



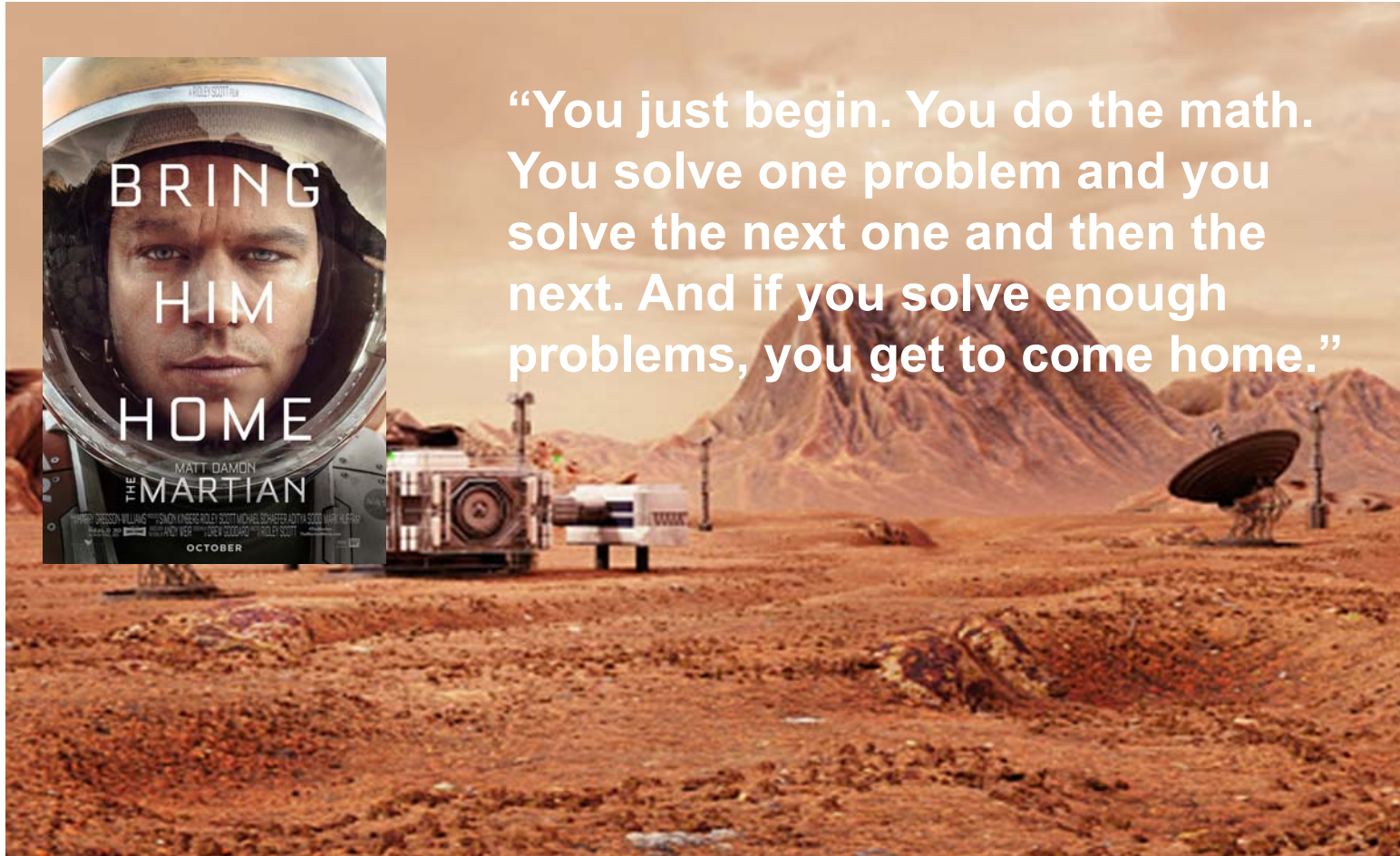
# Roadmap to Achieving Net Zero

TOPSIDES UK 2022

Date: 1<sup>st</sup> November 2022



## The Martian: Problem solving in space



“You just begin. You do the math. You solve one problem and you solve the next one and then the next. And if you solve enough problems, you get to come home.”

