SNS 2023

WELCOME

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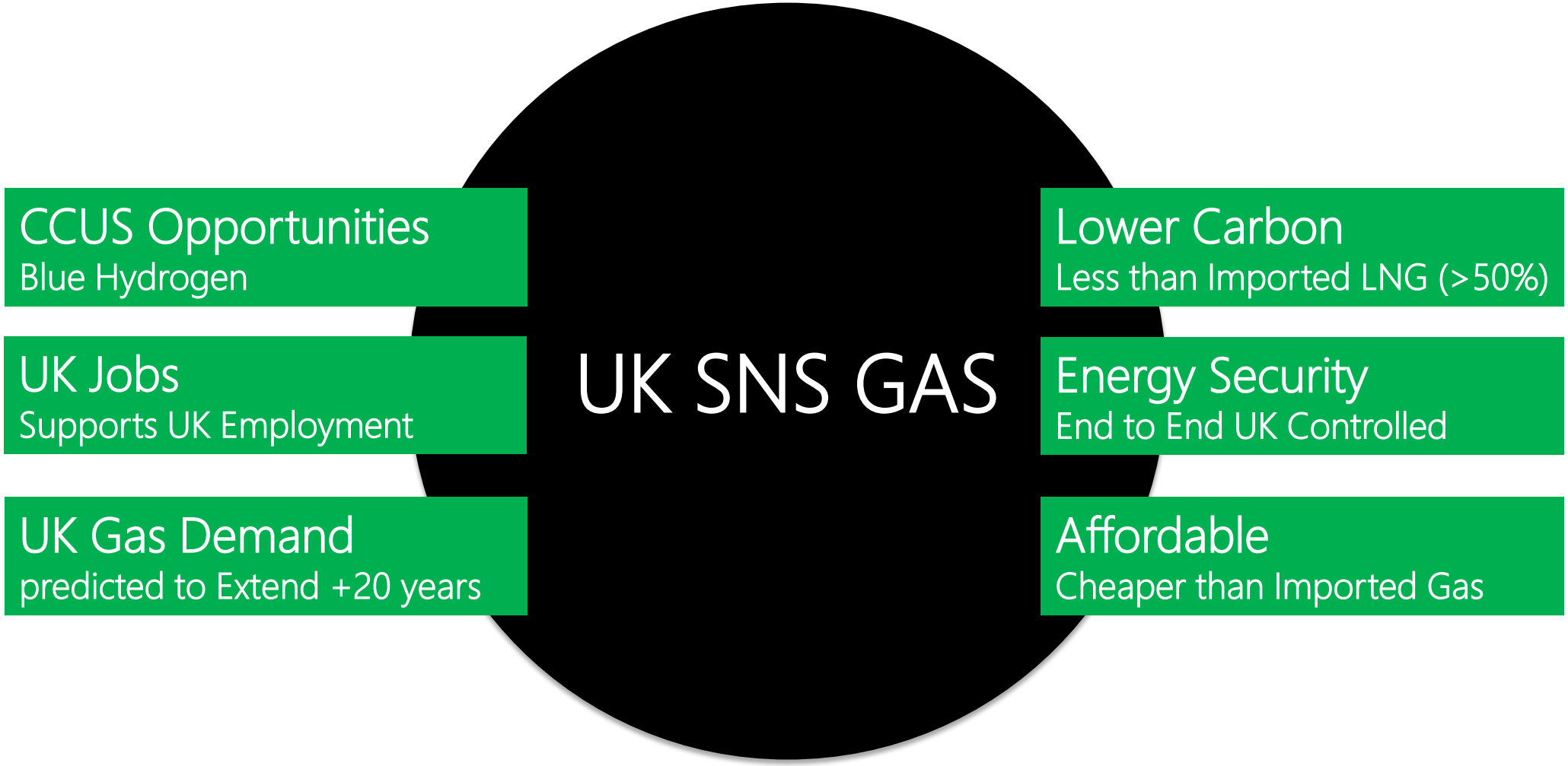
GAS TRANSITION
SECTOR COUNCIL

