

# Oil and Gas Methane Emissions: A European Opportunity

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# Climate Implications of Methane

POUND FOR POUND METHANE TRAPS  
**84X** MORE HEAT OVER 20 YEARS

CO<sub>2</sub>



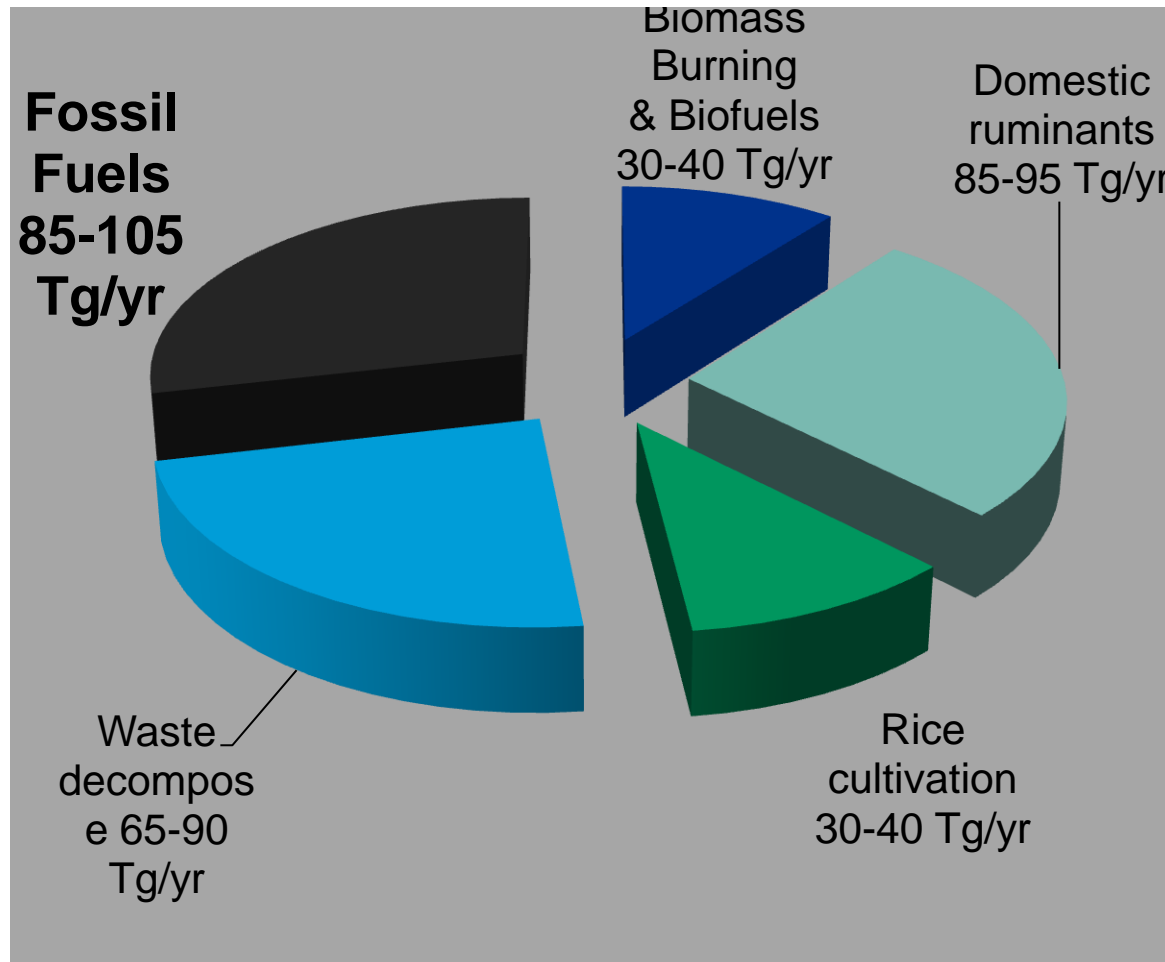
CH<sub>4</sub>



About **25 percent** of the man-made warming we are experiencing today is caused by methane.