1) Have a clear goal

2) Ask for help

3) Deal with facts

4) Be positive

5) Have a plan

6) Understand the whole process

7) Break it down

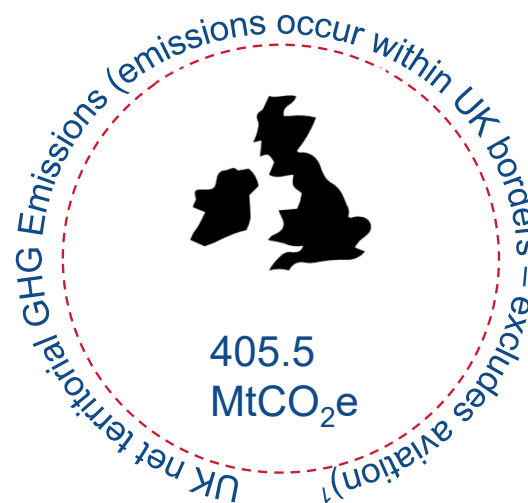
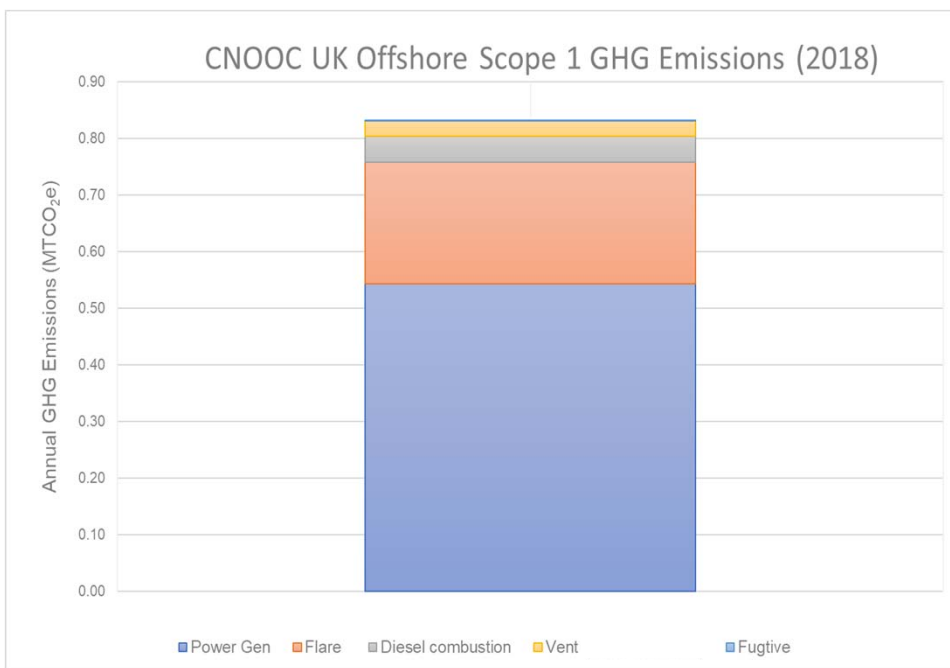
**Lessons for developing Roadmap to Net Zero**

# Emissions Context

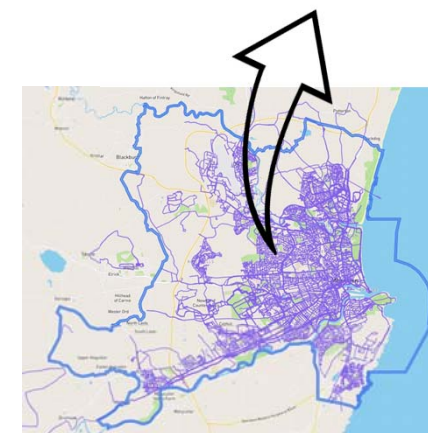
CNOOC Offshore Scope 1 annual GHG emissions 0.8 MtCO<sub>2</sub>e

