



OOQ Energy Efficiency Roadmap Journey Towards Fast Track Decarbonization

Aug 2024

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Introduction – OOQ

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OQ 2030 Emission Reduction



OQ Board set a target to reduce the CO2e emissions by 25% from 2021 baseline by 2030.

The 25% reduction is from 100% operated assets under OQ Group.

The total emission of CO2e from OQ operations around 9 million tons of CO2e per year.



OQ Group

OQEP

OQRPI

OQBi

OQAE

OQ Non-Operated Assets

2% of OQ Emissions 2021

78% of OQ Emissions 2021

14% of OQ Emissions 2021

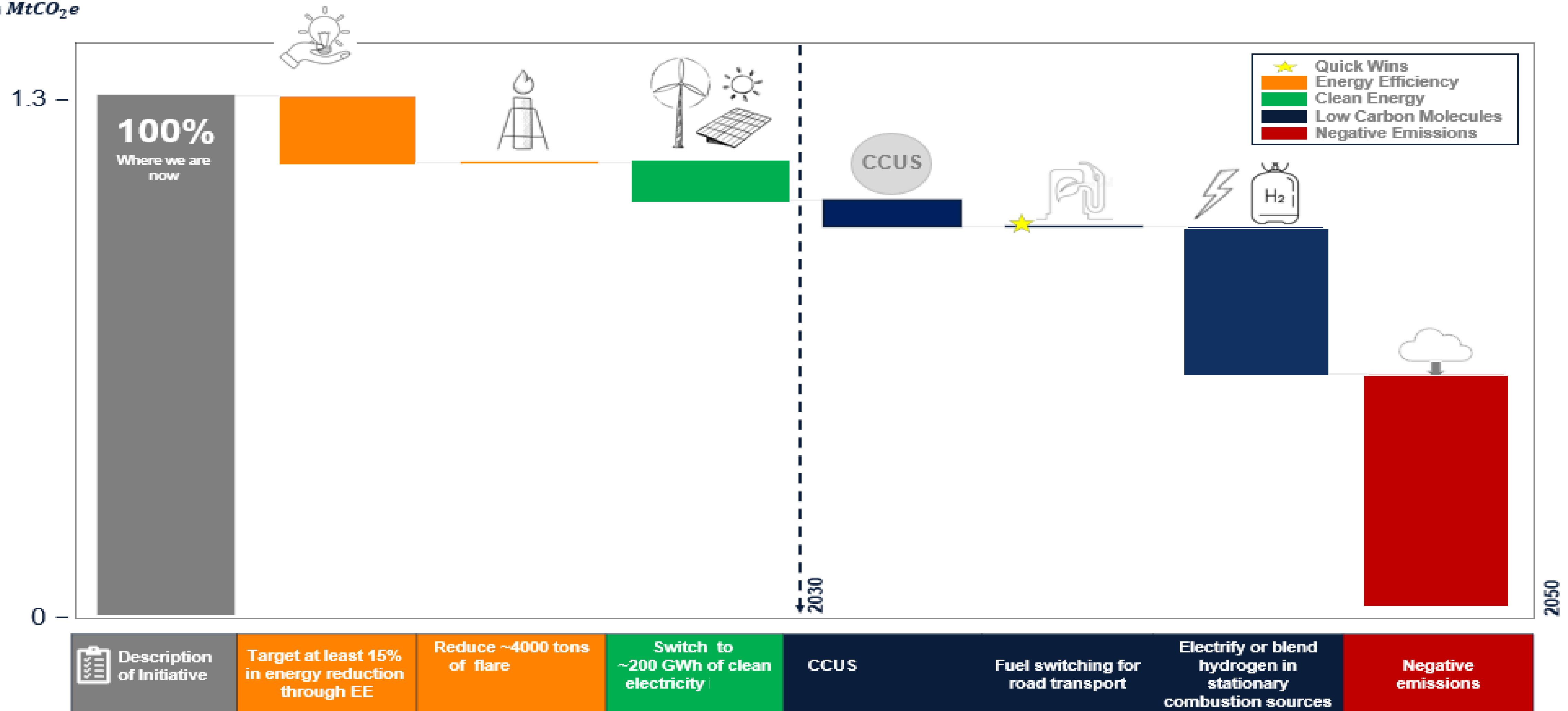


Energy Efficiency Program – OOQ Asset-A

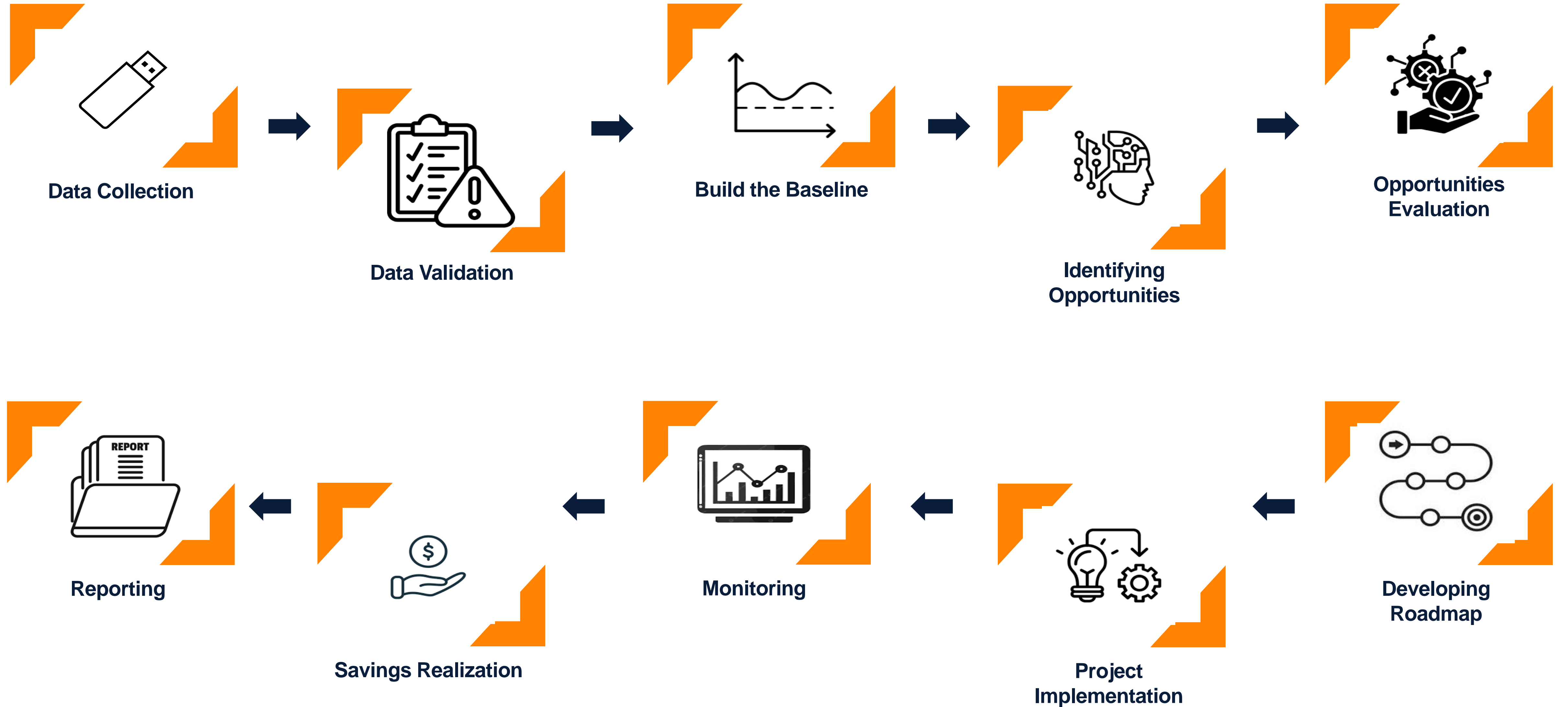
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2022 Decarbonisation Plan for OQ Asset-A

