

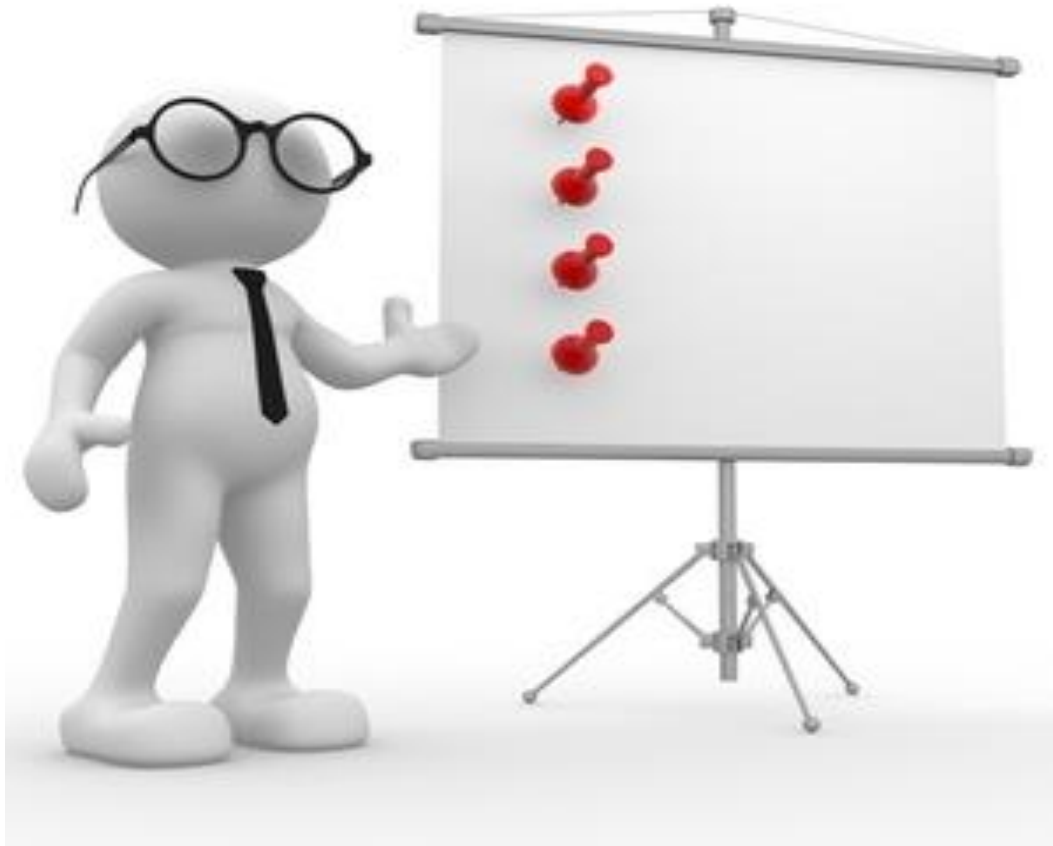
COMPARATIVE RISK ASSESSMENT OF NATURAL GAS UTILIZATION PROJECTS UNDER PETROLEUM PROFIT ACT AND PETROLEUM INDUSTRY BILL 2018

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Presented at the
42nd IAEE International Conference, Montreal, Canada
May 29th – 1st June 2019

Theme: LOCAL ENERGY, GLOBAL MARKETS

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INTRODUCTION – OVERVIEW OF STUDY (1)

