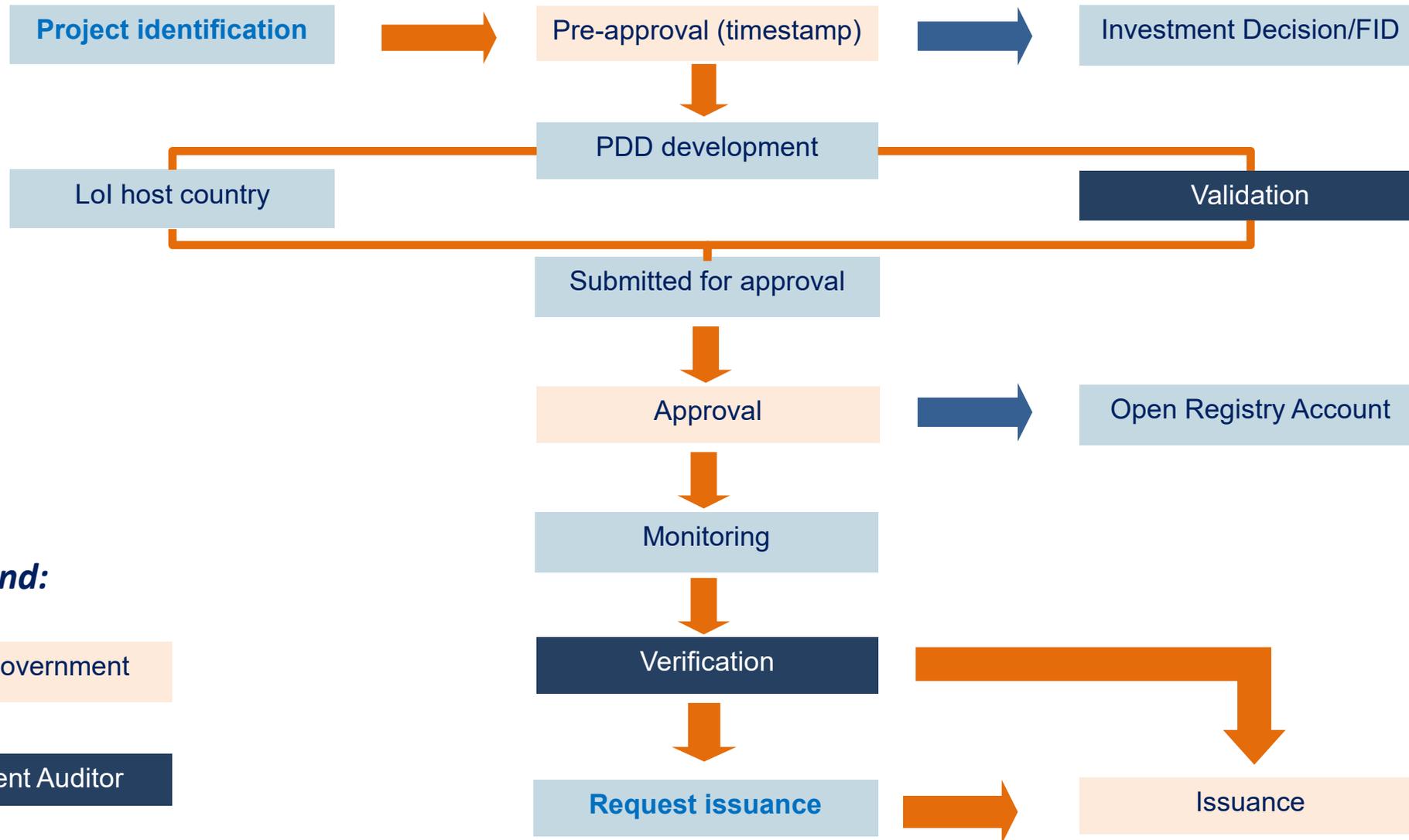
Leak repair only allowed as UERs when prior to refinery/processing facility of natural gas!



Emission reductions in AM0009



Key stages in development – German UERs





Contact Details

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INLANDSIS

Presentation to Global Methane Initiative, Feb 24, 2021

Financing Greenhouse Gas Reduction Projects

INLANDSIS FUND OVERVIEW

Fund I Portfolio



-  **Agricultural Methane Reduction Portfolio**
-  Dairy Methane to RNG Project Under Development
-  Dairy Methane to RNG Projects Under Construction
-  **AB Oil & Gas Methane Reduction Program**
(10,500+ installations in partnership with Bluesource)
-  **Abandoned Mine Methane Project**
-  **Improved Forest Management Project**
-  **Abandoned Mine Methane Reduction Portfolio**
-  **Active Mine Methane Reduction Project**