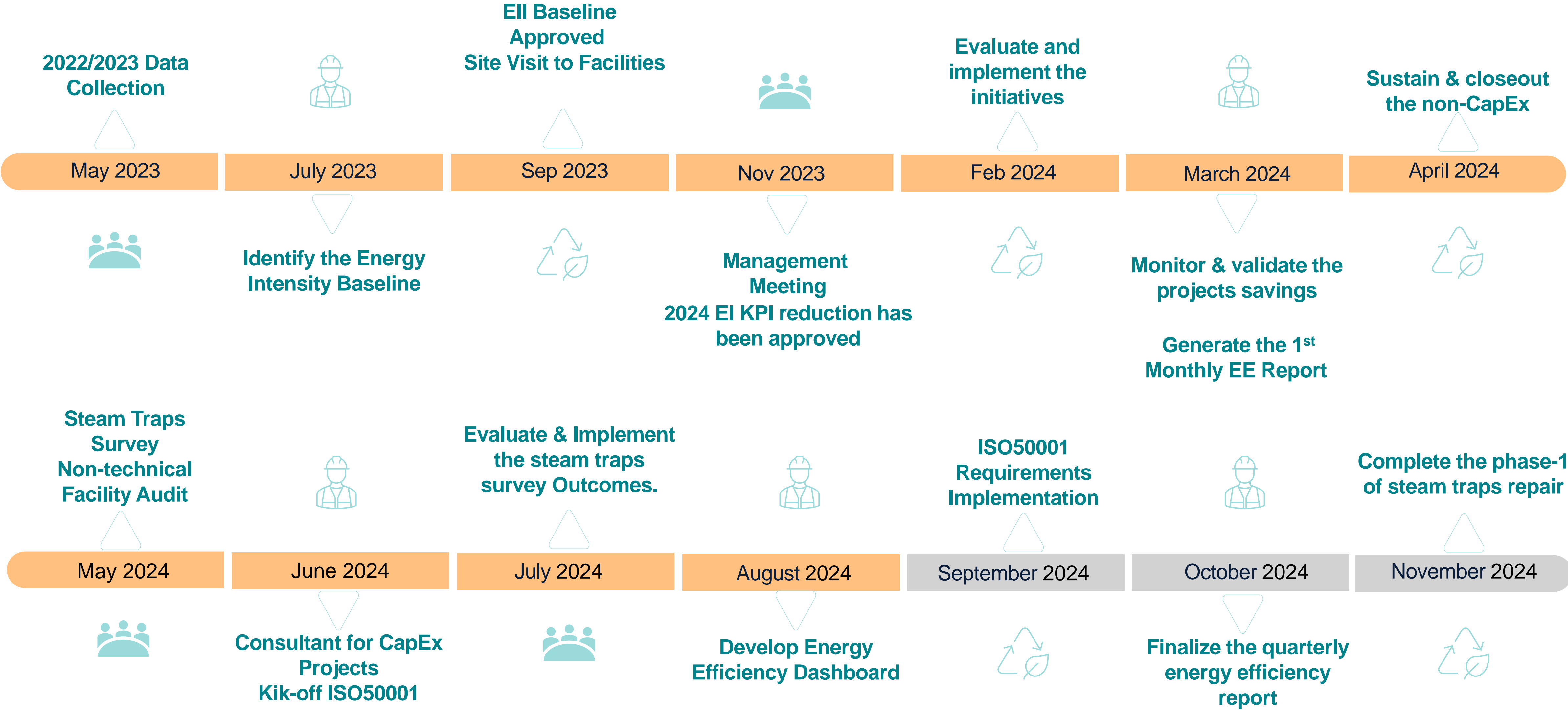
Emissions
in $MtCO_2e$



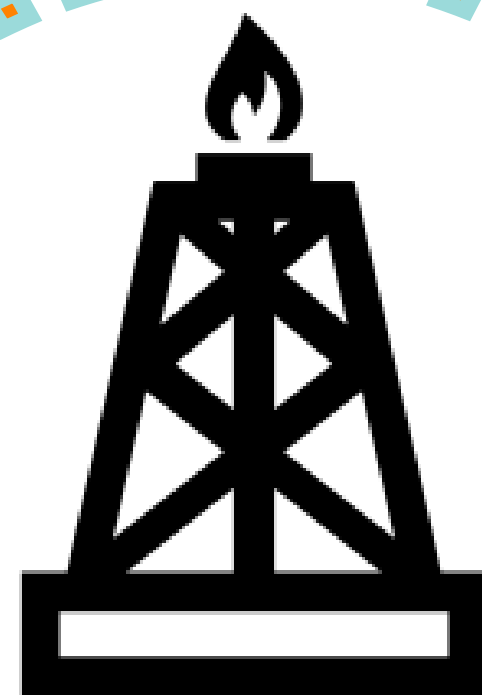
Energy Efficiency Programme Layout



2023/2024 Energy Efficiency Timeline



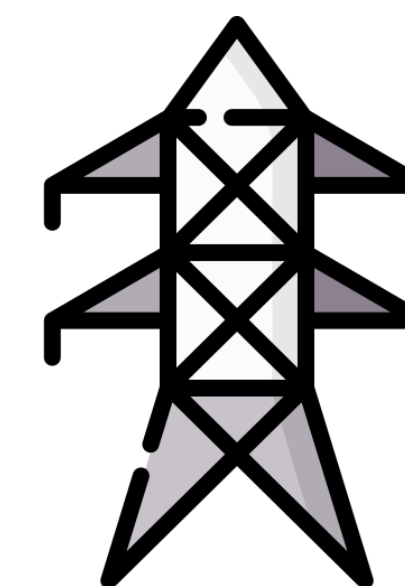