# A dirty little secret

Natural gas's reputation as a cleaner fuel than coal and oil risks being sullied by methane emissions

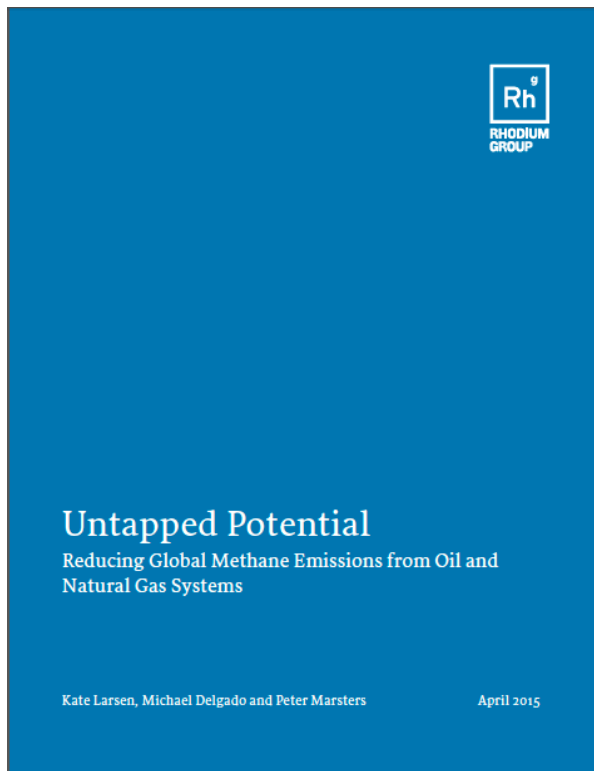




# Invisible methane pollution from industry

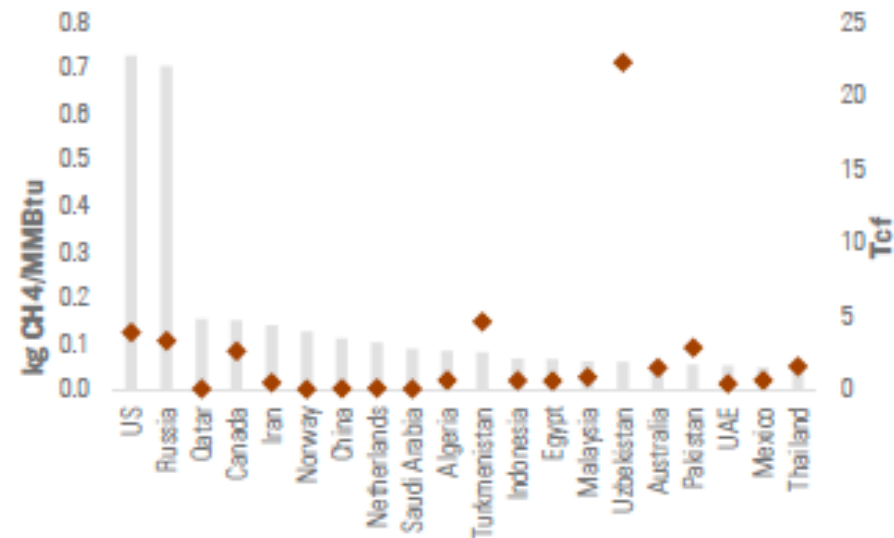
Source: EDF