Inlandsis Fund I

Headquartered in Quebec with team members in British Columbia and California

Launched in April 2017: the first Canadian fund to provide project finance exclusively tied to environmental credits

Founded in partnership with Fondation and Coop Carbone

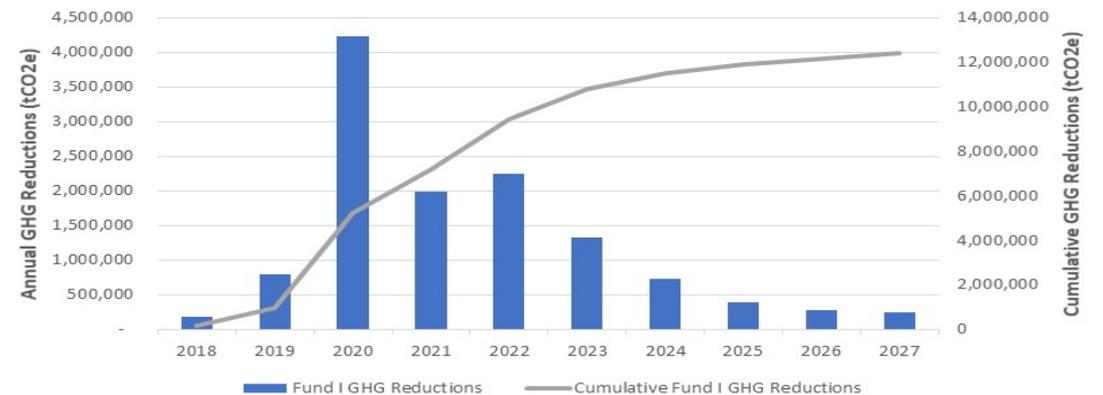
Majority of initial project investments have been methane reduction projects with investments across oil and gas, mining and agriculture

Capital: CAD30 million deployed in four years. Capital recycling of up to CAD10 million

Distributions: substantial distributions already made to Limited Partners

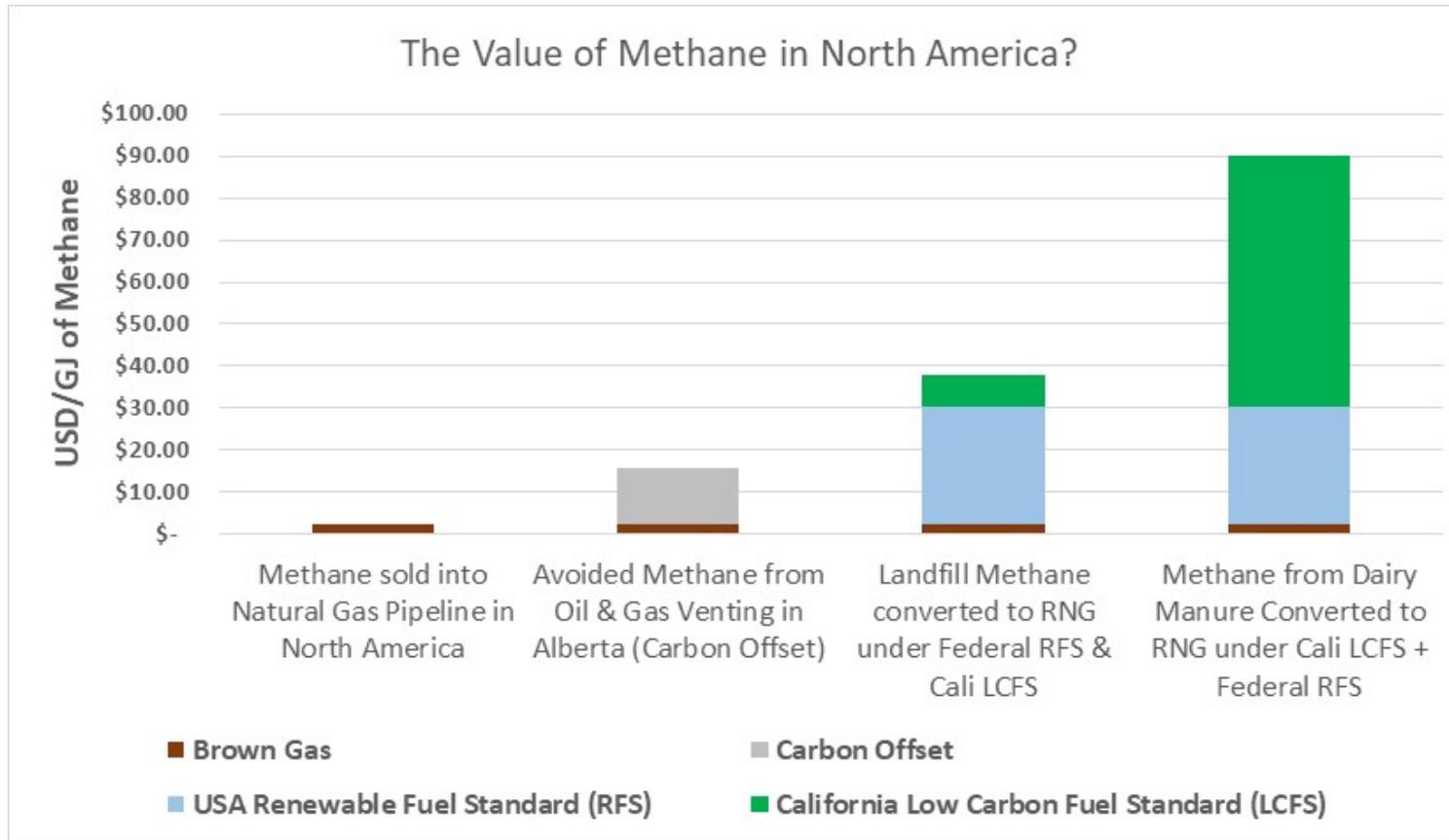
Preparing to launch Inlandsis Fund II later in 2021 with a continued focus on regulated carbon and clean fuels markets across North America