The Role of UKSNS Gas

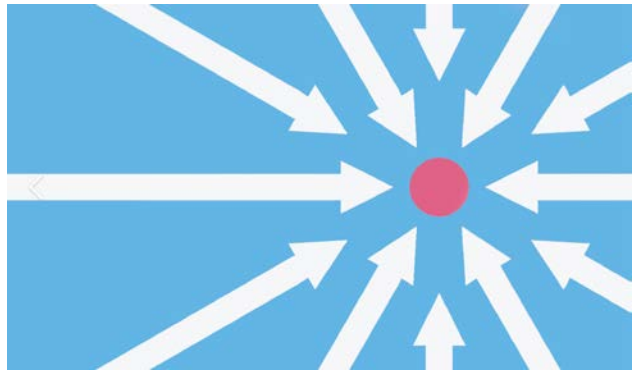


General Sector Council Strategy

Identify Common Challenges

Promote Collaboration

Promote Local Skills and Create Opportunities

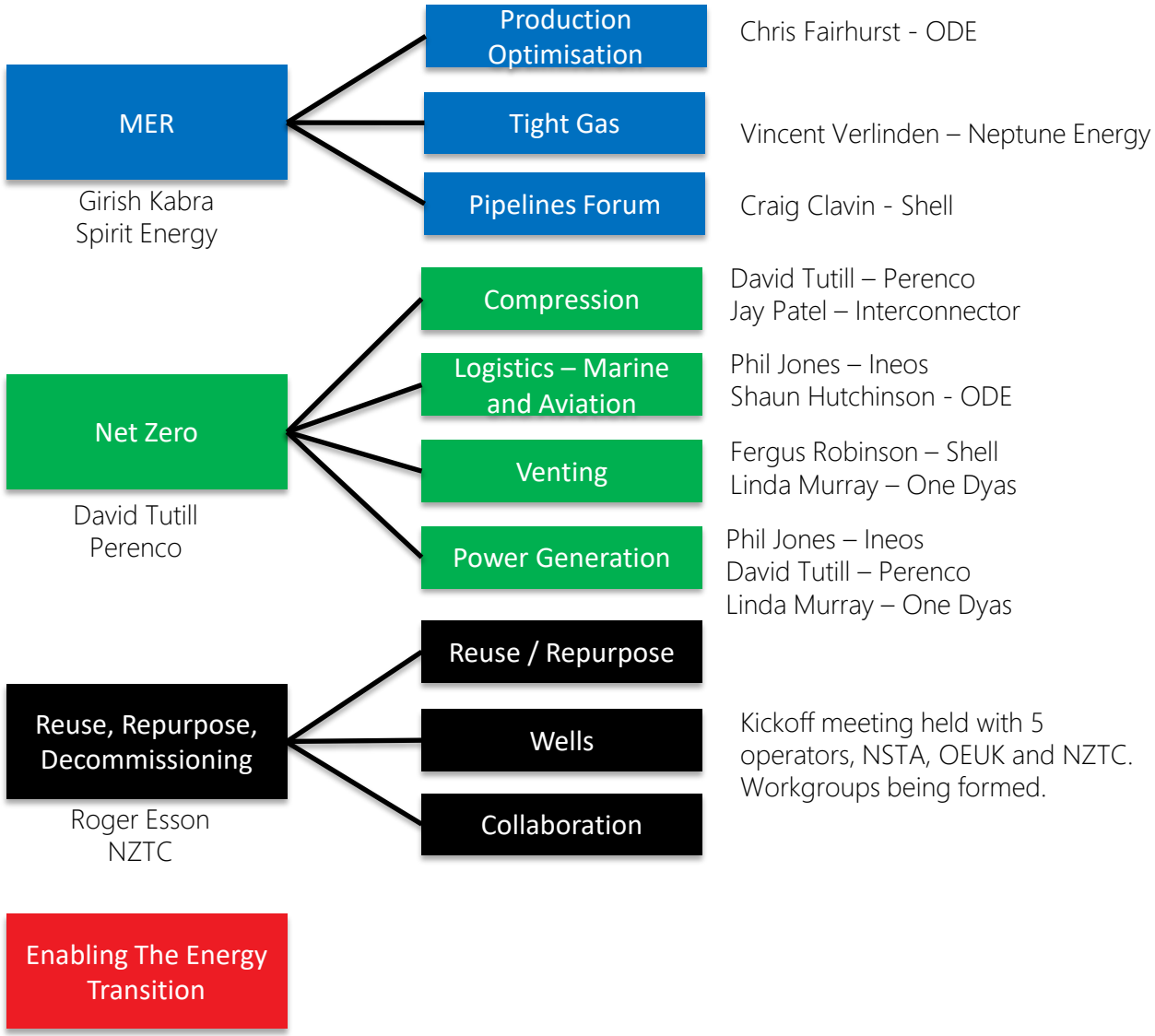


Attract Inward Investment

- 2 Physical Events per Year + SNS Participation
- Establish Special Interest groups to work on tasks
- Interface with other Sector Councils
- Promote and maintain the relevance of current gas operations as a critical energy carrier for the energy transition
- Communicate

Strategic Advisory Organisation's participate in driving strategy

Work Group Structure




Fossil Fuels have powered globalisation. Now they need to power the Energy Transition…

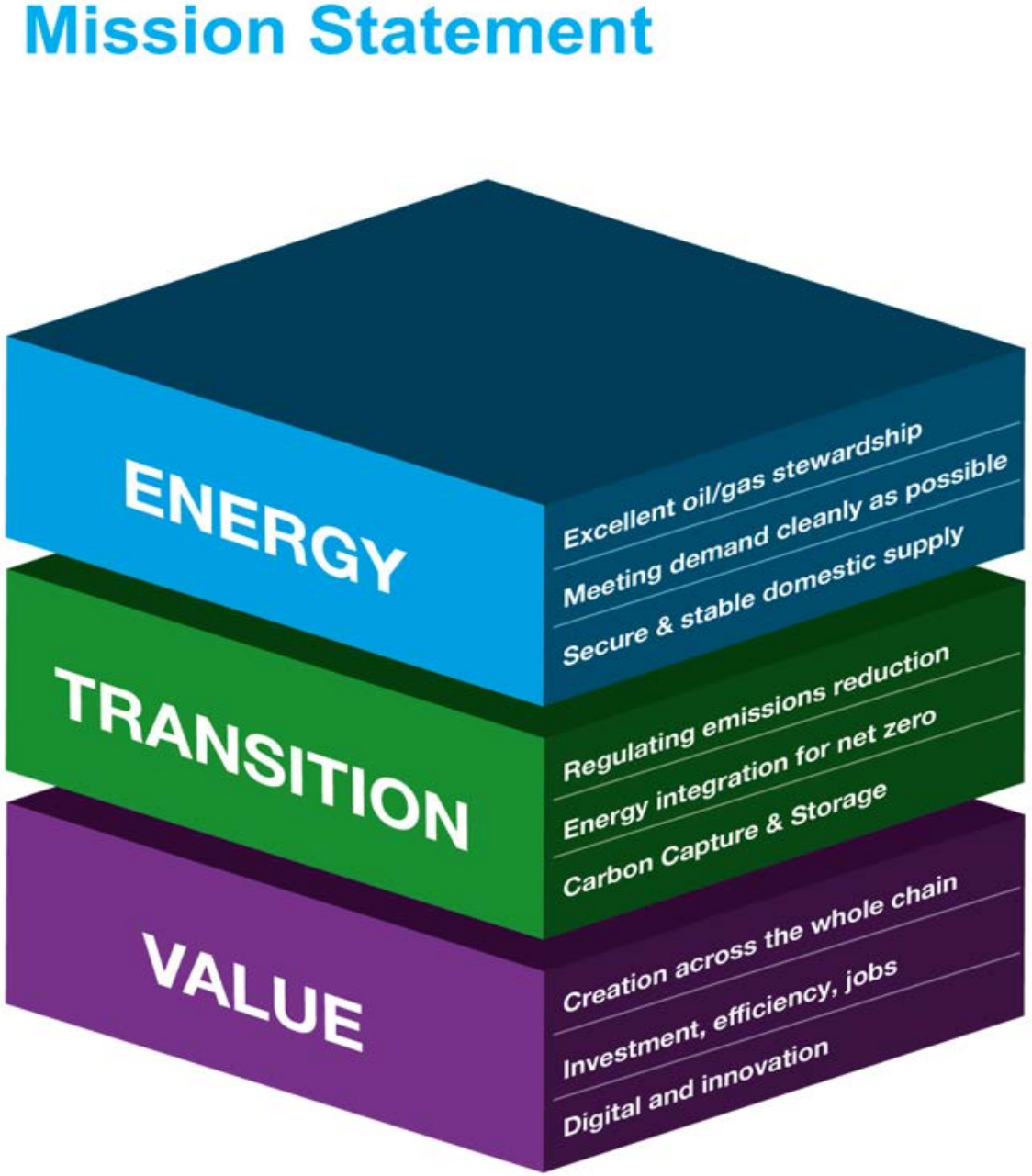
Role of the NSTA

The NSTA has a broad remit that covers the transition to Net Zero while maximising the value of economically recoverable petroleum