Energy Efficiency Projects Categories



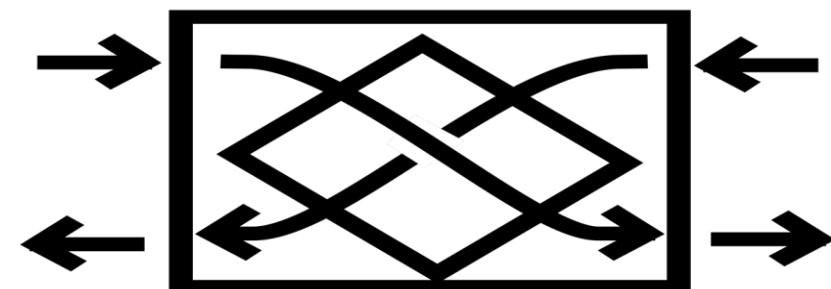
Flare Recovery



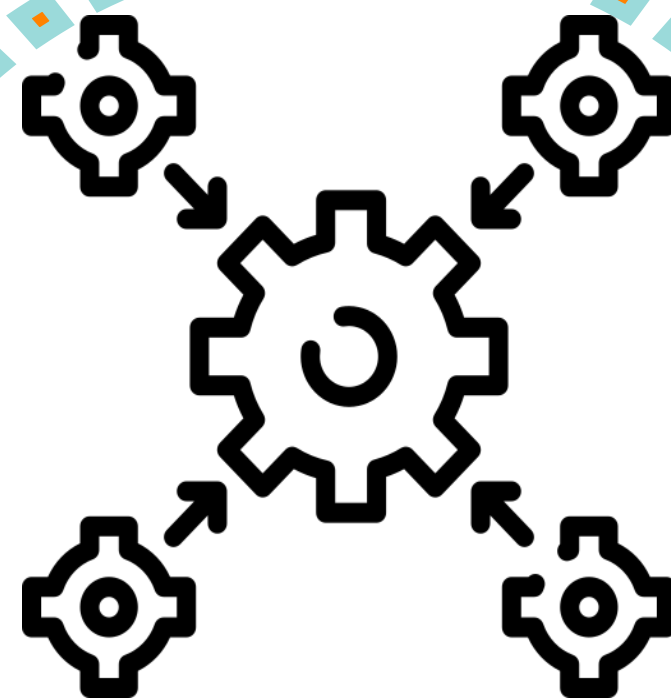
Steam Venting & Steam Dumping



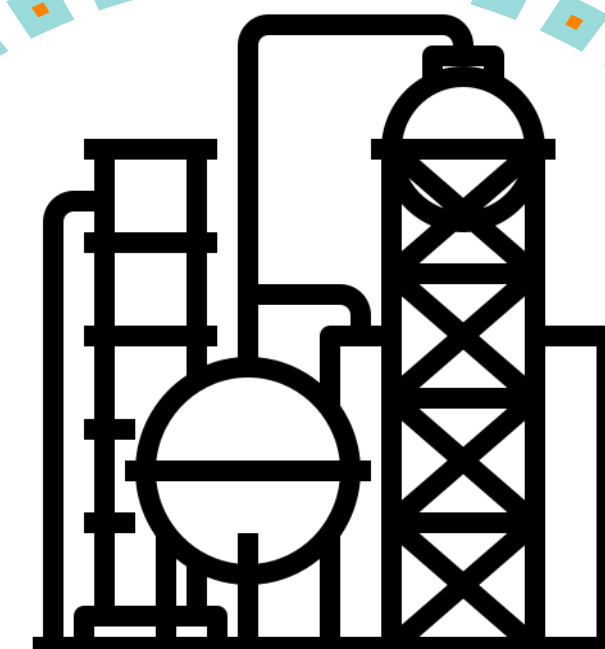