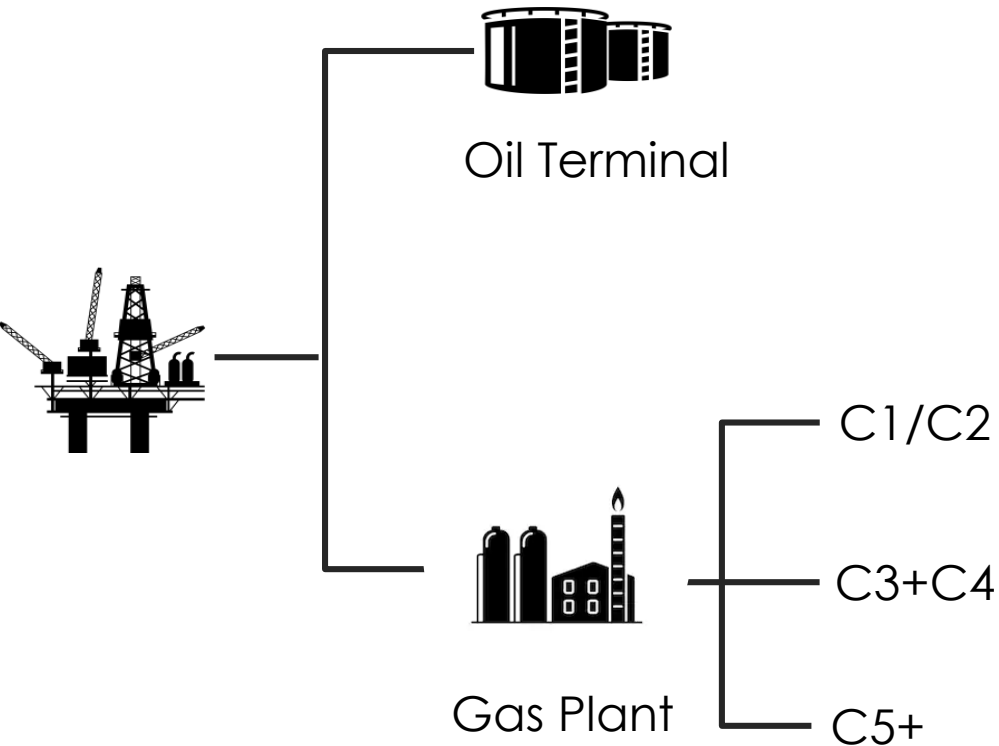
- Long standing policy intent to excise the Associated Gas Framework Agreement (AGFA) found in Nigerian Petroleum Profit Tax Act (PPTA)
- AGFA stipulates that costs incurred in the development of gas utilization projects will be recovered against oil income
- Policy makers have argued that AGFA encourages excess gas project spend, erodes the tax base, delays government take and acts as an avenue for investors to shift profits
- The proposed PIFB 2018 sets out to repeal AGFA; Hence a comparison of PPT vs PIFB2018 is explored

- Imperative for this paper is driven by:
 - Need to Assess the risk impact on gas investment by the repeal of AGFA
 - Potential impact on upstream projects upon repeal of AGFA

- This study will address the following questions:
 - What risk is a gas utilization project exposed to by the excise of AGFA
 - What changes in government take by the proposed policy change
 - How does the risk profile of an upstream oil investment shift due to the proposal

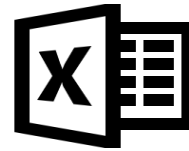
METHODOLOGY

Develop FDP Concept



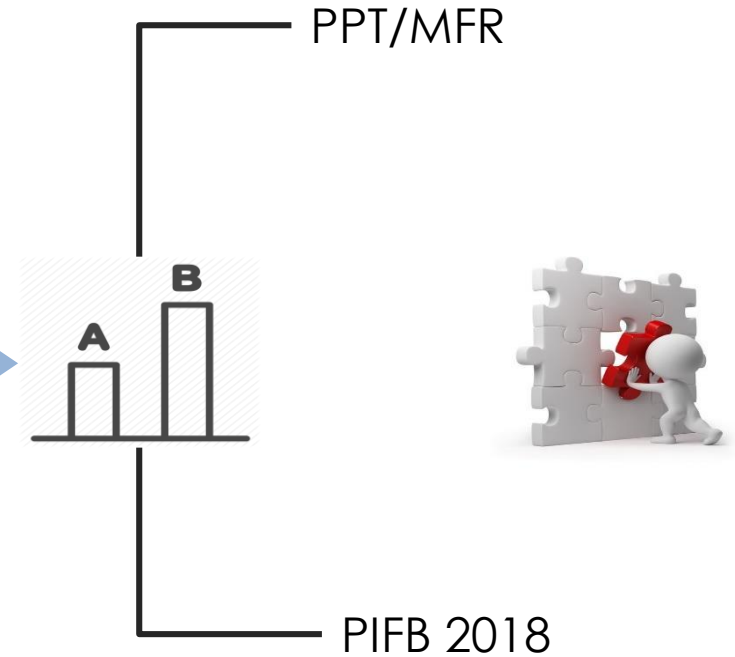
- Oil Production Profile
- Gas Production Profile
- 150mmscfd gas plant
- Review fiscal laws under which the FDP concept is treated