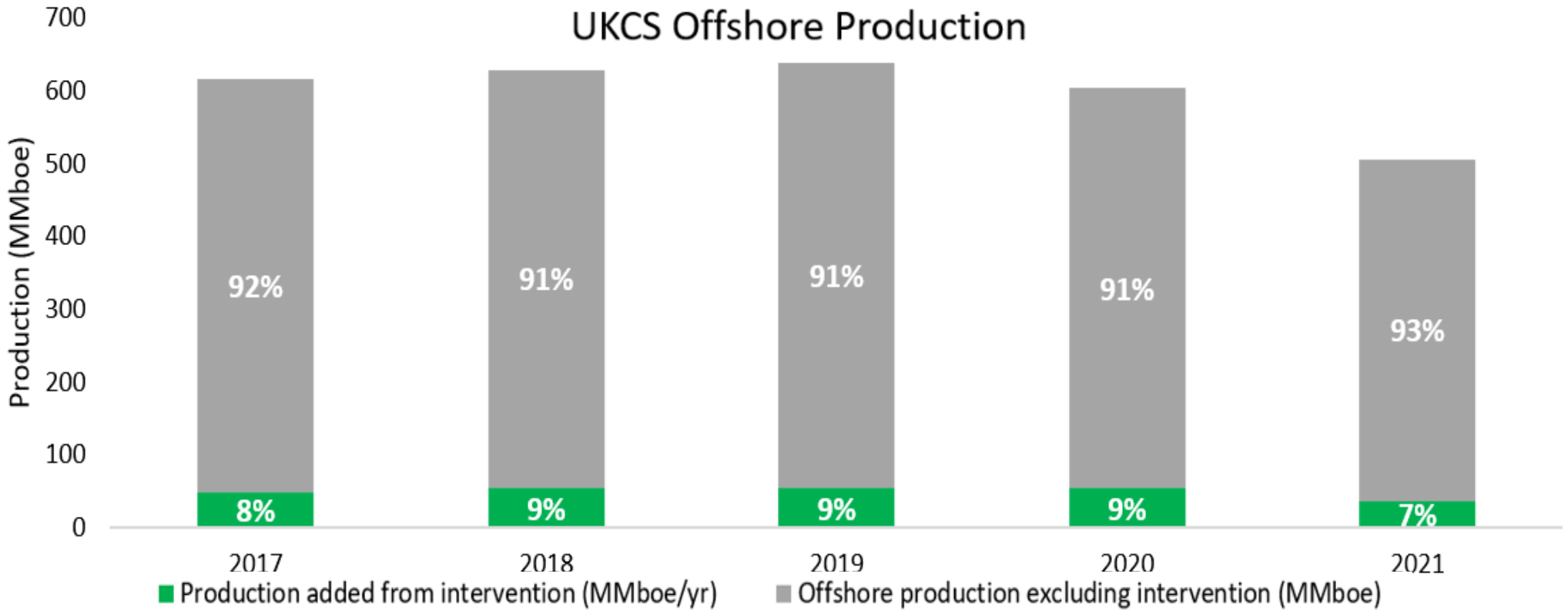
Through asset stewardship we ensure Operators are meeting the NSTA strategy and the 12 stewardship expectations.

- Stewardship Expectation 4 – Well Activity Performance

“The NSTA expects that operators will maximise the value of wells throughout the well lifecycle”