Power Integration



Heat Utilization



Rotary Equipment Optimization



Process Integration

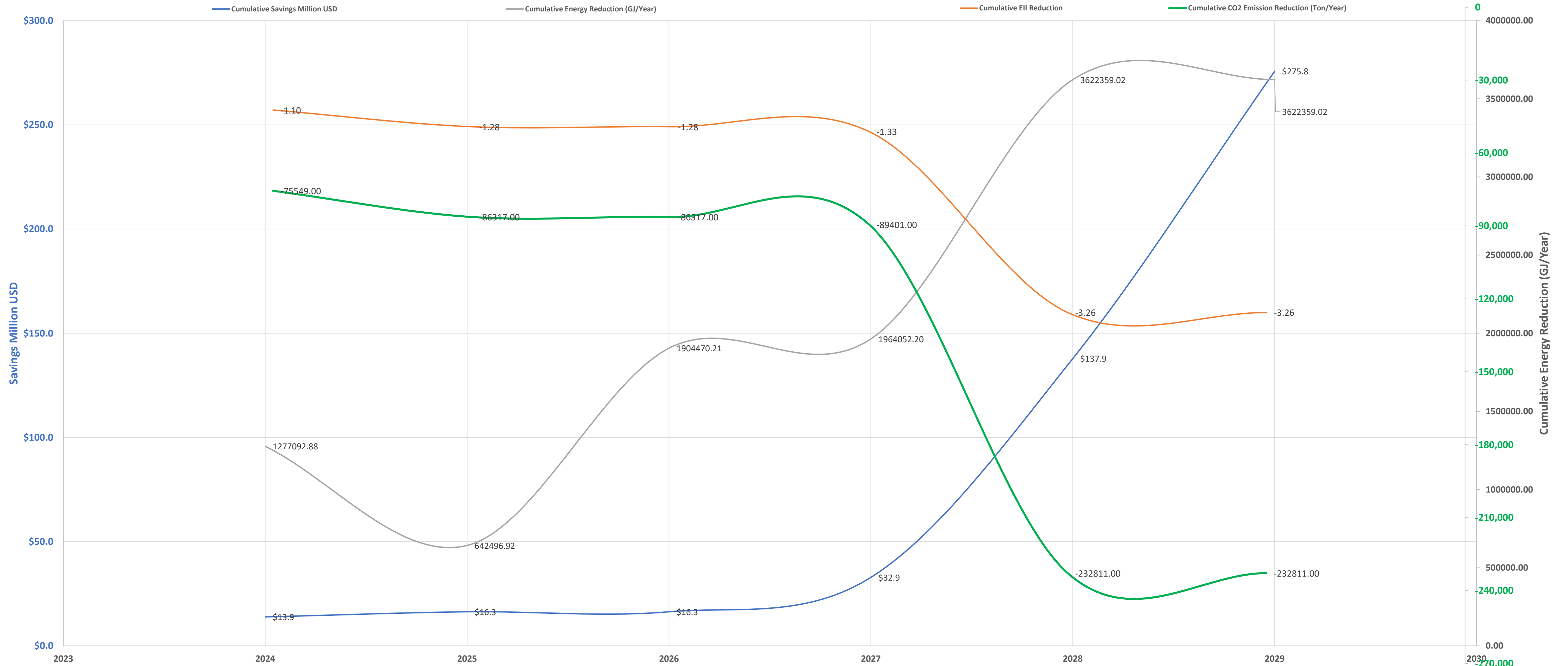


Electrification

Initial Decarbonisation 2030 Roadmap



2030 Decarbonisation Road-Map