0.2% of the UK's 2020 net territorial GHG emissions

70% Aberdeen City net 2020 territorial GHG emissions



Aberdeen City net 2020 territorial emissions = 1.1 MtCO<sub>2</sub>e<sup>2</sup>

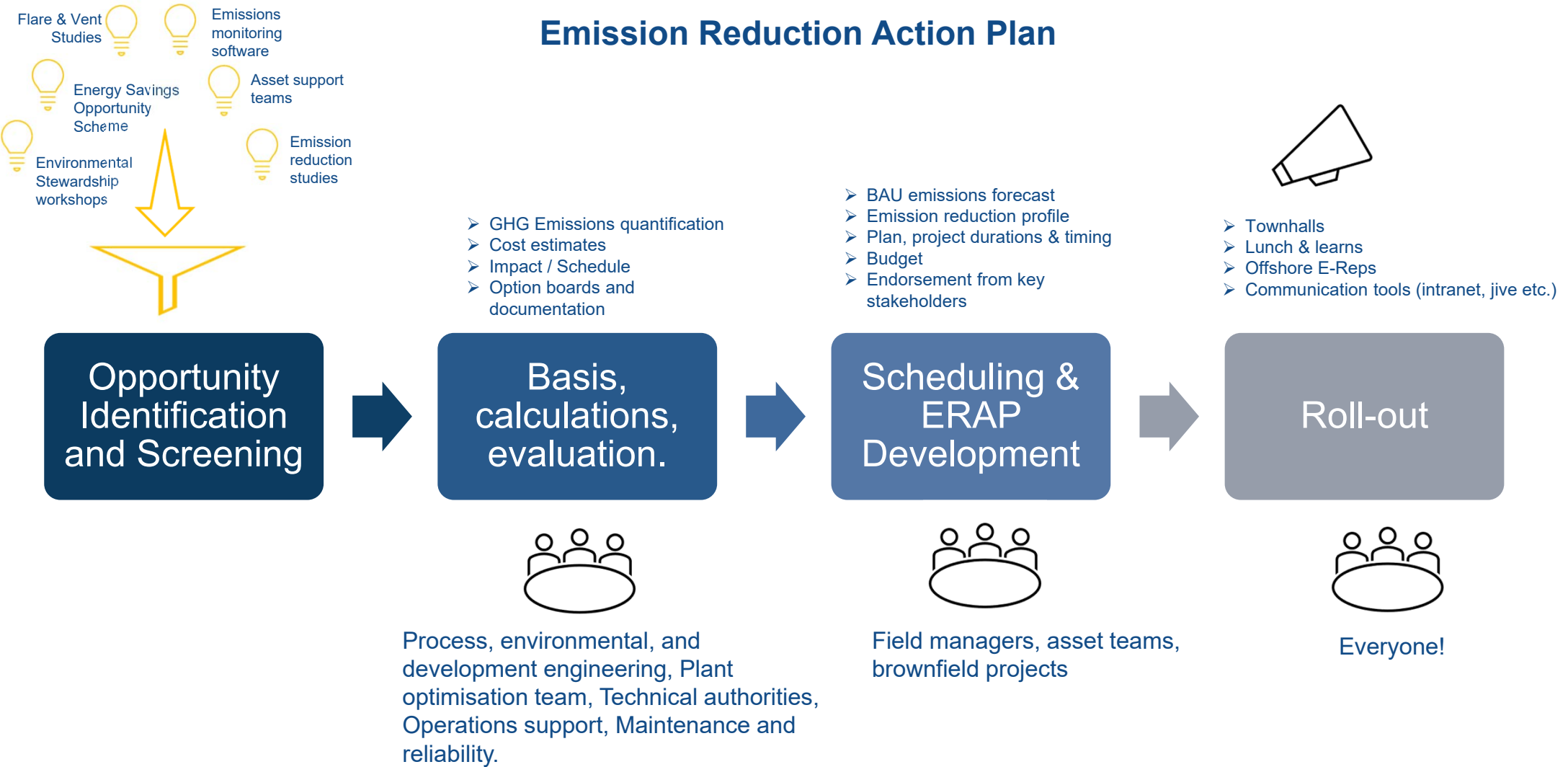


1. 2020 UK Greenhouse Gas Emissions, Final Figures - GOV.UK

2. UK local authority and regional greenhouse gas emissions, Department for Business, Energy and Industrial Strategy, 30 June 2022