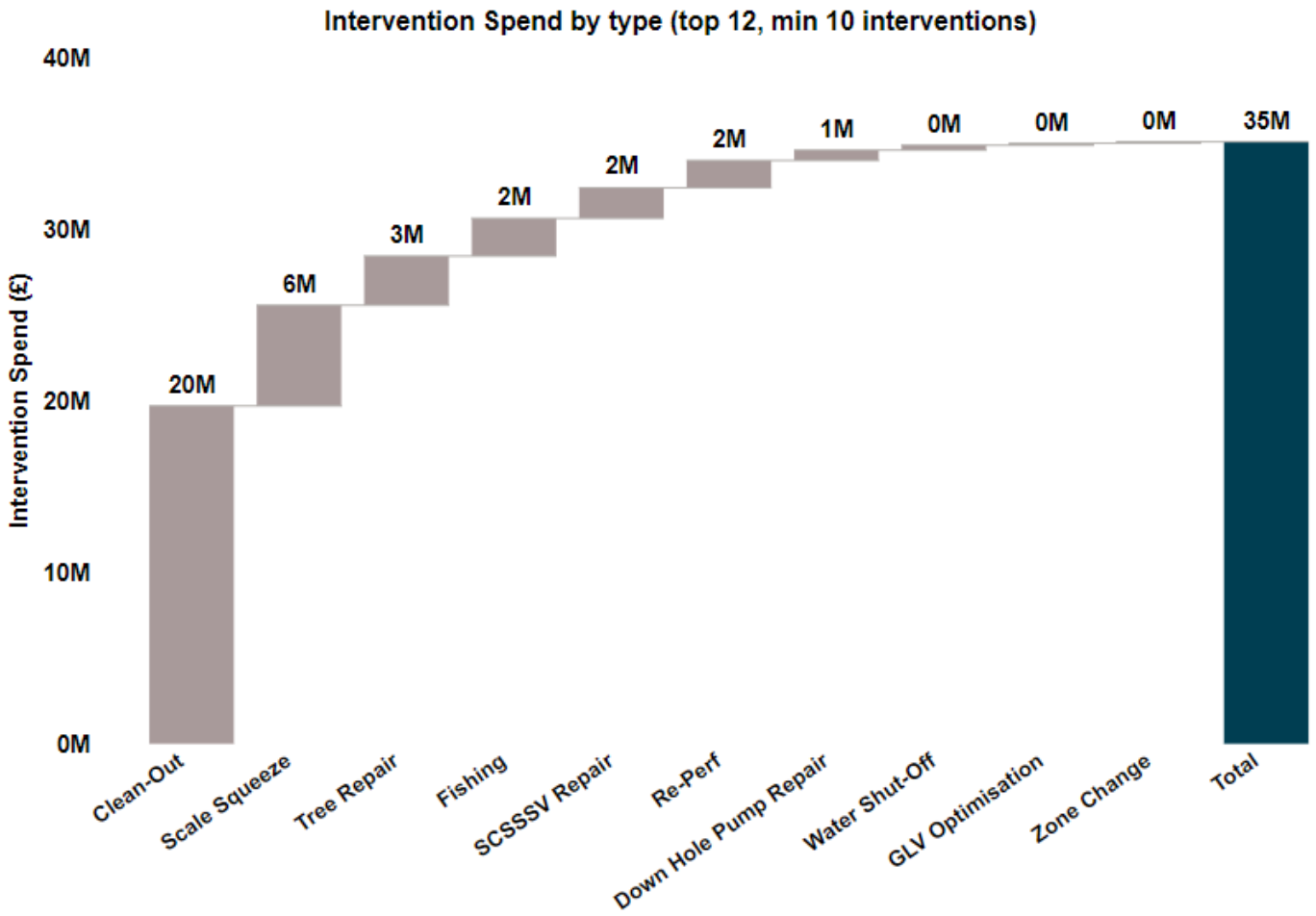


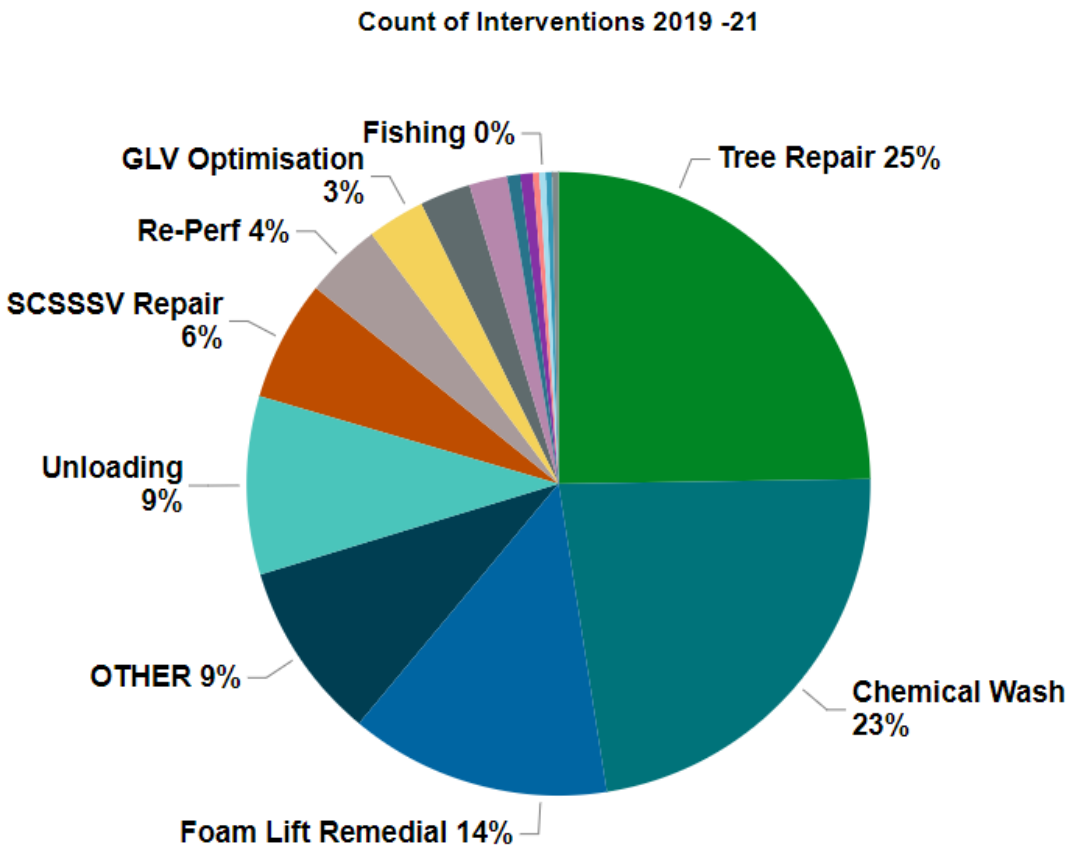
Well Intervention Overview



- Well interventions have generally accounted for between 7%- 9% of total production. Assuming an approximately even split between Oil and Gas production this was worth over **£1.9 Billion**.
- With Intervention spend just over **£300M –** great return on investment with an average cost per boe of **£5-10**

SNS Intervention Activity





SNS intervention largely focused on repairing wells, preventing scale and aiding lifting of gas in low pressure wells. Very low spend compared to rest of UKCS

How do we move forward?

- Recently the NSTA surveyed Operators around Security of Supply.
- Well Intervention recognised as key method of increasing production in the short term.

- But…
  - Only a few Operators showed pro-active management of well stock with intervention hoppers through to 2025.
  - Many mentioned cost challenges and competition for budget with other regions.
  - Many mentioned supply chain constraints (Personnel, Equipment).
  - Only a handful of Operators mentioned they had secured LWIVs for 2024 and beyond.
  - The Energy Profits Levy allows many well interventions to be offset against profits – very few Operators recognised this as an opportunity.

What are the NSTA doing?

- Wells task Force – engaging with industry
- Energy Pathfinder – platform for collaboration
- Stewardship – challenge Operators on work plans

What should Operators do?

- Challenge for investment– Well Intervention providing great returns
- Collaborate with other Operators and Supply Chain
- Utilise new technologies

What should the Supply Chain do?

- Continue to make great technologies
- Cross train personnel to minimise POB
- Work with Operators to fill out 2023/24 work plan

If we can collaborate across industry to overcome the challenges that face us, then we can meet the NSTA's target of Maximising Economic Recovery as we transition to Net Zero.

GAS TRANSITION
SECTOR COUNCIL

Sector Council Diagram

Present *Future*

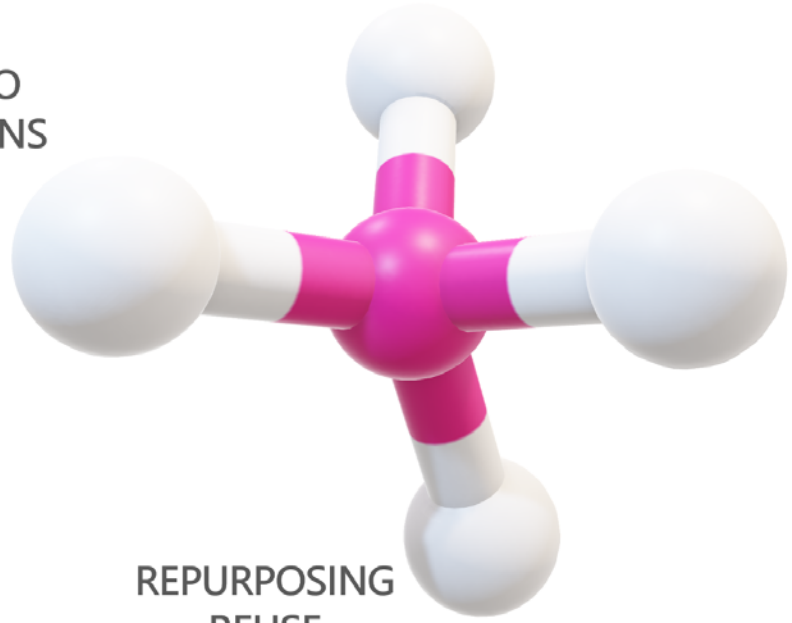
2022 — 2030

SNS GAS TRANSITION SECTOR COUNCIL

GATEWAY 2 ACCELERATED SUSTAINABILITY

MER

NET ZERO OPERATIONS



REPURPOSING
REUSE
DECOMMISSIONING

BACTON ENERGY HUB

ENABLING THE ENERGY TRANSITION

- BLUE HYDROGEN
- CARBON CAPTURE
- RENEWABLES
- ENERGY STORAGE
- GREEN HYDROGEN
- OTHER ENERGIES

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Objective of the MER workgroup

- Objective is to drive opportunities in the UKSNS to maximize economic recovery and assure near term security of supply
  - A platform for Collaboration
    - Create a wider awareness of the value that can be bought through sharing and learning with other operators and supply chain partners.
    - Share case studies from an operator perspective in relation to successes and opportunities in maximizing economic recovery
    - Showcase and Use of emerging technologies to un-lock the value from UK Southern North Sea gas basin.
    - Develop optimal solution for common operator's challenges

  - The MER workgroup is further divided into three sub-groups:
    - Production Optimisation – chaired by Chris Fairhurst from ODE
    - Unlocking potential from tight gas reservoir – co-chaired by Vincent Verlinden(Neptune Energy) and Jose Patroni (Spirit Energy)
    - SNS Pipelines Network – chaired by Craig from Shell.

