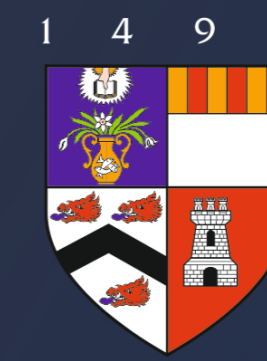


DEVELOPING A RENEWABLE ENERGY FUND FROM OIL REVENUES IN NIGERIA: A MULTIPLE SCENARIO APPROACH

Osuchukwu Joseph Ikechukwu



UNIVERSITY OF ABERDEEN

Motivation

- An increase in global transition to Renewable Energy (RE) sources due to finite supply of fossil fuels.
- Falling cost of renewable and advancement in technology.
- Energy Security and sustainability
- Poor Energy supply in Nigeria
- Poor funding for RE policies in Nigeria

Aims and objectives

- To design a structure for a viable and sustainable RE fund from oil revenues in line with the Nigerian budget.
- Account for possible scenarios that may arise during the course of the fund and debate on the feasibility of the project.

For this reason, this study considers developing a Renewable Energy Fund to finance renewable energy projects in the economy. This fund will be bankrolled by channelling 1% of the revenues specifically generated from NNPC crude oil sales

Methodology

Using the Discounted Cashflow Method, the NPV of the RE fund was applied to 9 scenarios with regards to changes in oil price and domestic oil production in Nigeria. The Base case scenarios are Deterministic while the Random walk Scenarios contain a stochastic variable.

Sensitivity Analysis and Monte Carlo Simulation were used to assess to uncertainty and risks that may affect the model outputs under different scenarios

Base Case

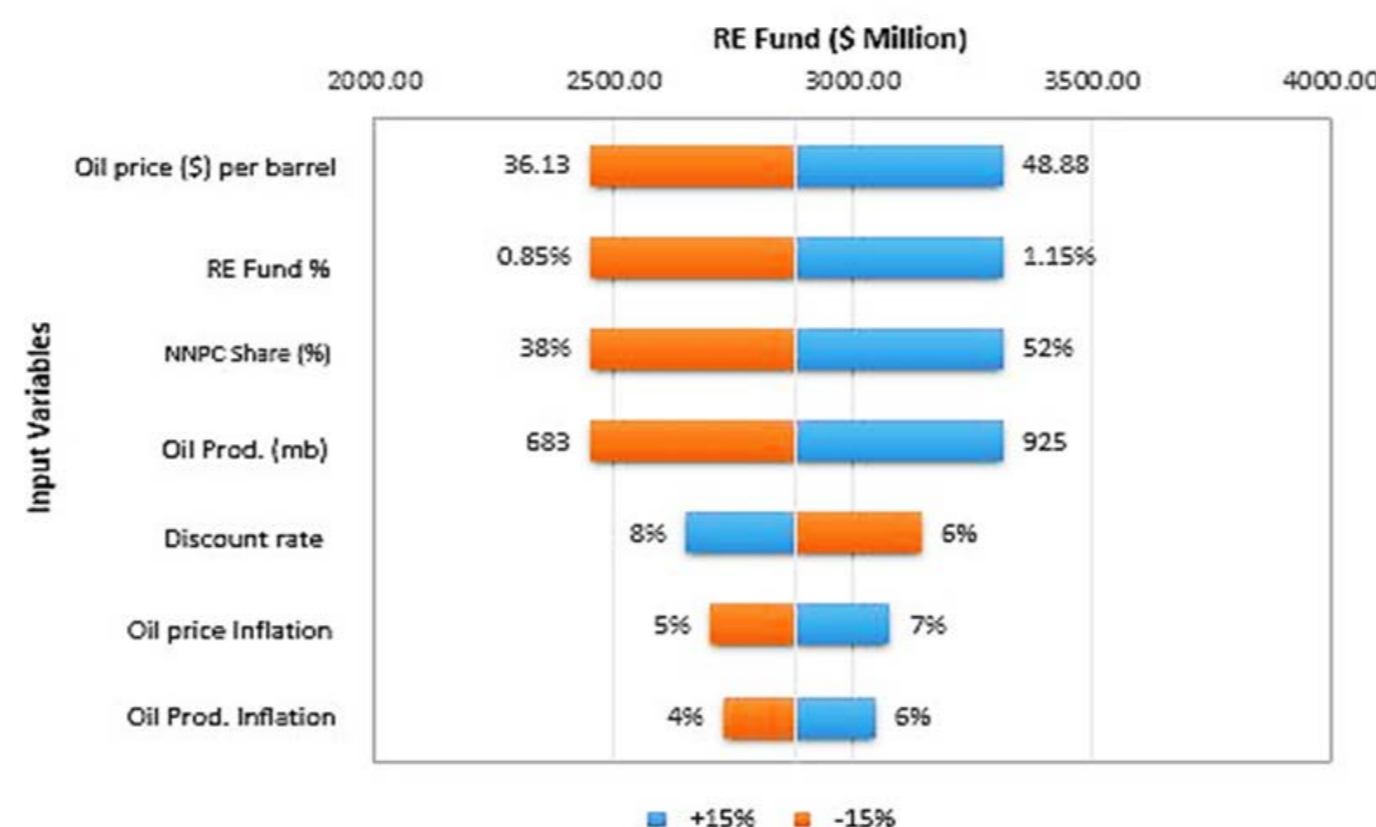
Scenarios	Oil price movement	Oil production movement
1	Steady increase	Steady Increase
2	Steady Increase	Steady Decrease
3	Steady Decrease	Steady Increase
4	Steady Decrease	Steady Decrease

