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A HOLISTIC APPROACH TO METHANE ABATEMENT

OEUK Decarbonisation 2023

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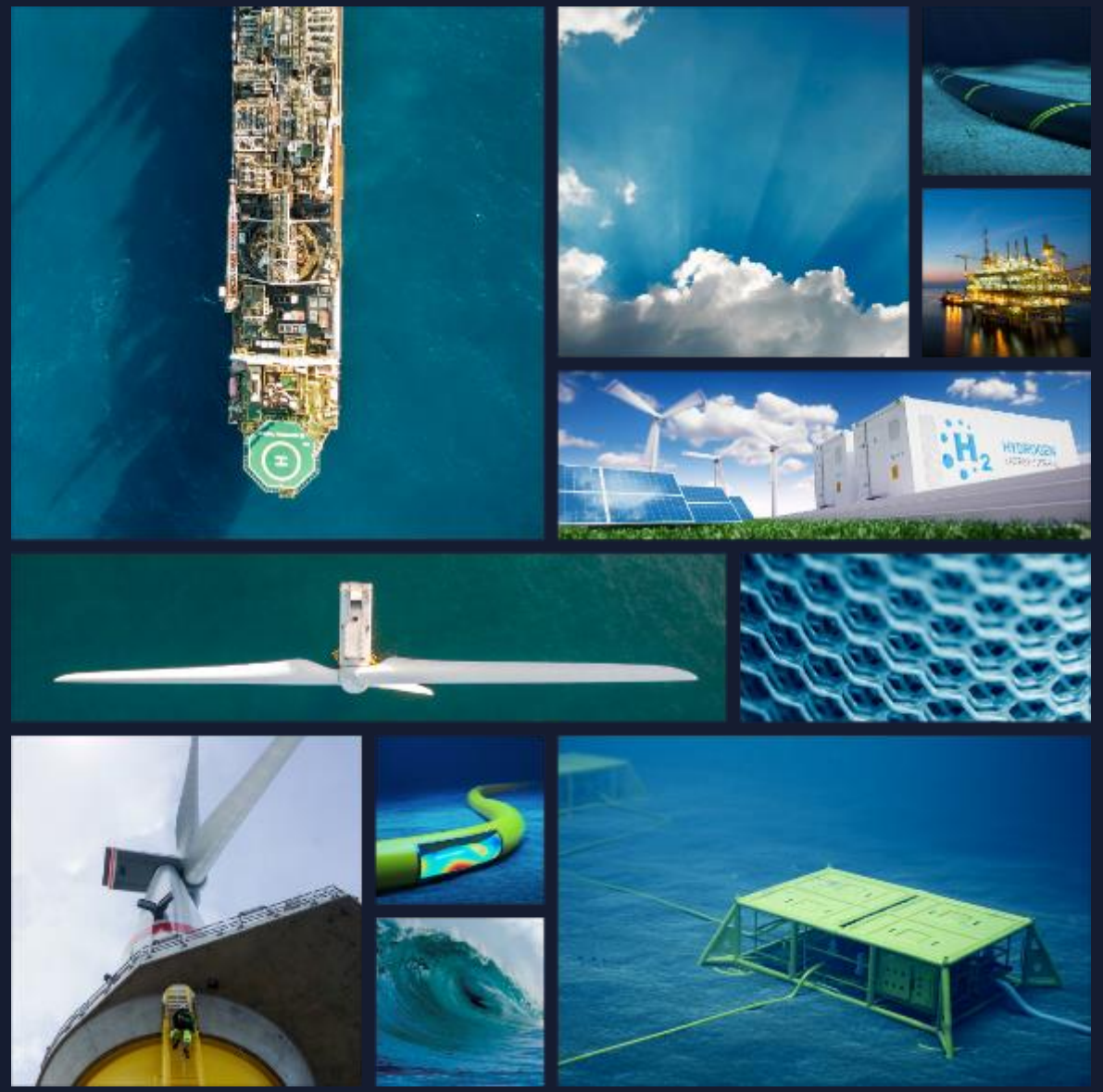


How Big a Problem is Methane?

- Emissions Monitoring Report (NSTA 2022)
  Less than 10%?
  Or **almost** **¼** of upstream Oil and Gas Emissions in 2020?