  - All the workgroups have kicked off with participations from various operators and supplier companies

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MER – Tight Gas Workgroup

- Objective is to unlock potential from tight gas reservoirs
  - tight gas reservoirs contain gas volumes that cannot be produced economically by conventional methods
  - Next TG wells and future investments will benefit from this WG

- The TG workgroup runs workshops with the intention to:
  1. Bring together relevant stakeholders with an interest in tight gas developments to share practices and issues, promote technology transfer and requirements, and identify opportunities to successfully unlock tight gas
  2. Establish relevant business cases for specific technology needs in support of tight gas developments
  3. Identify opportunities for collaboration, co-ordination and communication of activities within the Southern North Sea

- Open to all SNS operators willing and able to share tight gas experience
  - Current Participants: Spirit Energy (Jose Patroni), Neptune Energy (Vincent Verlinden), ONE-Dyas (Willeke Smit), EBN (Raymond Godderij), IOG (Kris McIntyre), INEOS (Richard Symonds), Shell (Bart Pestman), NSTA (Matt Redrup), Perenco (Nicolas Durr)

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INEOS
NEPTUNE ENERGY
SPIRIT ENERGY
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North Sea Transition Authority

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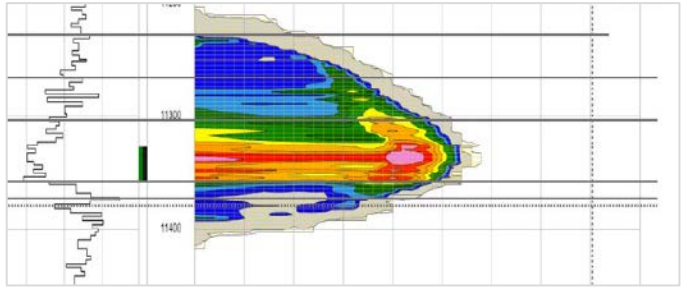
MER – Tight Gas Workgroup

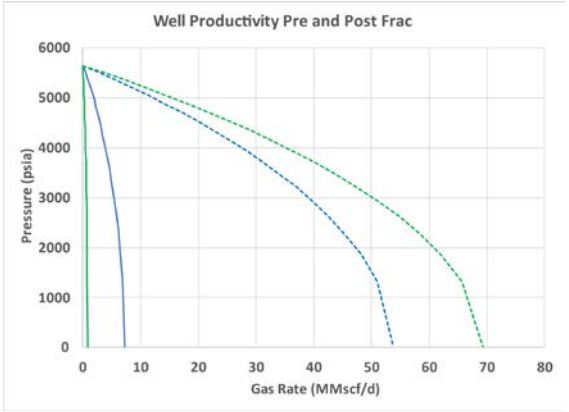
- 2023 focus
  - Organise workshops with participants
  - Identify challenges and share these with supply chain for solutions

- 1st group workshop Dec 8th
  - Technical Topic: Planning the 1st Hydraulically Fractured Well in the Cygnus Field
  - Logistics & Collaboration: North Sea Stimulation Vessel Logistics
  - Ideas: topics for next workshop & list with challenges/learnings

- 2nd group workshop April 13th
  - Technical Topic: Chiswick Infill well case study
  - Logistics & Collaboration: NSTA fractured well database – can it be utilised and how?
  - Ideas: topics for next workshop & list with challenges/learnings

- 3rd group workshop June TBC





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Production Optimisation Sub-Group Update

- Three meetings held to date, with delegates from:

Spirit Energy Perenco Neptune Energy Ineos
ODE Asset Management IOG Wood Doris UK

- The ToR identified 7 potential areas for initial investigation. A further one (Logistics) has subsequently been added based on discussions. Progress is summarised as follows:

1. Avoid Unscheduled Downtime / Outages

   All have agreed to share data based on NSTA submission categories for combined analysis. NDAs to enable this now circulated to operators, currently awaiting their return.

2. Minimise Planned Shutdowns / Turnarounds

Interpretation of HSE SIRP guidance document (HSG253) and operators' internal guidelines for use of reverse integrity gaskets to simplify leak testing are being shared, to identify best practice and ensure safety whilst minimising time/resource requirements.

3. Rejuvenate Long Term Shut-In Wells

   Wells enhancement event held yesterday (23rd May) with presentations of Operator case studies and supplier technology offerings. Outcomes to be published shortly.

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Production Optimisation Sub-Group Update

4. Eliminate Capacity Constraints

   Operators have agreed to share how they measure production losses and thereby identify opportunities for improvement, along with examples which have been implemented.

5. Reduce Resource Demands

   Areas identified for analysis are: fuel gas & diesel usage optimisation, minimise power consumption, high maintenance burden equipment. Operators yet to provide data.

6. Mitigate Obsolescence

   Operators to provide a list of systems known to be at risk, so that a common database of spares & vendors can be developed.

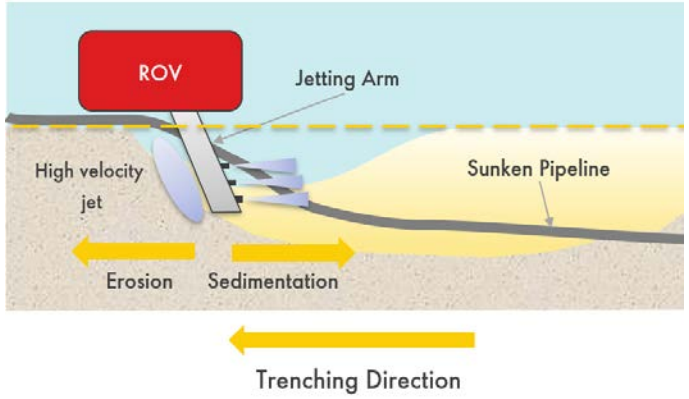
7. Anticipate Consequences of Legislation Changes