Random Walk Case

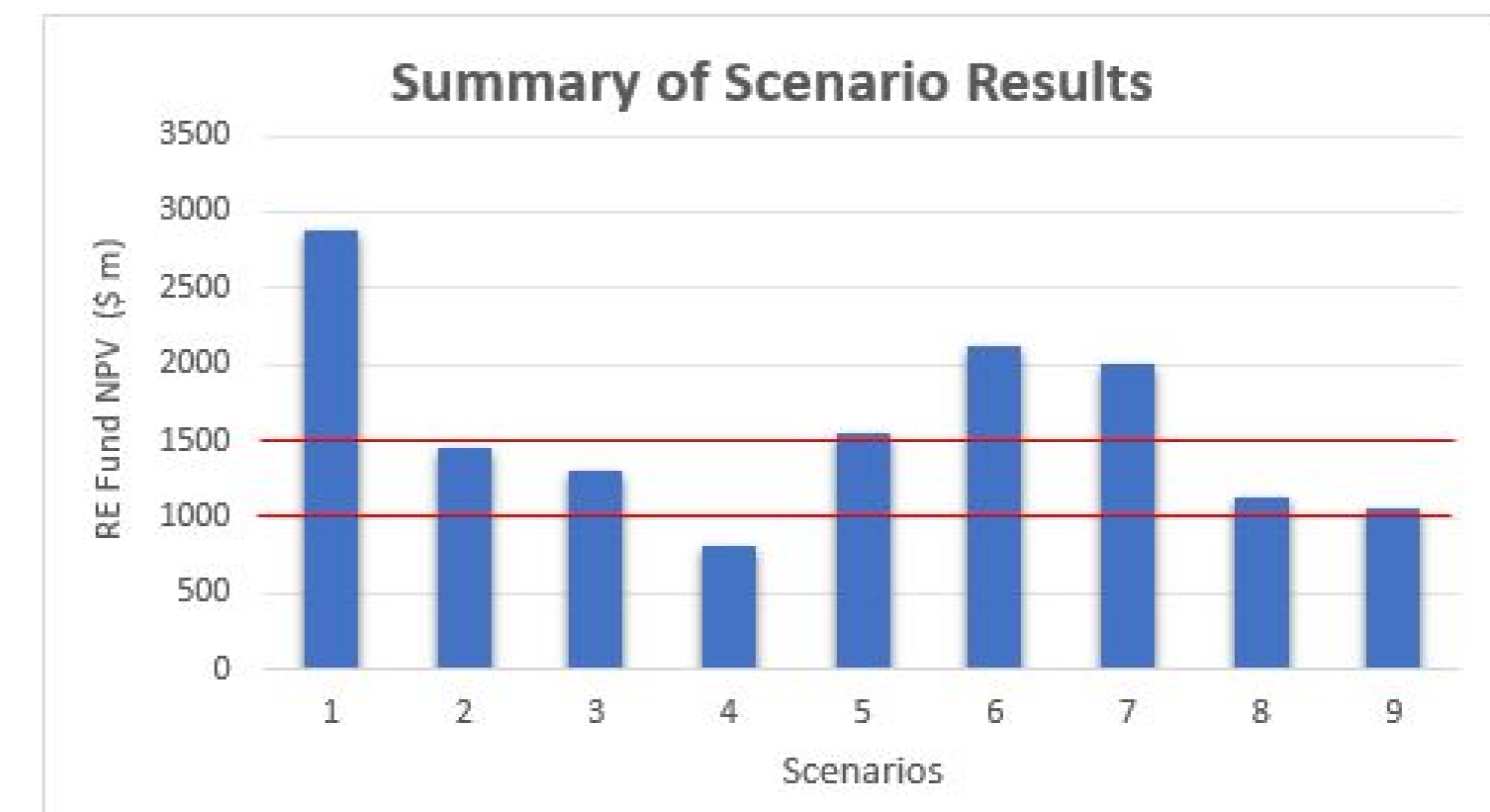
Scenarios	Oil price Movement	Oil production movement
5	Random walk	Random walk
6	Steady increase	Random walk
7	Random walk	Steady Increase
8	Random walk	Steady Decrease
9	Steady Decrease	Random walk

Results

Scenario 1 Tornado Chart



Result from the Sensitivity analysis above show that oil price, percentage of RE fund from oil revenues, NNPC share of total oil output and total oil production have an equal and huge significant effect on the RE fund followed by discount rate, oil price inflation then oil production inflation.



The chart above shows the summary of the base case and random walk results in terms of the RE fund outcomes of each individual scenario

- At a benchmark of \$1.5billion, with an average of \$100million set aside annually for 15years, 4 out of the 9 scenarios will produce a viable RE fund.

If this benchmark is lowered to \$1billion, 8 of 9 scenarios will be covered for the renewable fund except for Scenario 4 which implies a decreasing oil price and domestic oil production.

Conclusion

The accumulation of a RE fund in substantially feasible amounts is possible under different circumstances of the oil industry in Nigeria.