- Depends on GWP-100 or GWP-20

A Perplexing Molecule

A daunting array of voluntary initiatives, organisations, methodologies, guidance, certifications and pledges

OGCI
GGFR
MGP
IPCC
World Bank ZRF
OEUK MAP
SE-11
IPIECA

EDF
UNEP
IMEO
IEA
IOGP
CATF
CCAC
MARCOGAZ

API Compendium
Methane Flaring
Toolkit
OGMP 2.0
Veritas (GTI Energy)
MiQ Standard
EPA Methane
Challenge
MGP Policy Toolkit

GMP
GMH
GMI
.....

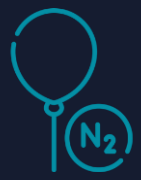
Methane Abatement: A Consultant's View

1. Getting the Basics Right
2. Technology Choices
3. Flaring Efficiency
4. Influence
5. Takeaways

Getting the Basics Right

Proper Flare Operation

Ignite Remotely
Keep it Lit
Know when it goes out



Capture/N2 Sub. Vent Streams

Glycol Reboiler
Compressor Seals
Drains Vessels
Maintenance/Leaks

Emission Inventory

Basic Assumptions:
Flare rates and Eff.
Combustion
Liquid Loading

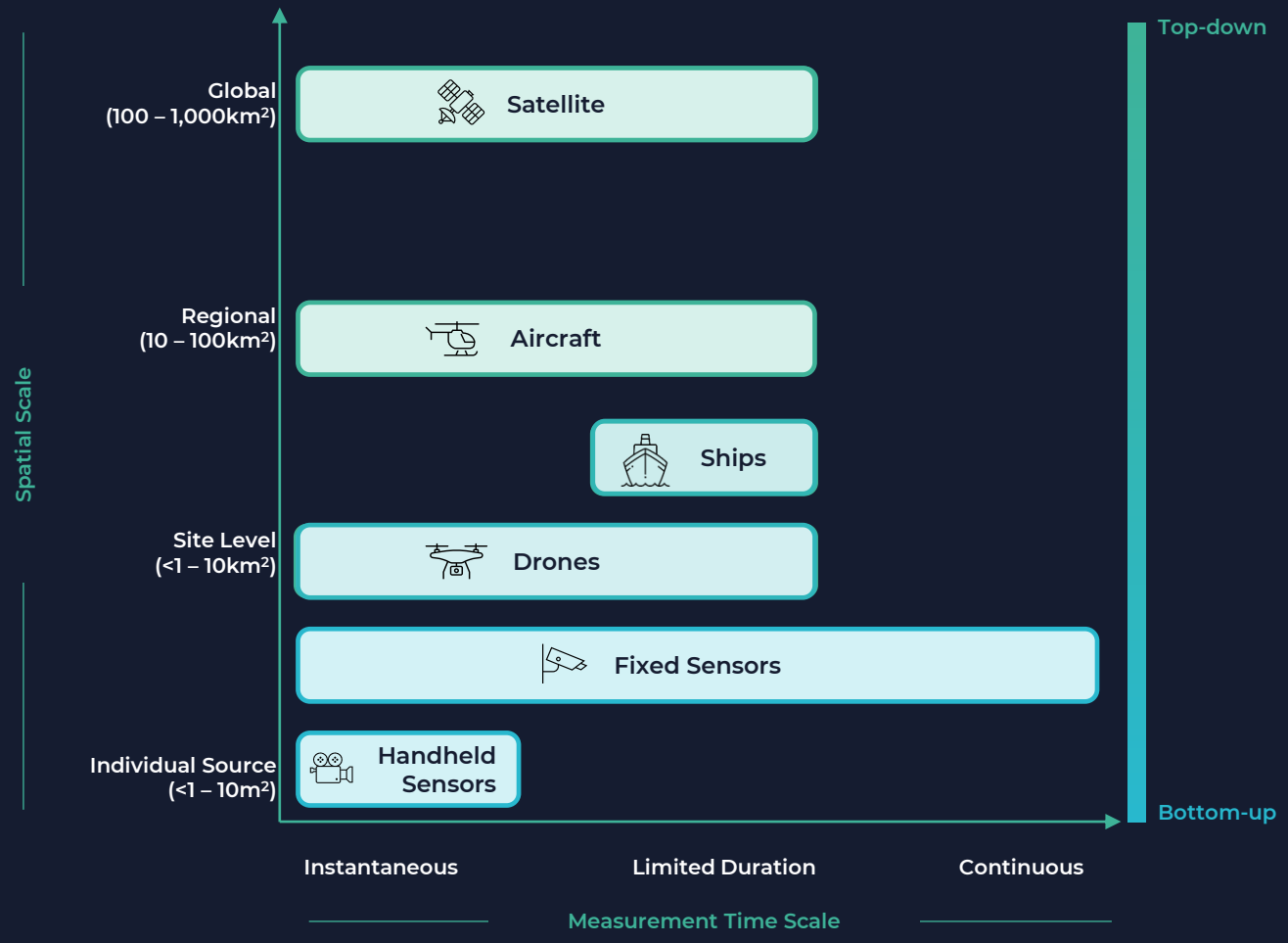
Targets

Cross company engagement
Operator buy-in
Track & Monetise

Getting these right can be valuable.

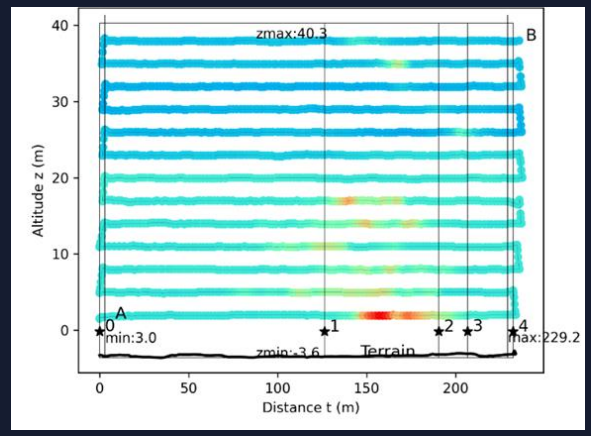
Technology Selection

Identification or Quantification?



Technology Selection

- Automation and Repeatability
- Guidance and Toolkits available
- No one-size fits all – apply expertise



Flaring Efficiency

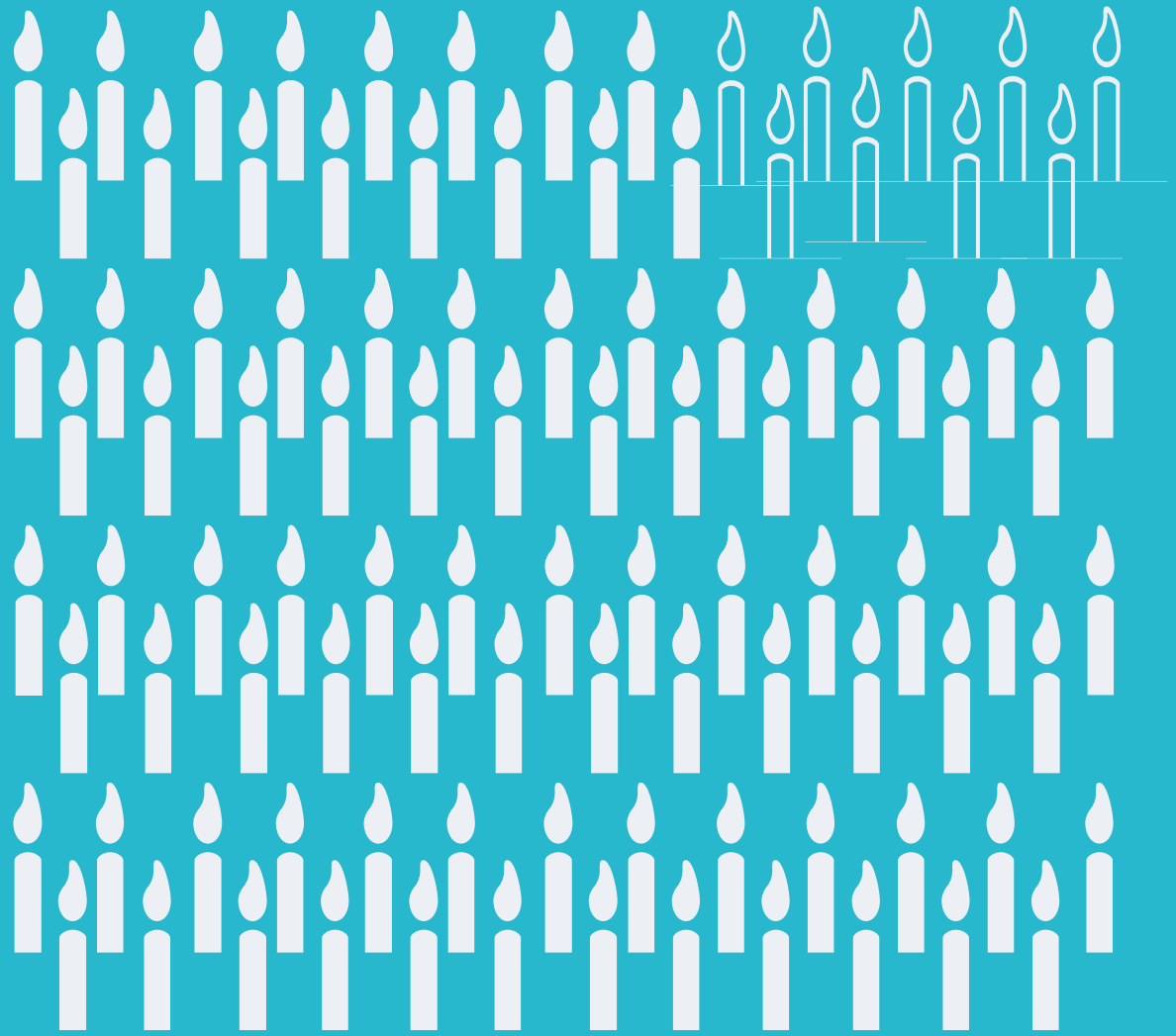
NINETY EIGHT PERCENT?