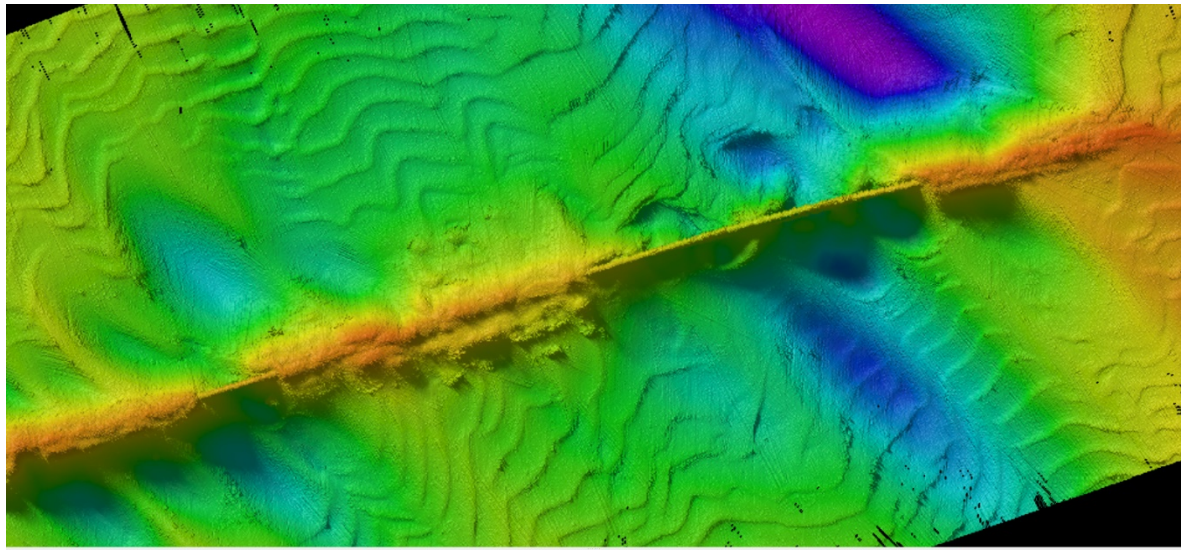
   Government Environmental Outcome Report Consultation document circulated for review and discussion at next meeting. Operators evaluating consequence/opportunities of recent minimum Wobbe Index spec reduction for discussion at future meeting.

8. Maximise Logistical Synergies

   Discussions have commenced on the production of a common database of W2W vessel specs/capabilities and platform safety case requirements, to aid with vessel sharing initiatives. Operators will nominate points of contact for information sharing to improve responsiveness.

- The simple objective is for those who work with Pipelines to deliver the core aims of MER
  - *Collaboration (over 500 years of pipelines experience in the group!)*
  - *Share & learn (successes & failures)*
  - *Share and build best practice (how have we responded to threats?)*
  - *Security of supply (how do we address SoS in a dynamic world?)*
  - *New technology*
- Examples
  - Security of supply – what does good look like?
  - Freespan Strategy – everyone has a way….
  - Riser Inspection Philosophy – gaps in the process…





Gas Transition Sector Council

Towards a NetZero Industry

Tuesday 24th May 2023

Norwich

The Problem

Green House Gas Emissions Causing Global warming

Where do they come from in the Upstream industry?

Predominantly:-

- Direct methane emissions
- CO2 from combustion(methane and diesel)
- Refrigerants
- N2O

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Our Challenge

The North Sea Transition Deal(NSTD) is a joint commitment on behalf of the UK Government and UK Oil and Gas (On behalf of the industry), to the delivery of the following objectives/policies, set against a 2018 baseline:-

- 10% reduction in offshore emissions by 2025;
- 25% reduction in offshore emissions by 2027;
- 50% reduction in offshore emissions by 2030;
- NetZero by 2050;

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Department for Business, Energy & Industrial Strategy

OGUK

North Sea Transition Deal

TOGETHER FOR OUR PLANET

North Sea Transition Deal

The Rt Hon Kwasi Kwarteng MP

Secretary of State for Business, Energy and Industrial Strategy

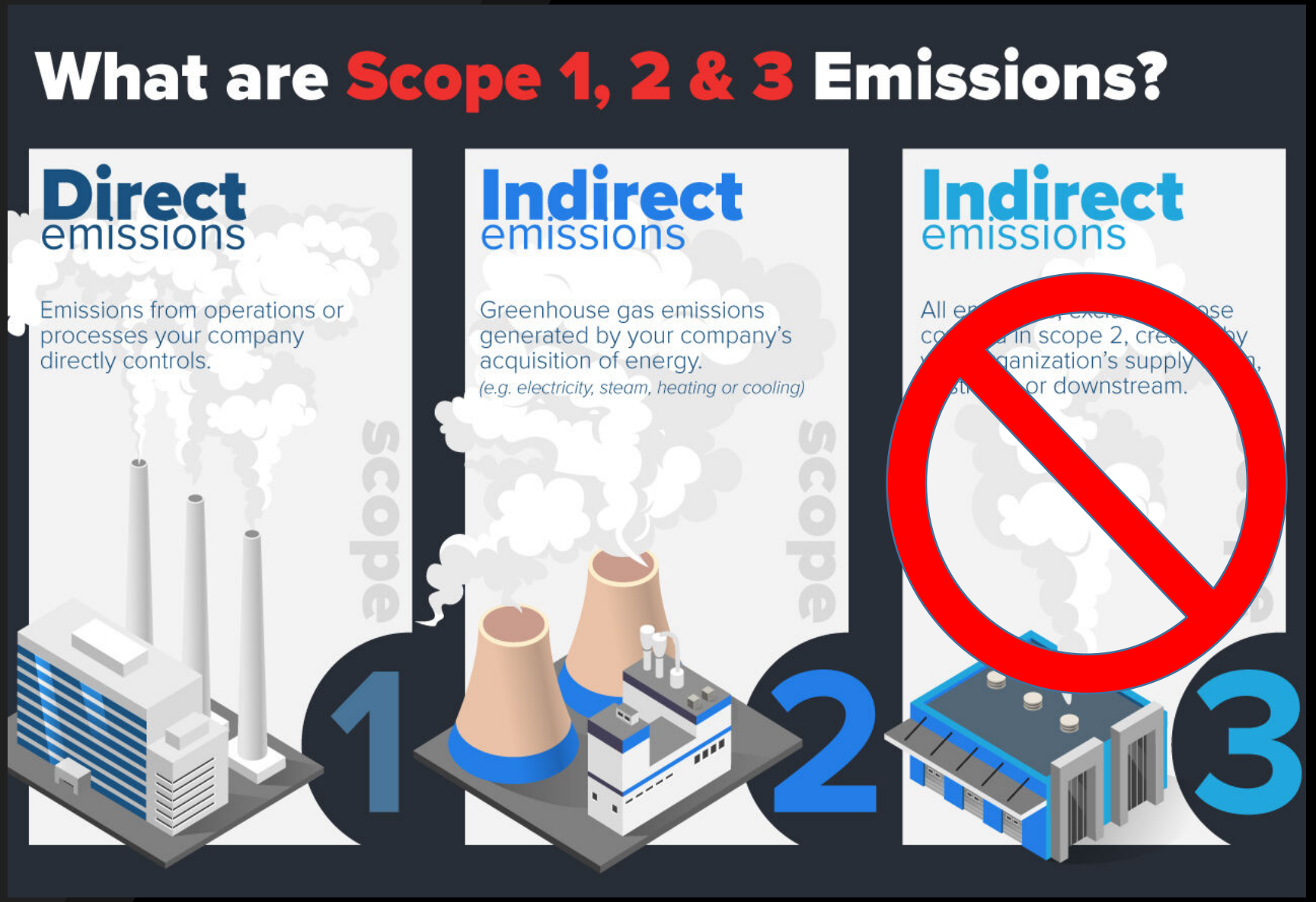
Deirdre Michie OBE
Chief Executive, OGUK

The Rt Hon Anne-Marie Trevelyan MP

Minister of State for Business, Energy and Clean Growth, and UK International Champion on Adaptation and Resilience for the COP26 Presidency

What is Included in The Review?