# Emission Reduction Study and ERAP Development Overview

## Emission Reduction Action Plan





## Operational Efficiency

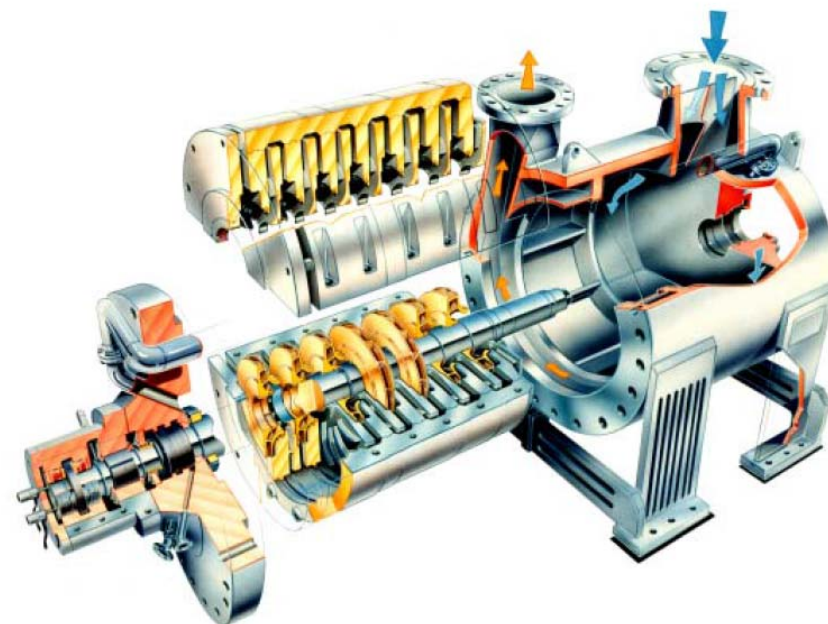
- **Size of the prize measured in 100's of Te of CO2e per year**
- Every asset has opportunities for incremental change
- Incremental gains from the OPEX budget
  - *Typical examples – reducing PCV flow to flare, improving air intake filters, optimising stripping gas flowrates, optimising gas import operation*
- Operators are already chasing these
- Having specific focus on reducing emissions helps make these happen



## Equipment Upgrade

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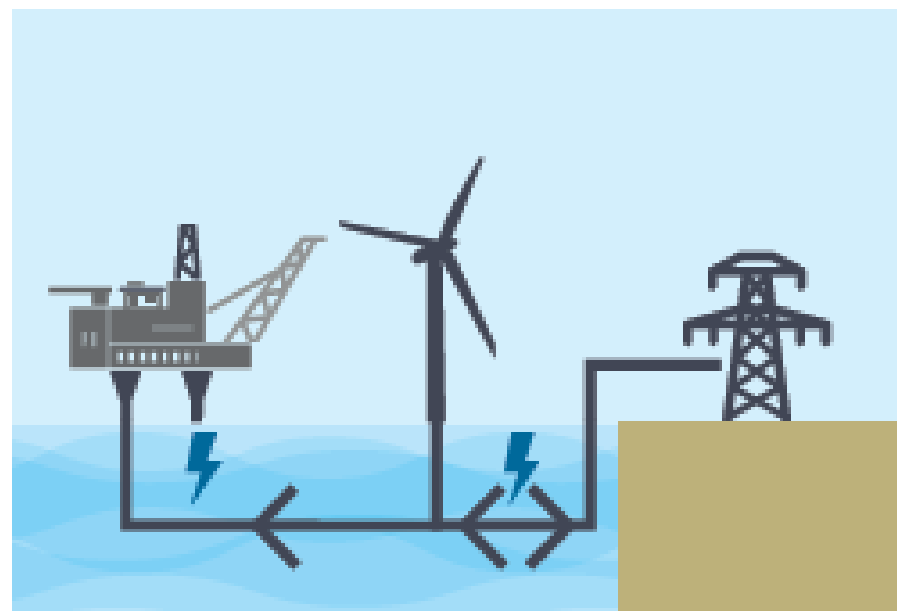
- **Size of the Prize measured in ~1000's of Tc of CO2e per year**
- These are CAPEX upgrades that will have larger emissions savings
- For late life assets, the challenge is having enough remaining life to justify the change
  - *Typical examples – replacing Gas Turbines, Re-wheeling compressors, oil export and water injection pumps, bypassing redundant process plant*
- Some have significant shutdown scope so need to be implemented in planned TAR campaigns