Flares are neither always lit, nor destroy methane with 98 per cent efficiency

United Nations Environment Programme (2022). An Eye on Methane: International Methane Emissions Observatory 2022. Nairob

Flaring Efficiency

Only 91 % of Methane Destroyed*



*Plant *et al*. 2020:
95% destr. Eff
Johnson *et al* 2008: ~95%
Gvakharia *et al*. 2017: 97%
Strosher 1996: ~ 84%

Flaring Efficiency

Wind Speed

Nitrogen Purge

Flare Design

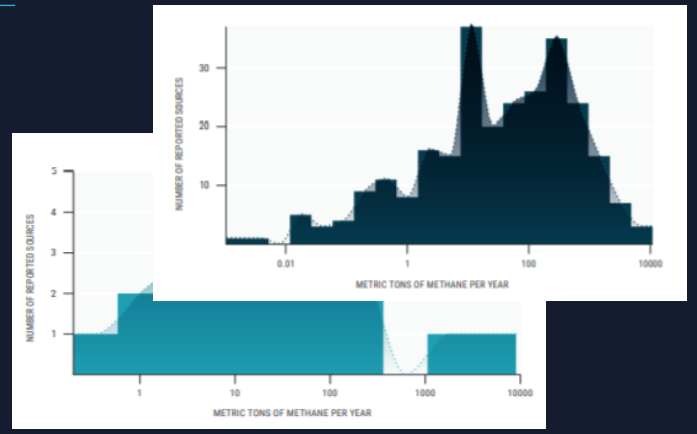
Computation

ETS Data Already Provides:

- **Gas Composition**
- **Flare Flow rates**

https://flaringmethanetoolkit.com/methane-flaring-toolkit/find-a-technology/

What can we do Better?



Influence:

- Eliminate the “fat tail” (**3% sources = 80%** of Venting Emissions)
- Regulatory Framework and Policy

Data and Reporting:

- Global meta-data analysis across initiatives?
- Better definition of reconciliation?

0.18%

Intensity of Emissions North Sea

Key Takeaways

- Use GWP-20 **and** GWP-100 for Methane
- Focus on doing the **basics** well
- Choose **technology** carefully
- Consider **flaring efficiency**
- Exert **influence** wherever possible.

THANK YOU

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