MITIGATING CLIMATE CHANGE- ANALYSING THE INVESTMENT DECISION OF CARBON CAPTURE AND STORAGE AND ITS BENEFIT IN PROLONGING FIELD LIFE IN THE UKCS

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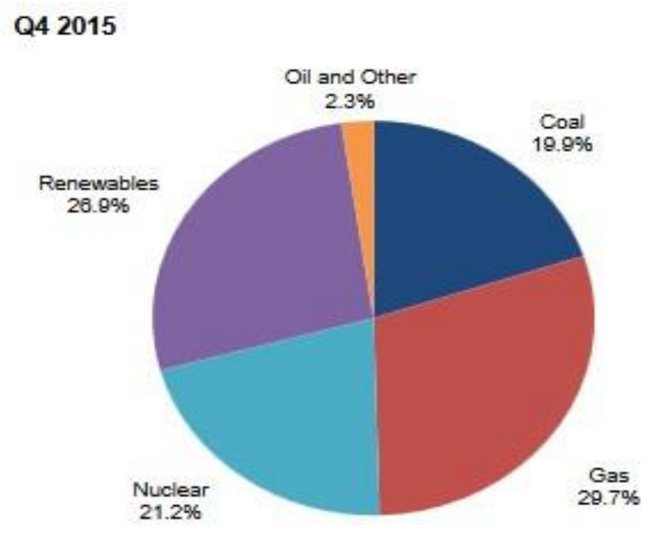
OVERVIEW

❖ There has been an increase in the burning of fossil fuel to meet high energy demand,

❖ The degree of dependency in the UK is a reality that is set to continue for decades to come.

Share of energy generation in the UK



❖ CCS technology offers the potential to enjoy the used of fossil fuel without worrying about the emission associated with burning them.

MOTIVATION

❖ A need to reduce CO_2 released into the atmosphere.

❖ The announcement on November 2015 regarding the cancellation of CCS funding on demonstration project in the UK.

RESEARCH QUESTIONS

❖ Is CCS a profitable technology in UK for mitigating GHG emissions?

❖ Should the UK government support investors in demonstrating CCS projects?

❖ How can CCS technology assist in increasing the lifespan of depleting oil fields in the UK North Sea?

METHODOLOGY

DCF ANALYSIS → SENSITIVITY → MONTE CARLO SIMULATION

❖ An integrated CCS financial model was built to obtain the post tax NPV, IRR, payback and breakeven oil price.

❖ Sensitivity on 10 inputs variables including oil price, discount rate to mention a few. A tornado diagram for the variables thereafter.

❖ 1000 simulation trials made on variables including: oil price, capture volume, discount rate to mention a few.

RESULTS

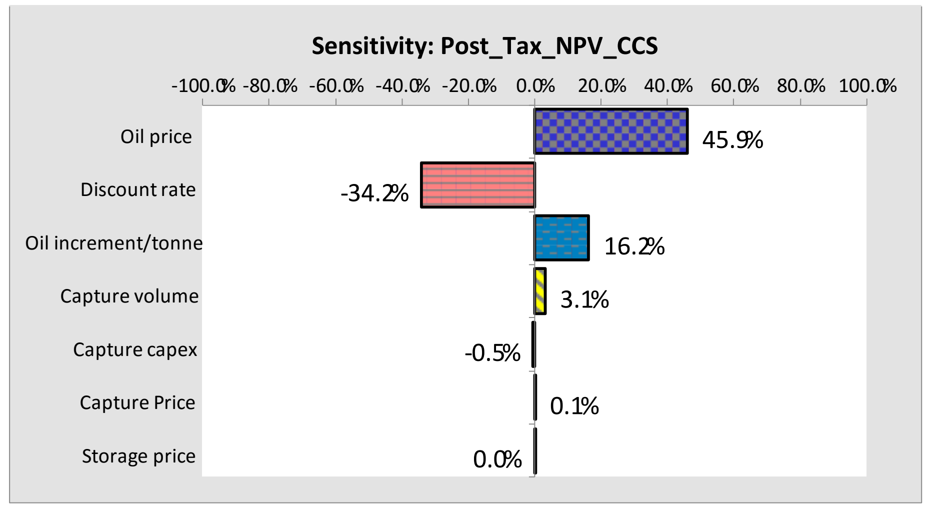
Discounted Cash flow	
Post tax NPV	**£261,546,571**
Payback/ IRR	**9 years / 12%**
Breakeven Oil Price	**£48.37**

❖ Monte Carlo simulation on crude oil price, discount rate, oil increment/ton of CO_2.

✓ 77.64% probability of a positive NPV from the Investment

✓ 62.01% chance of getting a post tax NPV higher than the result obtained.

❖ **Contribution to Variance**



CONCLUSION

❖ The result suggest that investment in CCS is economically viable for oil prices above £48.37/barrel of oil.

❖ The oil price, discount rate and oil increment per tonne of CO2 injected are what is contributing the most to the variance of the forecast which affects the profitability of a CCS investment.

❖ The lifespan of depleting fields are prolonged through injection of CO2 for enhancing oil recovery in the UKCS.

❖ The government should support potential investors to make CCS deployable now in the UK to take advantage of the future outlook of crude oil price.

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