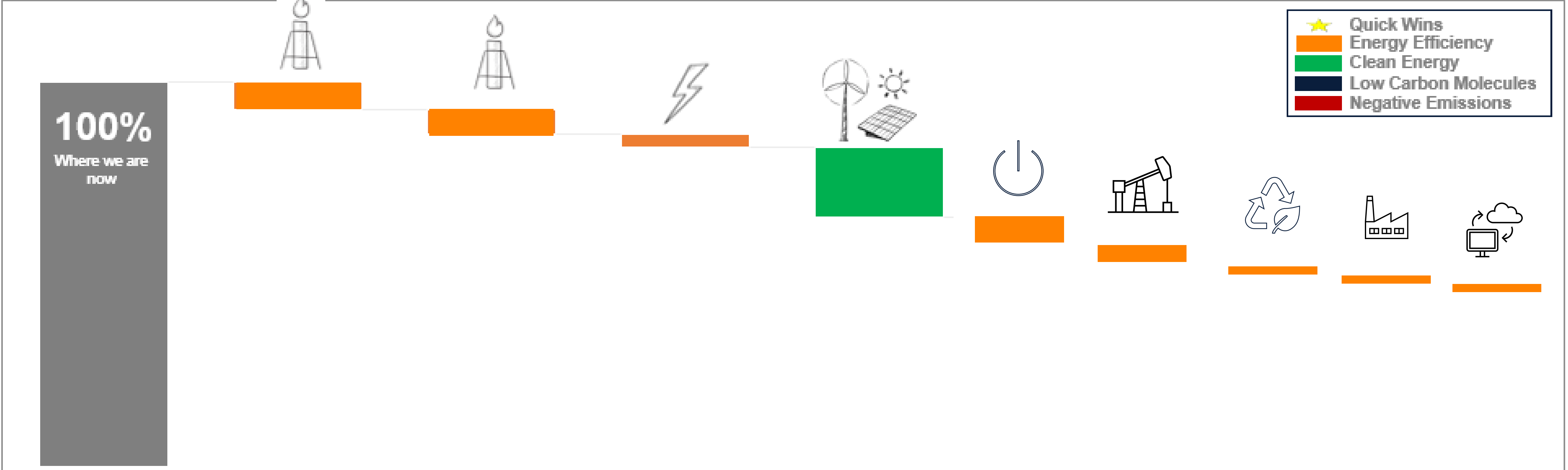




Energy Efficiency Program – Other OOQ Assets

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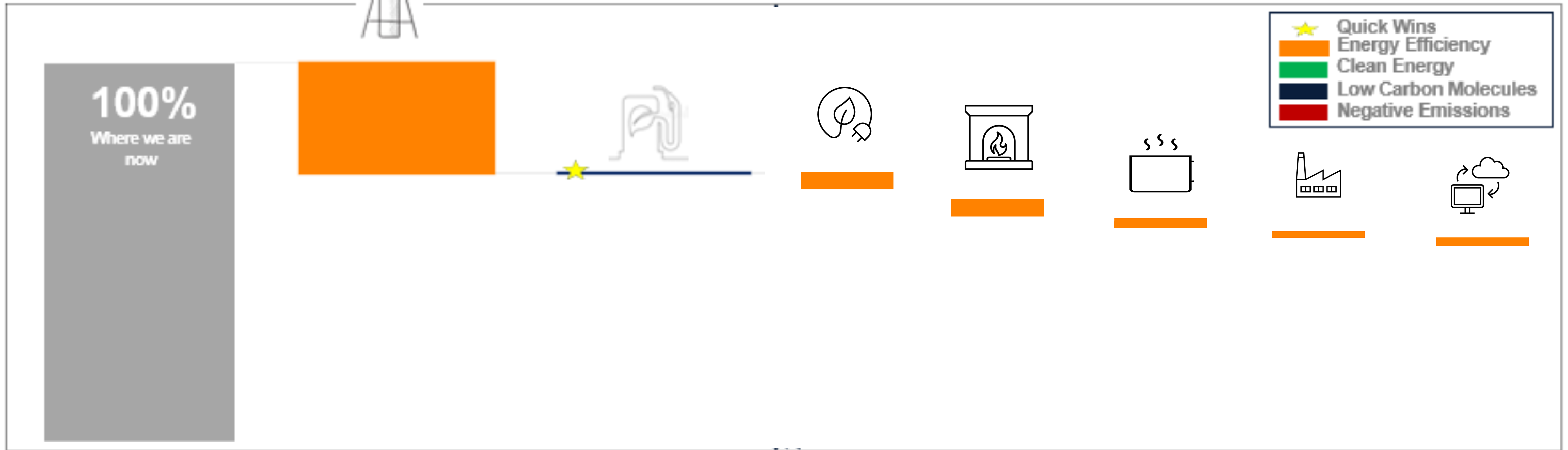
OQ Asset-B Roadmap