- Scope 1 Emissions
- Scope 2 Emissions



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Where Do Our Emissions Come From?

- Marine Operations
- Aviation Operations
- Offshore Gas Production
- Onshore Gas Processing
- Local Power Generation
- Non standard interventions
- Unplanned releases
- Flaring/ Venting
- Drilling activities
- Decommissioning activities
- Pipeline venting

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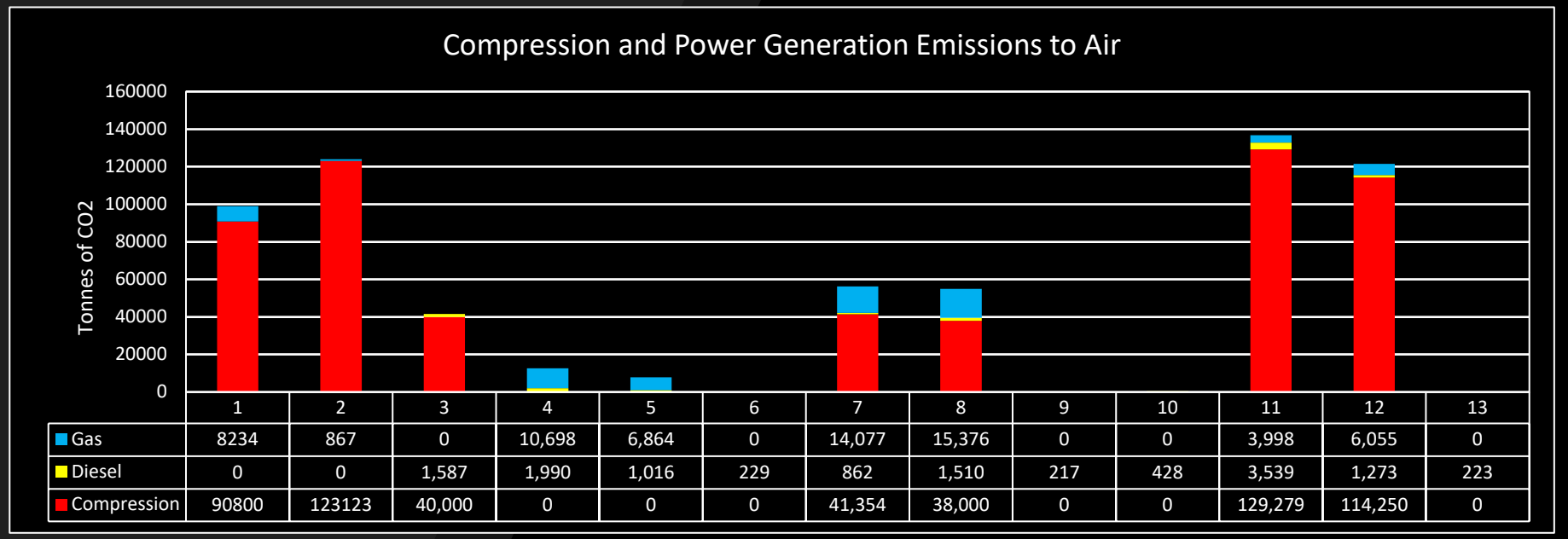
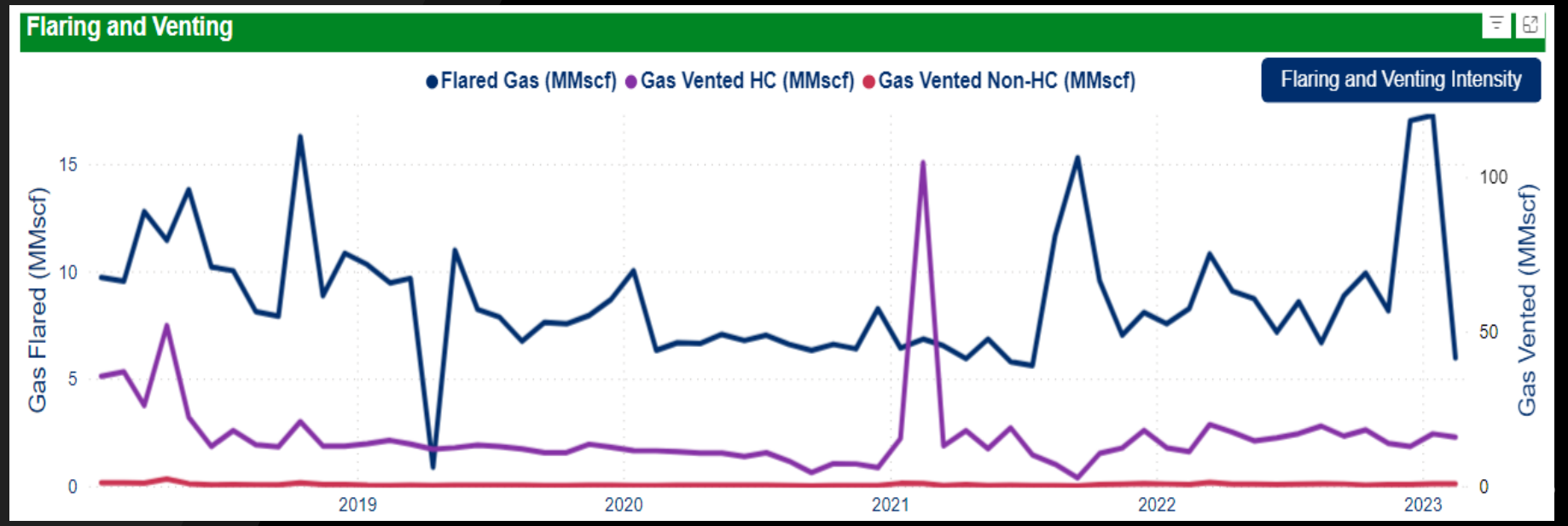
Where Do Our Emissions Come From? – Focus Areas

Focus Area

- Compression
- Power Generation
- Flaring and venting
- Marine
- Aviation



	1	2	3	4	5	6	7	8	9	10	11	12	13
Gas	8234	867	0	10,698	6,864	0	14,077	15,376	0	0	3,998	6,055	0
Diesel	0	0	1,587	1,990	1,016	229	862	1,510	217	428	3,539	1,273	223
Compression	90800	123123	40,000	0	0	0	41,354	38,000	0	0	129,279	114,250	0