Develop Excel Model



- DCF Fiscal Model (PPT, PIFB)
- Upstream CapEx model
- Upstream OpEx model
- Gas Plant Costing
- Gas Price model
- NGL Price model

Comparative Analysis



- Deterministic Analysis
- Probabilistic Analysis
- Sensitivity Analysis
- Policy Recommendations

PPT vs PIFB 2018 – The Fiscal terms Compared

FISCAL INSTRUMENTS	PPT/MFR	PIFB 2018
Fees		
Fees and Levies	YES	YES
Signature Bonus	YES	YES
Production Bonus	YES	YES
Royalty		
Royalty by Water Depth	YES (0% - 20%)	NO
Royalty by Terrain	YES	YES
Royalty by Daily Production	YES (for Marginal)	YES
Royalty by Price	NO	NO
Cost Treatment		
Cost Recovery Limit	NO	YES (80%)
Cost Consolidation (Gas and Oil)	YES	NO
Cost Efficiency Factor	NO	YES
Allowances		
Petroleum Investment Allowance	YES (5%)	NO
Production Allowance	NO	YES
Tax		
PPT	YES (65.75% - 85%)	NO
NHT	NO	NO
CIT	NO	NO
PIT	NO	YES
APIT	NO	YES

Royalties proposed in PIFB are generally lower for ONSHORE and SHALLOW terrains than in PPT, but increased for DEEPWATER

Production Allowance for the PIFB is for the purposes of PIT. Furthermore, it is a function of CEF and RRR. No Production Allowances in PPT

PIFB2018 retains the existing single tax system of PPT but reduces the rate. An additional PIT included which is assessed on Post-Tax basis and dependent on oil prices to capture increase in oil prices.

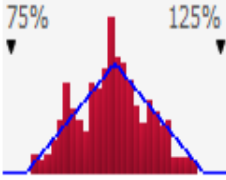
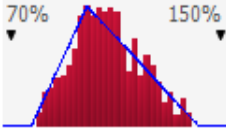
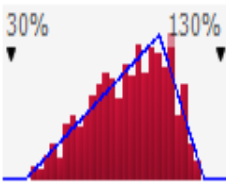
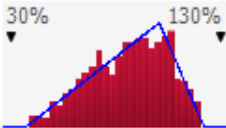
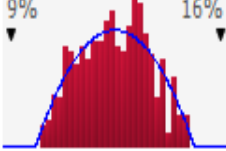
PIFB: Petroleum Industry Fiscal Bill