# Poor data: Are nat'l emissions really so different?



**Figure 1: Upstream gas methane leakage rates**

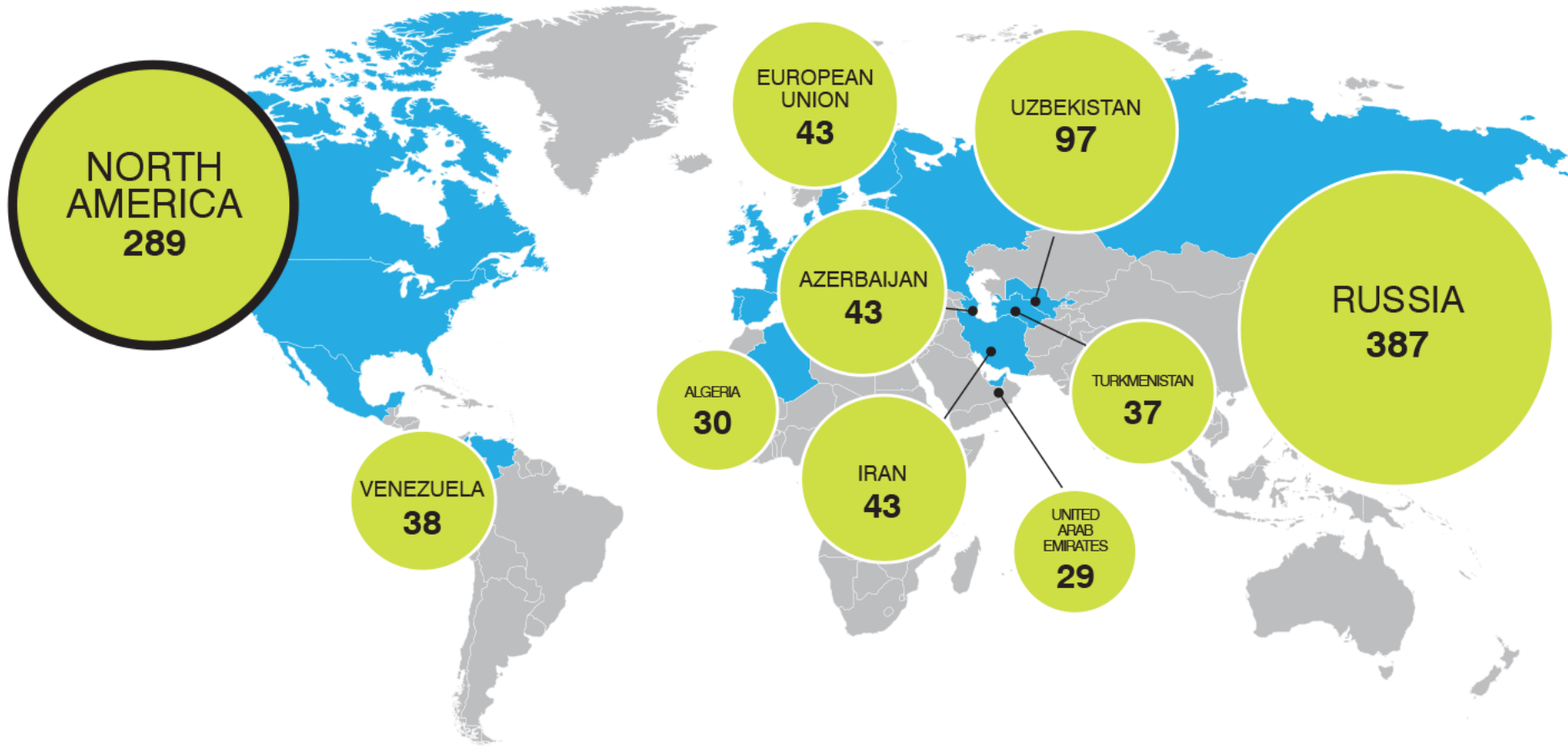
Leakage rate (left axis, dots) and production (right axis, bars)



Source: UNFCCC, EIA, Rystad and RHG estimates.