# Transformational Change

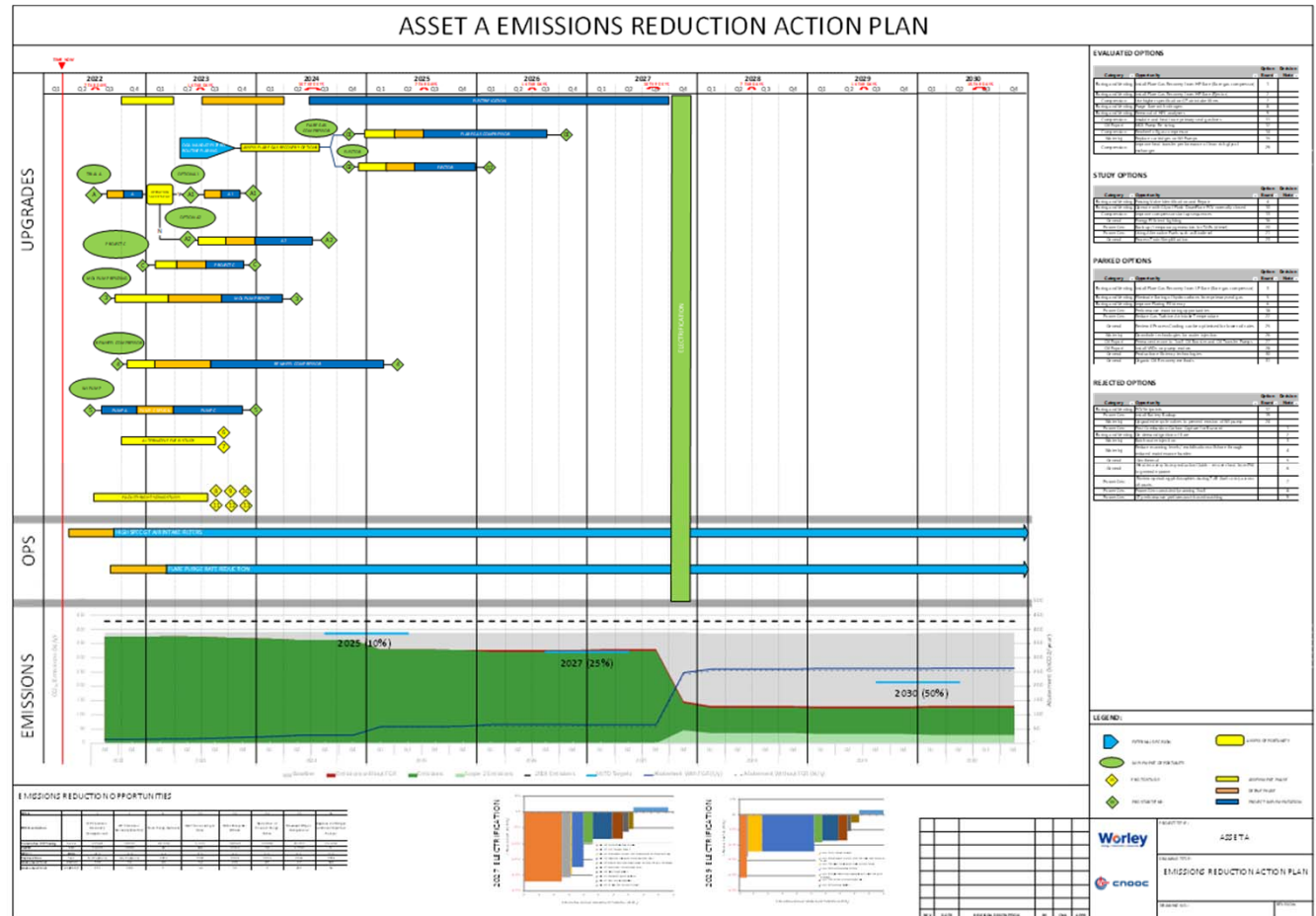
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- ***Need to achieve ~100,000's of Tt of CO2e per year by 2030***
- To achieve 2030 reduction target of 50% requires a step change
- Only possible through a transformative change
- Electrification
- Requires secure reliable power supply
- The options are CAPEX intensive to implement