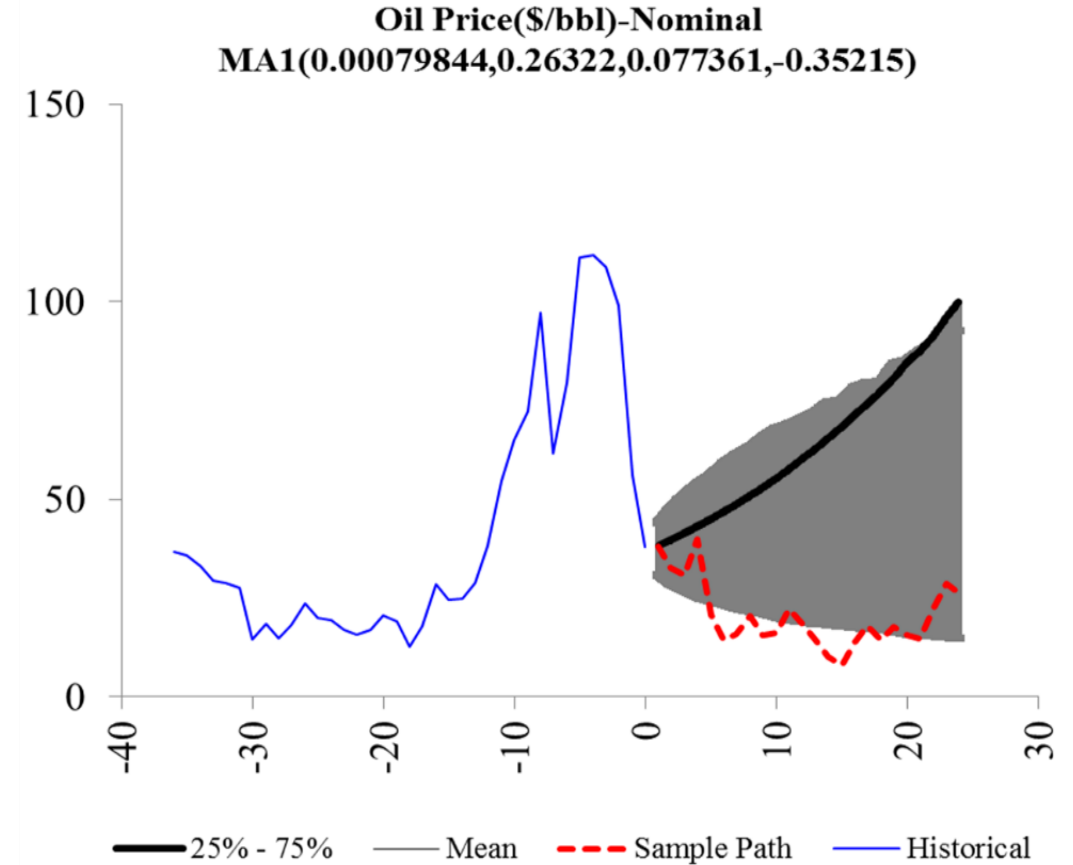
PPT: Petroleum Profit Tax

PIT: Petroleum Income Tax

CEF: Cost Efficiency Ratio

PROBABILITY DISTRIBUTIONS

S/N	Variable	Probability Distribution	Graphs	Justification
1	Upstream field CapEx	Triangular (0.8, 1.0, 1.2)		Based on the observed distribution for lifecycle CapEx less than or equal to \$2,000Million
2	Gas plant CapEx	Triangular (0.8, 1.0, 1.4)		Basis derived from Upstream CapEx
3	Upstream field OpEx	Triangular (0.4, 1.0, 1.2)		Based on the observed distribution for lifecycle OpEx less than or equal to \$2,000Million