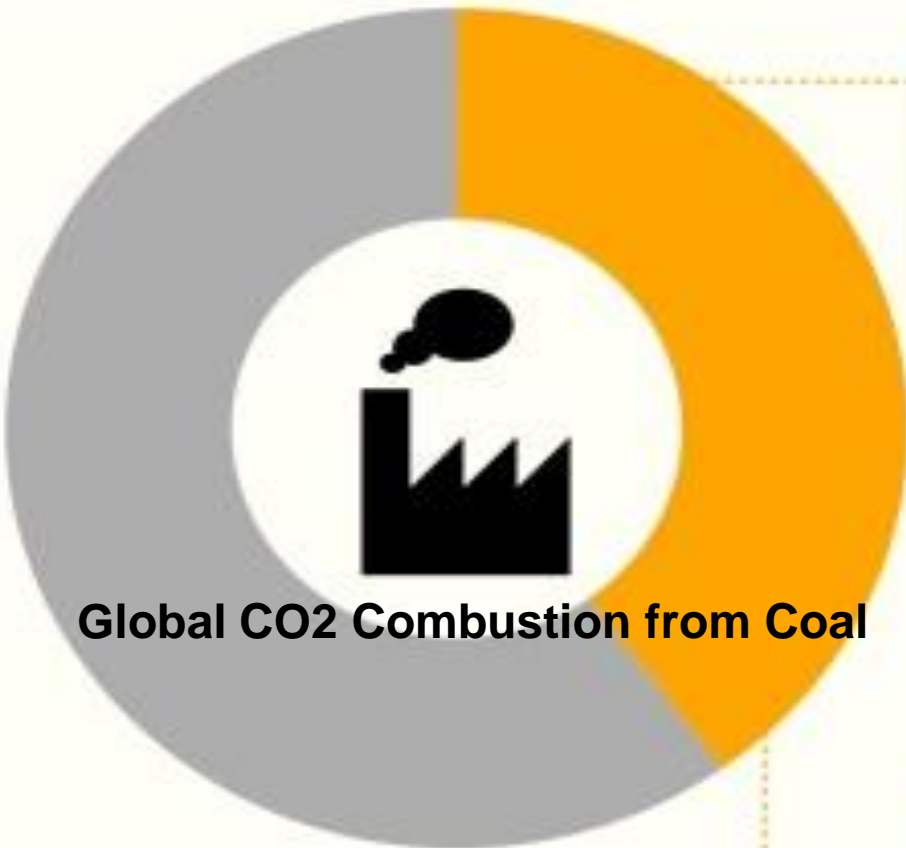
# TOP OIL & GAS METHANE EMITTERS GLOBALLY

IN MILLION METRIC TONS CO<sub>2</sub>e



Europe is the 7<sup>th</sup> source of methane from oil and gas

# Impact of Oil & Gas emissions



Oil and Gas methane equivalent to **40%** of total CO2 from global coal combustion

- Approximately 3.5 TCF in 2012
- Equivalent to Norway's production
- Translates into \$30 Billion value

# EDF: 24 Published Studies Thus Far...

1. **December 2013:** UT Production study:

<http://www.pnas.org/lookup/doi/10.1073/pnas.1304880110>

2. **May 2014:** NOAA DJ Basin Flyover: <http://onlinelibrary.wiley.com/doi/10.1002/2013JD021272/pdf>

3. **November 2014:** HARC/EPA Fence-line study: <http://pubs.acs.org/doi/abs/10.1021/es503070q>

4. **December 2014** UT Pneumatics Study: <http://pubs.acs.org/doi/abs/10.1021/es5040156>

5. **December 2014** UT Liquid Unloadings Study: <http://pubs.acs.org/doi/abs/10.1021/es504016r>

6. **January 2015:** Harvard Boston Urban Methane Study:

<http://www.pnas.org/content/early/2015/01/21/1416261112>

7. **February 2015:** CSU Transmission and Storage study: Measurement paper:

<http://pubs.acs.org/doi/abs/10.1021/es5060258>

8. **February 2015:** CSU Gathering and Processing study: Measurement paper:

<http://pubs.acs.org/doi/abs/10.1021/es5052809>

9. **March 2015:** WSU Local Distribution study: <http://pubs.acs.org/doi/abs/10.1021/es505116p>

10. **May 2015:** CSU Gathering and Processing study, Methods paper: <http://www.atmos-meas-tech.net/8/2017/2015/amt-8-2017-2015.html>

11. **July 2015:** CSU Transmission and Storage study National results paper:

<http://pubs.acs.org/doi/abs/10.1021/acs.est.5b01669>

12. **August 2015:** CSU Gathering and Processing study CSU Gathering and Processing study

National results paper: <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b02275>

**Barnett Coordinated Campaign Papers (July 2015)**

13. **Overview:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b02305>

14. **NOAA led Top-down study:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00217>

15. **Bottom-up inventory - EDF:** <http://pubs.acs.org/doi/abs/10.1021/es506359c>

16. **Functional super-emitter study - EDF:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00133>