- Quick Wins
- Energy Efficiency
- Clean Energy
- Low Carbon Molecules
- Negative Emissions

Description of Initiative	Bisat Gas Recovery System – eliminate routine flaring from BST A, B, C.	GPP Flare Gas Recovery – recover tank flash / blanketing gas and flare header purge gas	Leased power project-Electrification (switch diesel to gas) wells, contractor camps	Switch to permanent OHL & Bisat Solar Power	ESP Power Optimization	Decarb. Rig Operations	Bisat Water Inj. Pumps	Non-Tech. Facilities	Digitalization
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OQ Asset-C Roadmap



★ Quick Wins
 Energy Efficiency
 Clean Energy
 Low Carbon Molecules
 Negative Emissions

 Description of Initiative	Reduce ~9000 tons of flare	Fuel switching in diesel generators	VFD for Motors	Boiler Electrification	Steam Loss Management	Non-Tech. Facilities	Digitalization
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Case Studies

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Case Study: Drilling rigs with mobile solar panels units

Current scenario:

- Rig power supplied through diesel generators
- Temporary setup
- High cost
- High carbon emissions, polluting and noisy

Using mobile solar power is more sustainable:

- No CAPEX solution
- Pay for energy used
- Reduce diesel consumption → Cost savings
- Easy to move
- Reduce emissions, pollution and noise
- Inline with decarbonization roadmap for OQ

DECARBONIZING RIG OPERATIONS

EII Reduction

0.6 kWh/BOE

CO₂e Reduction

~9500 tonnes/year

Savings

~\$2.4 Mn/year

Case Study – Mobile Power

Trailer mounted solution

2-4 hours to deploy

Easily movable – already moved >14 times

8-10 hours on renewable power

DECARBONIZING RIG OPERATIONS



Case Study: Fix leaks in steam system

- Target:
 - Reduction in fuel gas consumption in boilers
 - Reduce boiler feed water and associated savings
 - Reduce safety hazard due to leaking steam traps
- Steam Trap Leaks to addressed
 - Conduct survey
 - Identify leakage points
 - Determine root cause of failures
 - Replacement of leaking/non-functional steam traps