4	Gas plant OpEx	Triangular (0.4, 1.0, 1.2)		Basis derived from Upstream OpEx
5	Discount rate	General Beta (2, 2, 0.10, 0.15)		Based on price distributions of securities according to McDonald (1996)



VALUE DISTRIBUTION (Deterministic) – Repeal of AGFA reduces the gas plant NCF contribution to 42.40%.

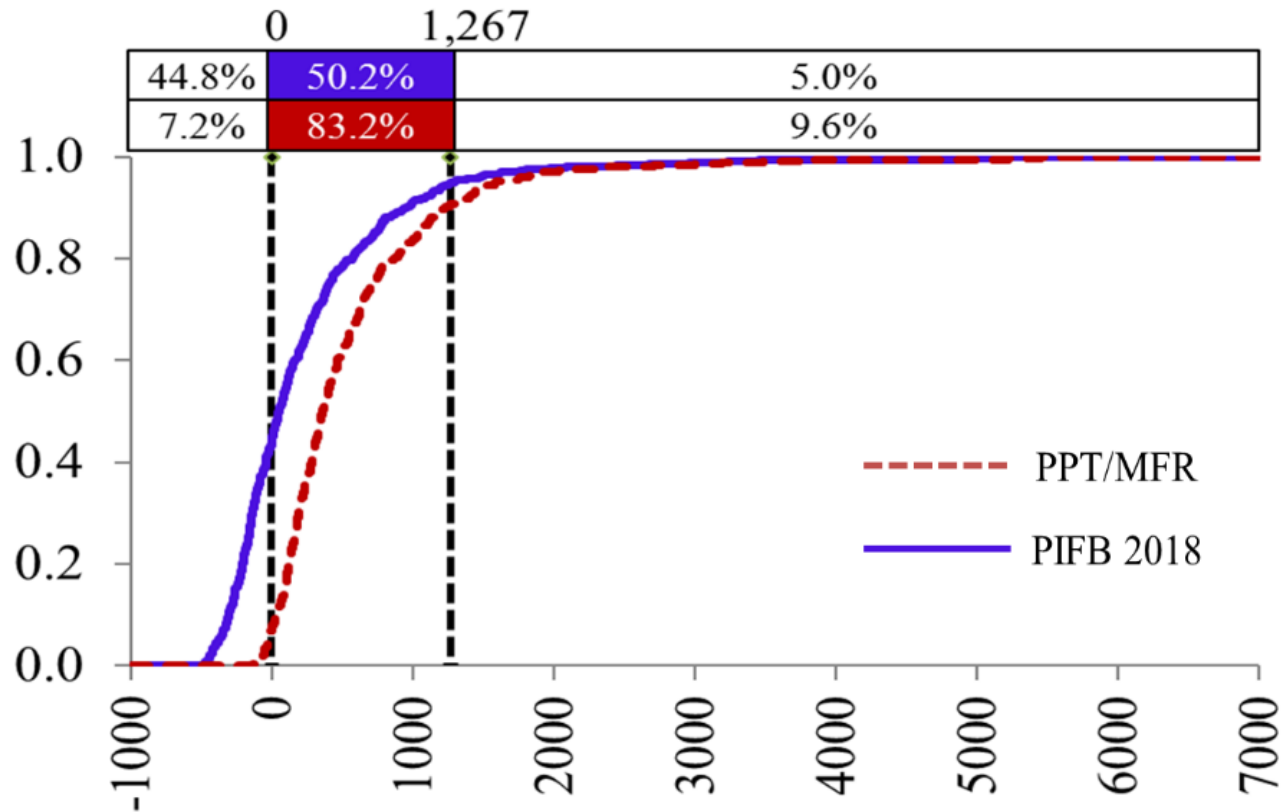
GAS PLANT PROJECT	Units	PPT/MFR	PIFB 2018
Revenue	\$MM	5,727.60	5,727.60
CapEx	\$MM	-	385.00
OpEx	\$MM	3,297.79	3,297.79
Gov't Take	\$MM	625.51	504.24
NCF	\$MM	1,804.29	1,540.57
NPV 10%	\$MM	626.63	335.12
IRR	%	NA	20.85%
MCR	\$MM	NA	(360.71)
Payout	Yrs	NA	7.00
Gov't Take (%)	%	26%	25%