17. **Michigan airborne study:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00219>

18. **WVU compressor study:** <http://pubs.acs.org/doi/abs/10.1021/es506163m>

19. **Princeton near-field study:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00705>

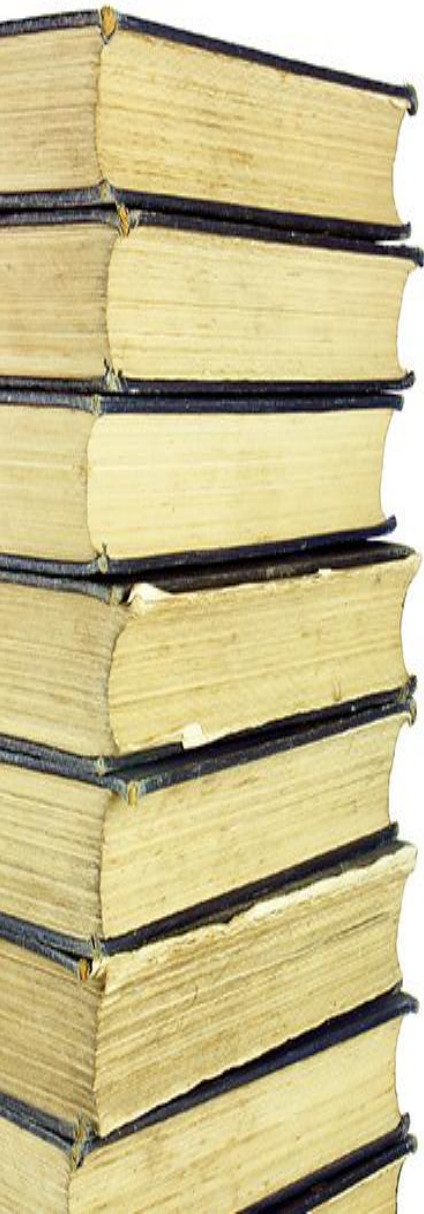
20. **Purdue aircraft study:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00410>

21. **Aerodyne mobile study:** <http://pubs.acs.org/doi/abs/10.1021/es506352j>

22. **U of Houston mobile study:** <http://pubs.acs.org/doi/abs/10.1021/es5063055>

23. **Picarro mobile flux study:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00099>