STEAM LOSS MANAGEMENT

EII Reduction

3 MJ/MT

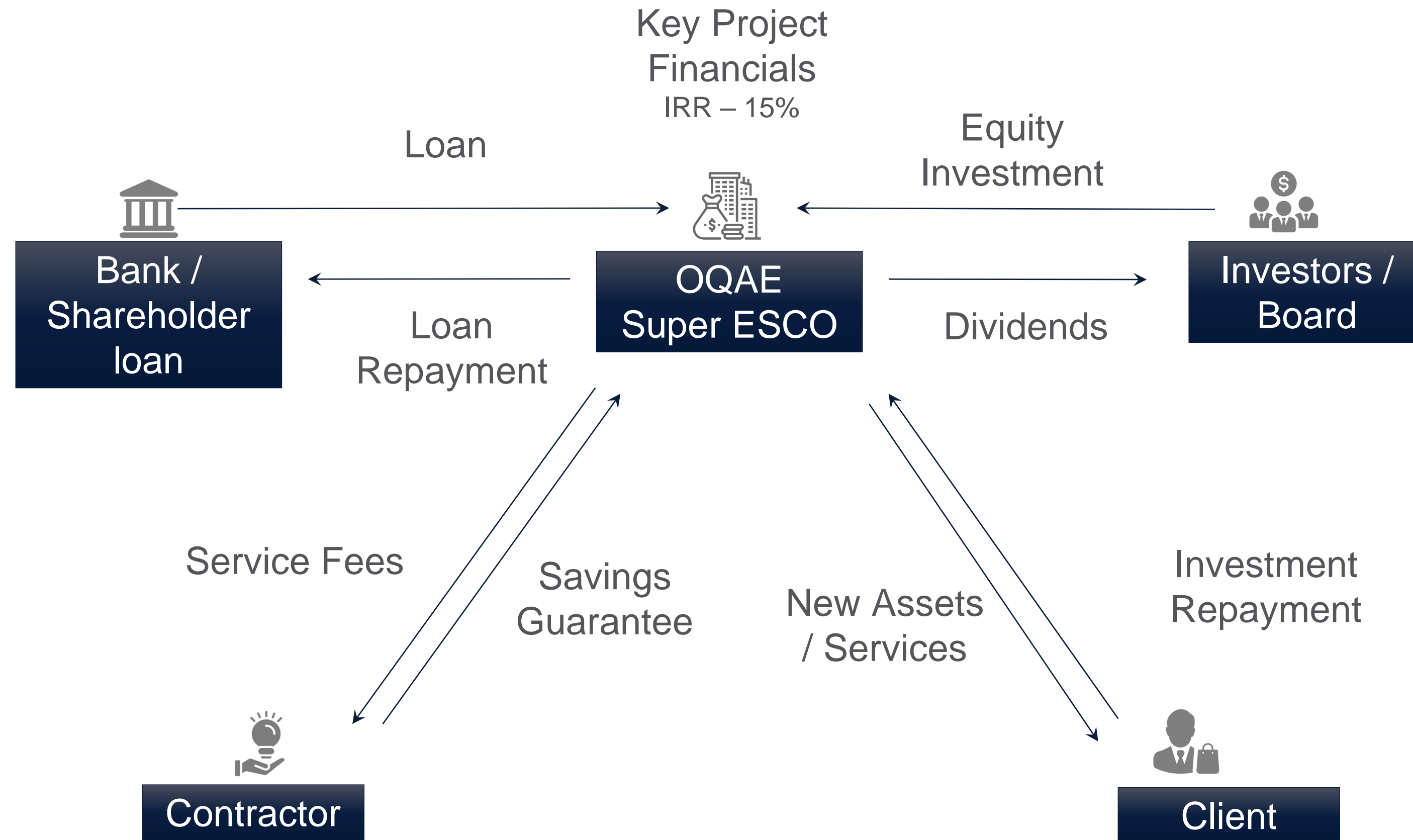
CO₂e Reduction

~9500 tonnes/year

Payback

<1 month

Case Study: ESCO model for OQ buildings



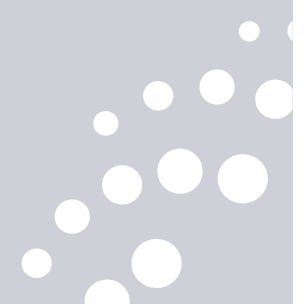
NON-TECHNICAL FACILITIES

CO₂e Reduction
 ~9000 tonnes/year

Payback
 6 years

IRR
 15%

Conclusion



OQ has benefitted immensely by working out a detailed Energy Excellence roadmap

Provides confidence to all internal and external stakeholders about the success of the programme

The case studies demonstrate that having a variety of projects can help organizations reach their target for decarbonization

- CAPEX
- non-CAPEX
- non-technical facilities

OQAE Energy Excellence team is keen on engaging with experts and technology providers in its journey towards decarbonization



Thank you