UPSTREAM PROJECT	Units	PPT/MFR	PIFB 2018
Revenue	\$MM	5,461.03	5,461.03
CapEx	\$MM	1,612.98	1,227.98
OpEx	\$MM	1,155.16	1,155.16
Gov't Take	\$MM	1,693.06	985.04
NCF	\$MM	999.83	2,092.86
NPV 10%	\$MM	(149.27)	405.52
IRR	%	7.54%	19.39%
MCR	\$MM	(1,129.97)	(649.81)
Payout	Yrs	11.00	9.00
Gov't Take (%)	%	63%	32%

**From a contribution of
64% of total investor
NCF under PPT**

MIDSTREAM VALUE (Probabilistic) – Repeal of AGFA in PIFB 2018 shifts the Investor Risk in the Gas Plant Upward

**Comparison of Gas Plant NPV CDF*
Between PPT/MFR and PIFB 2018**

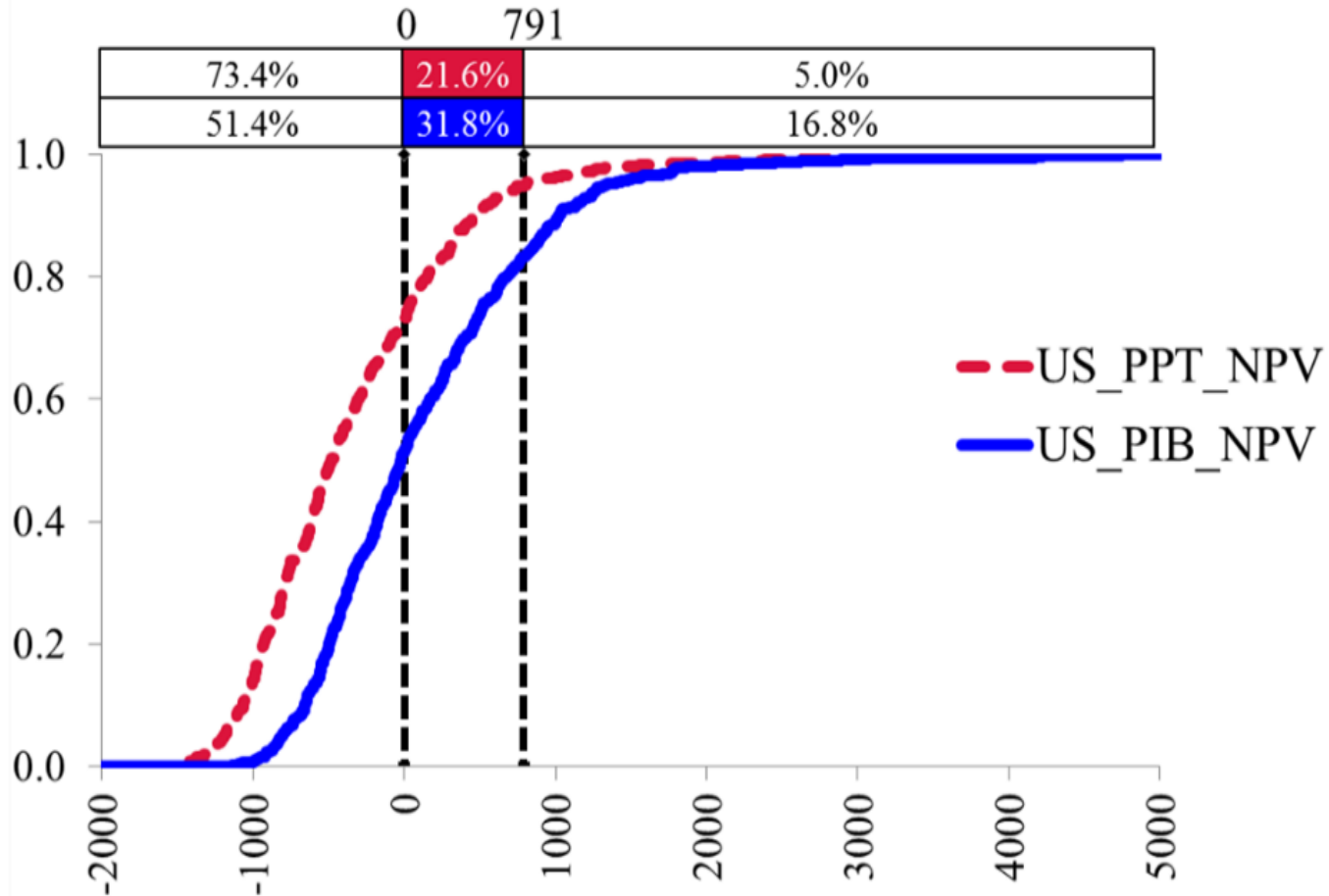


* Cumulative
Distribution Function

With AGFA under PPT, probability of NPV<0 is ~7%. Without AGFA under PIFB, this probability of NPV<0 increases to ~45%.

UPSTREAM VALUE (Probabilistic) – Repeal of AGFA in PIFB 2018 shifts the Investor Risk in the Upstream Downward

Comparison of Upstream NPV CDF Between PPT/MFR and PIFB 2018



with AGFA there's a 73.4% chance of returning an NPV < 0; however by adopting the proposed PIFB2018, that probability of returning an NPV < 0 declines to 51.4%.

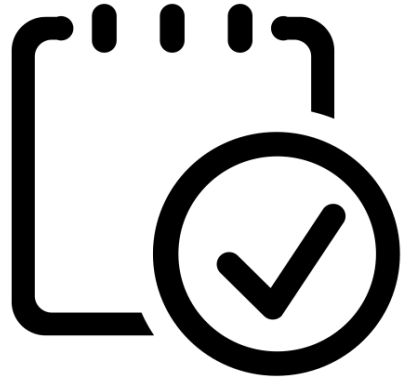
KEY CONCLUDING POINTS

- Policy makers have been determined to excise the AGFA provisions from the petroleum laws in Nigeria
- The chief consideration for this is to do with the intent to develop a self-sustaining midstream segment independent of the performance and ability of oil projects to “carry” them.
- Repeal of AGFA will dramatically increase the riskiness of midstream gas utilization projects,
- While decreasing the riskiness of upstream oil projects on which gas projects are currently allowed to draw fiscal support from

KEY CONCLUDING POINTS

- Possible consequences of this repeal:
 - Potential investors with oil portfolios to shun project developments in midstream gas utilization as gas projects' risk profiles are heightened while upstream oil projects are further “derisked”.
 - Investors in the gas utilization projects will seek higher cost or market reflective prices and/or tariffs for processed gas with implication for gas-based industries
 - Investors pursue optimised costs for gas projects, seek improved contracting cycle times for projects to engender a self sustaining midstream segment.

KEY RECOMMENDATIONS...



- Ratification of the fiscal proposal to excise AGFA
- Midstream gas investors to emplace risk mitigation measures to further reduce the risk of $NPV < 0$ post-AGFA.
- For government to be acutely aware of project cost benchmarking to preserve value to be taxed.
- Government developed Tax expenditure models to track tax benefits implied by the government granted incentives

END