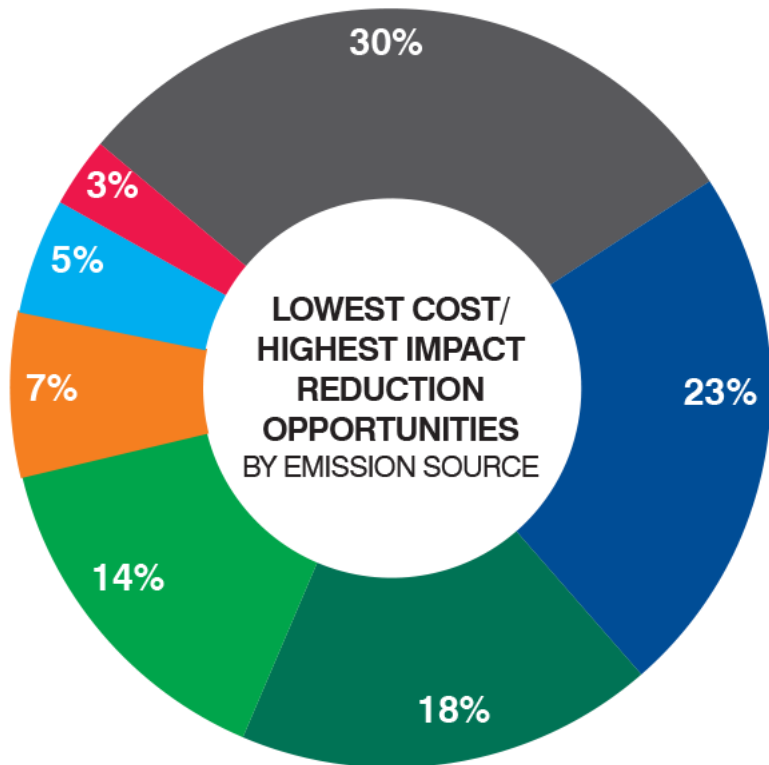
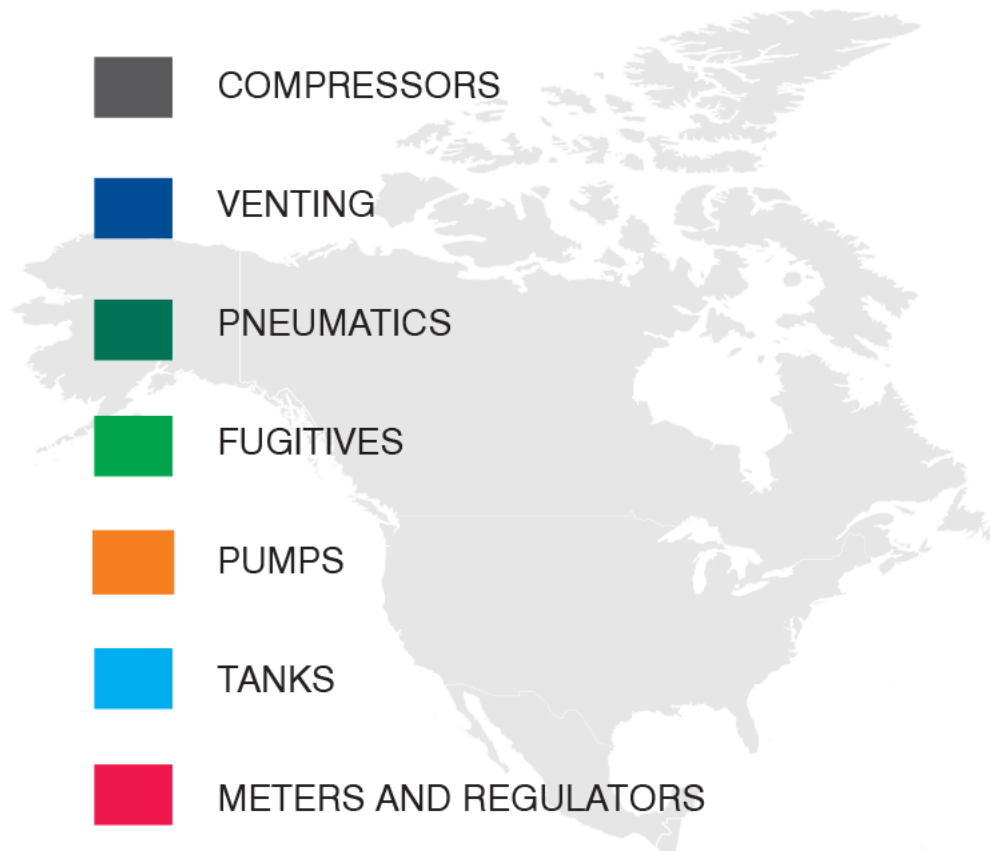
24. **Cincinnati tracer apportionment:** <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00057>





# ACHIEVING DEEP METHANE CUTS ACROSS NORTH AMERICA

MANY LOW-COST SOLUTIONS ARE AVAILABLE TO CUT ALMOST HALF OF OIL AND GAS METHANE



Source: ICF North American methane summary

**Solutions across all three nations are the same. Similar actions enhance North American energy integration.**

# Lessons Learned from the Studies

1. Emissions higher
2. Heavy-tailed distributions
3. Reduction is cost-effective
4. Regulation works




# AN INVESTOR'S GUIDE TO METHANE:

ENGAGING WITH OIL AND GAS COMPANIES  
TO MANAGE A RISING RISK

October 2016

- Investment risk
- Questioning the case for gas
- Differentiating companies



“Today, Mexico will join Canada and the United States in committing to reduce their methane emissions from the oil and gas sector ... 40% to 45% by 2025, towards achieving the greenhouse gas targets in our nationally determined contributions.”

*North American Leaders' Statement  
June 29, 2016*

# An accessible climate solution



- An underestimated problem
- Known solutions
- Cost effective
- Well-capitalised actors
- EU should take leadership