Total Inlandsis Fund I GHG Reductions (tCO₂e)



HOW MUCH IS A UNIT OF METHANE WORTH?

The economics of methane emission reduction projects are almost 100% driven by the value of the environmental attributes!



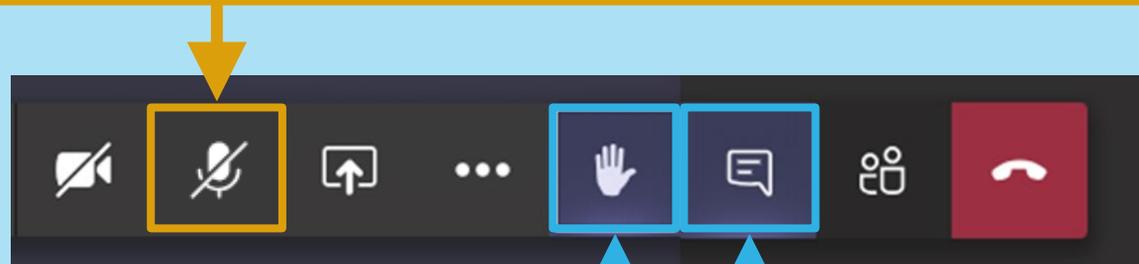
WHAT MAKES A MARKET SUITABLE FOR INVESTMENT?

#	Key Risks that Program Design Can Influence	Positive Examples	Negative Examples
1	Election/Political Risk	-Alberta Offset System (long running) -USA RFS (bi-partisan)	-Ontario C&T exit in 2018 -USA DOJ lawsuit vs California/ QC
2	Program Risk	-Cali/QC cap & trade + Cali LCFS (both regs extend out to 2030)	-USA RFS (post-2022?) -Canadian Federal OBPS (post-2022?)
3	Regulatory Risk at Project Type Level	-Alberta Methane Reg phase-in, - California dairy reg proposal (both allow for early action)	-USA fed/state oil & gas methane regs -Command & control regs that do not provide a "carrot" for early action
4	Market Price Signal	-Cali/QC cap & trade (annual floor price escalation)	-Alberta Carbon Price (2019 election crash) -Cali offsets (usage limit is restrictive)
5	Protocols/Quantification Methodologies	-Alberta Offset System -Cali LCFS	-Quebec cap and trade (few protocols) -Federal Cdn OBPS (no protocols)
6	Crediting Period	-Alberta Offset System (8 years + potential 5-year extension)	-Rebate-type programs that do not allow offsets/recurring revenues
7	Invalidation, Additionality & Admin Considerations	-Alberta Offset System (additionality defined in protocol)	-CDM (additionality issues) -California LCFS (long timeline to first \$ from LCFS credits)

Question and Answer

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Wrap Up

GMI Oil & Gas Subcommittee Webinar: Accelerating Methane Mitigation Through Markets



Oil & Gas

24 February 2021

- A recording of today's Subcommittee meeting and this presentation will be posted on the GMI website soon

Reminder



We welcome your feedback!
We encourage you to share suggestions by email to asg@globalmethane.org.

Stay Tuned - Upcoming Webinars

- Based on the feedback during the October 28 O&G Subcommittee meeting, we are planning additional webinars to cover the following topics:
 1. Marginal abatement cost (MAC) curves for methane emission abatement technologies
 2. Cost-effective leak detection and repair programs
 3. Emerging policies for reducing methane emissions

Thank you for participating today



See you at the next webinar!