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Measuring Emissions

- How do we do it?
- Best Practice?
- Petroleum industry guidelines for reporting greenhouse gas emissions

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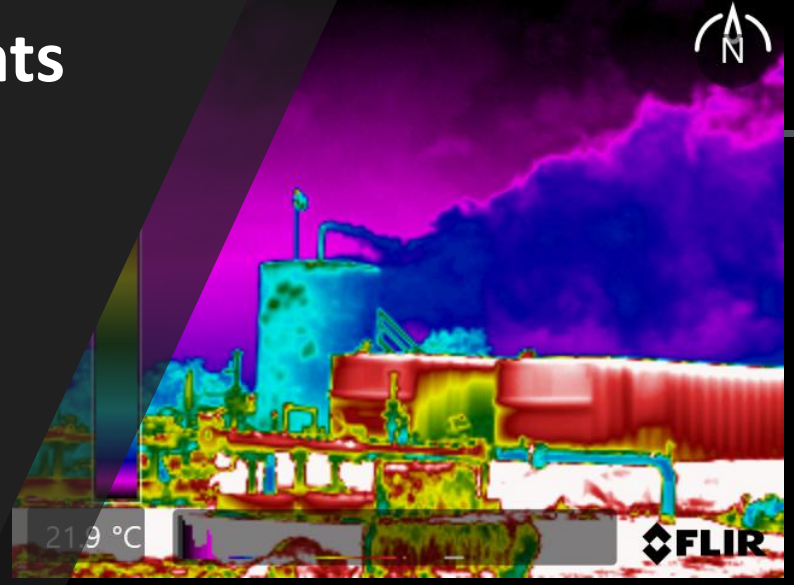
What Can We Do to Achieve Improvements

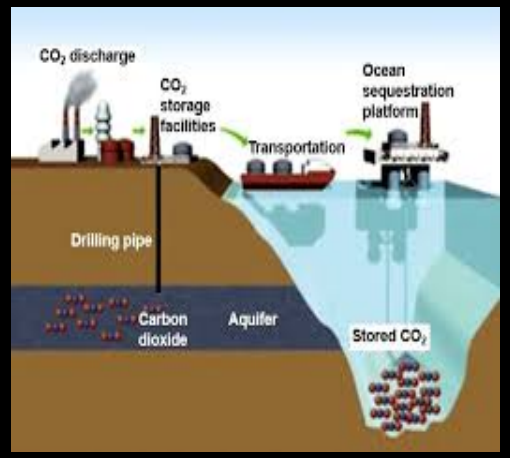
Define Scope 1 Emissions Improvement Potential

Definition: Direct emissions from sources owned or controlled by a reporting company otherwise known as **Burn Emissions**

Potential areas for review:-

- Consolidated/Electric compression
- Reduced venting and flaring (inventory reductions, vent purge management, improved operational practices etc.);
- Reduced fugitive emissions (improved leak detection(drones, ultrasonic detectors, FLIR) integrity systems);
- Improved power efficiency, reducing demand on local combustion(operational simplification);
- Renewable/ Efficient Energy Sources (Solar, Wind, Tidal, Hydrogen, Solid Oxide Fuel Cells(SOFC)).
- Carbon capture at source and disposal





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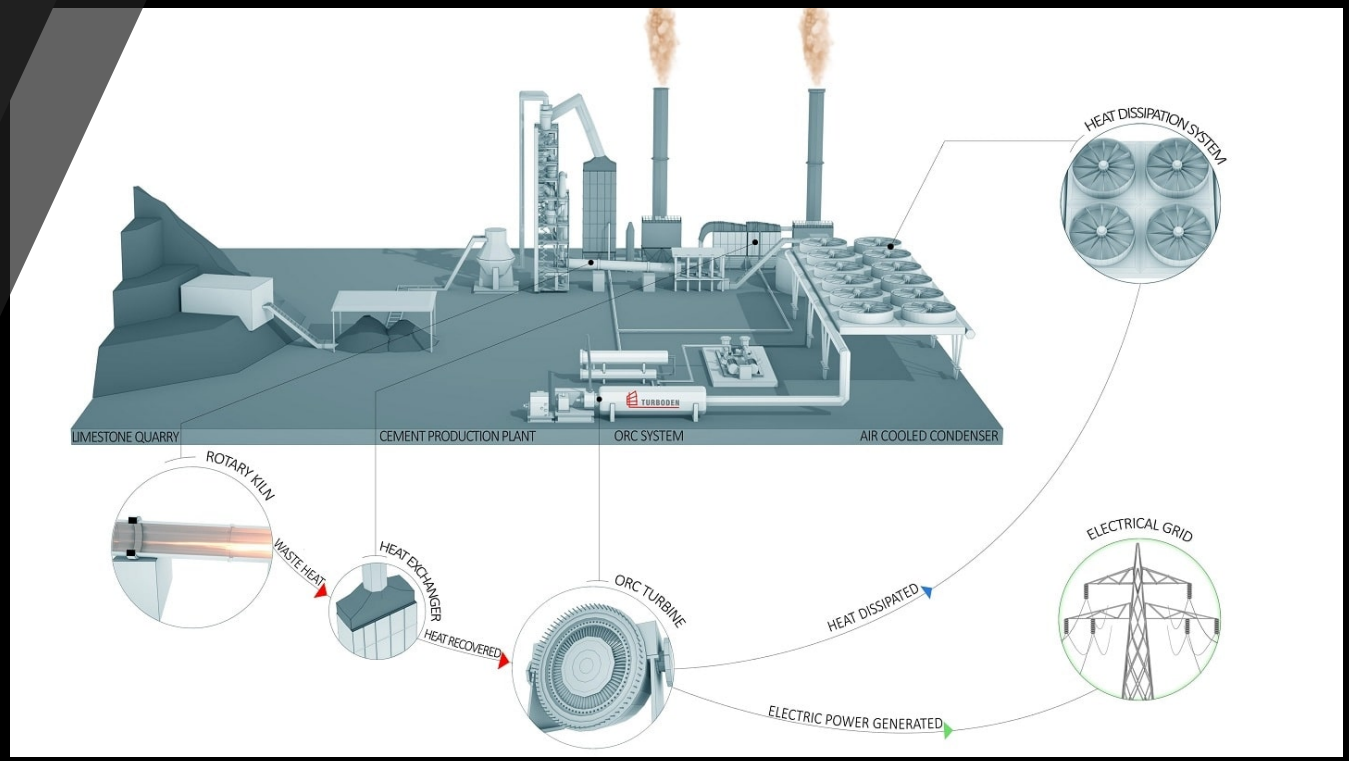
What Can We Do to Achieve Improvements

Define Scope 2 Emissions Improvement Potential

Definition:- Scope 2 emissions are indirect emissions generated from purchased energy—including electricity, steam, heating, and cooling otherwise known as **Buy Emissions**

Potential areas for review:-

- Energy/services purchased from renewable sources
- Transition to self generated renewable energy
- Waste Heat Recovery for power



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