# Asset ERAP

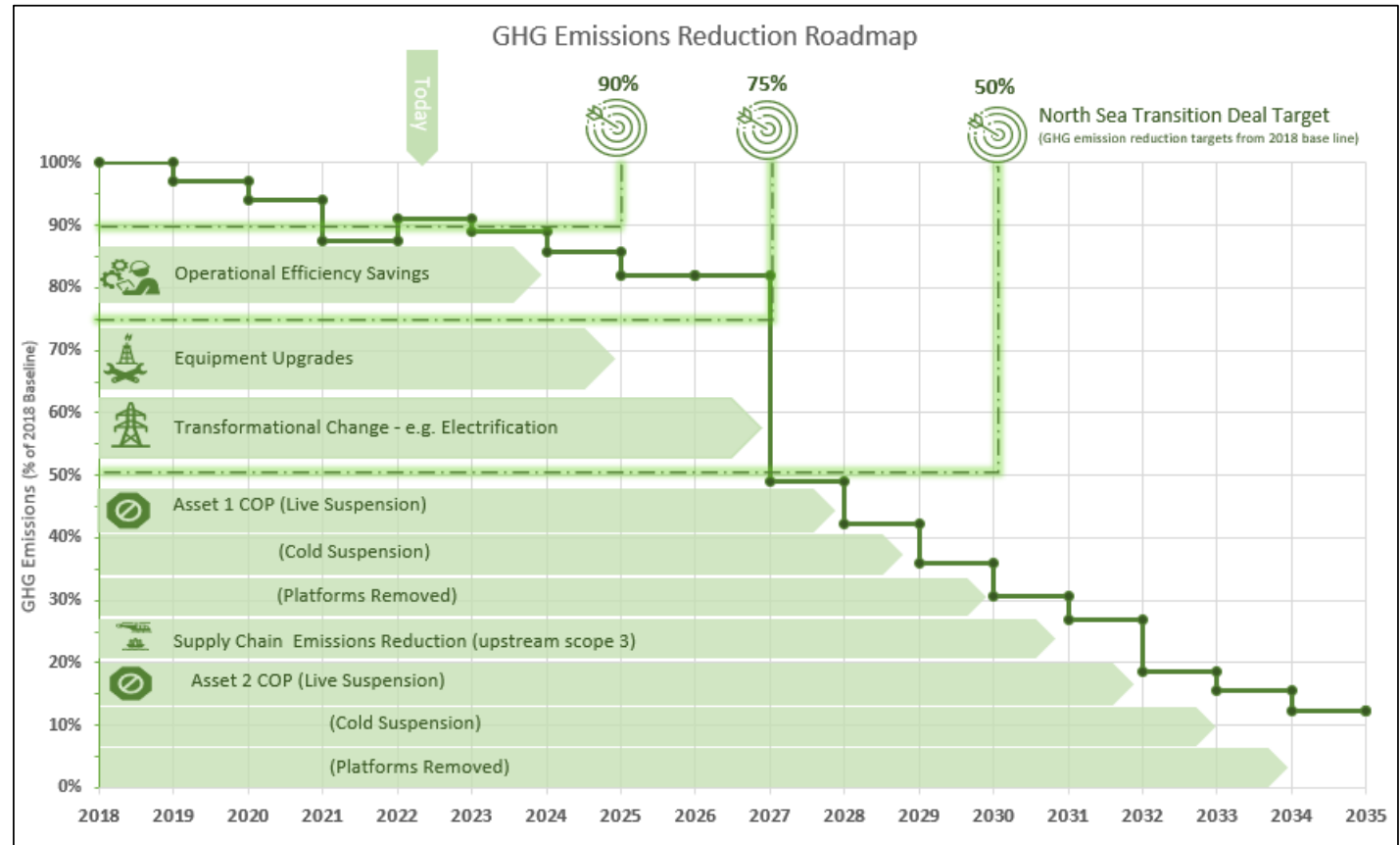
- **Visualise the Output**
- Single image of whole process
- Can be maintained and updated
- Able to monitor progress vs. targets





# Roadmap to achieving Net Zero

- **Roadmap to Visualise the Output for the company**
- Having a framework to communicate progress helps drive progress towards targets
- Meeting the NSTD Targets is challenging
  - Need to grasp all the “low hanging fruit”
  - Also need to implement upgrades to improve efficiency
  - Transformational change is required to meet 2030 targets



- To meet industry emissions reduction goals we all have a part to play. So develop a plan, start solving the problems and making those emission reduction gains and if we solve enough we'll get to Net zero!