Nigeria's Decade of Gas

Sustaining Policy Improvements to Drive Growth in the Natural Gas Sector

NGA INDUSTRY MULTILOGUES 2

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"I understand now what Hell is. Hell is the endless and eternal sessions of the natural gas conference"

James R. Schlesinger
(First US Secretary of Energy)

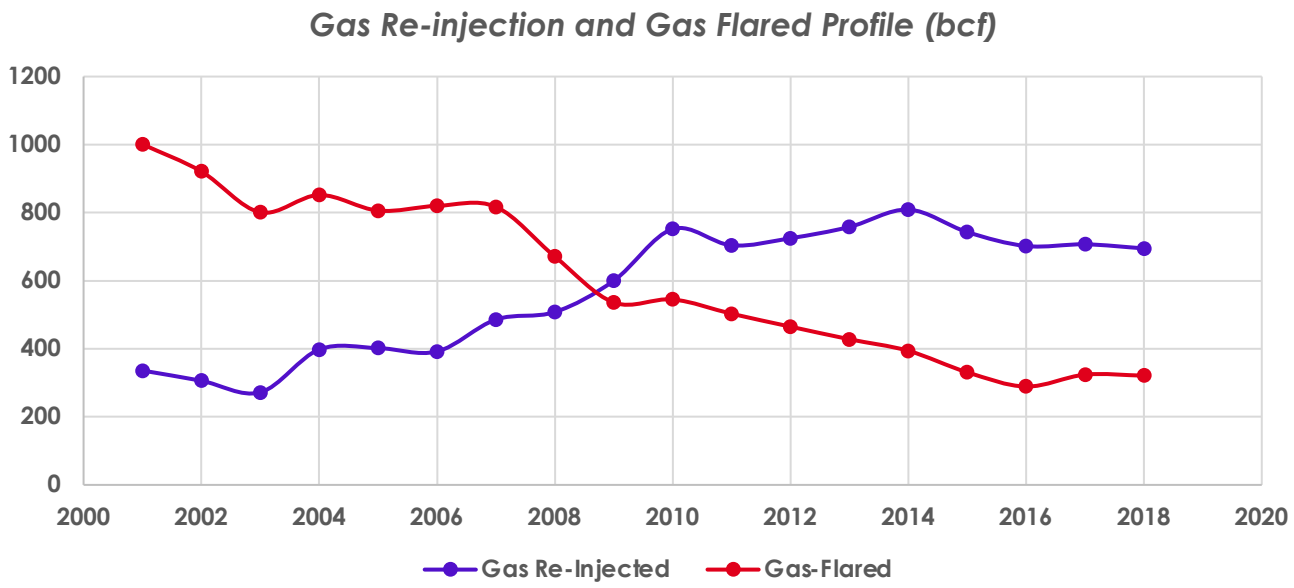
DomGas Penetration: Key Initiatives

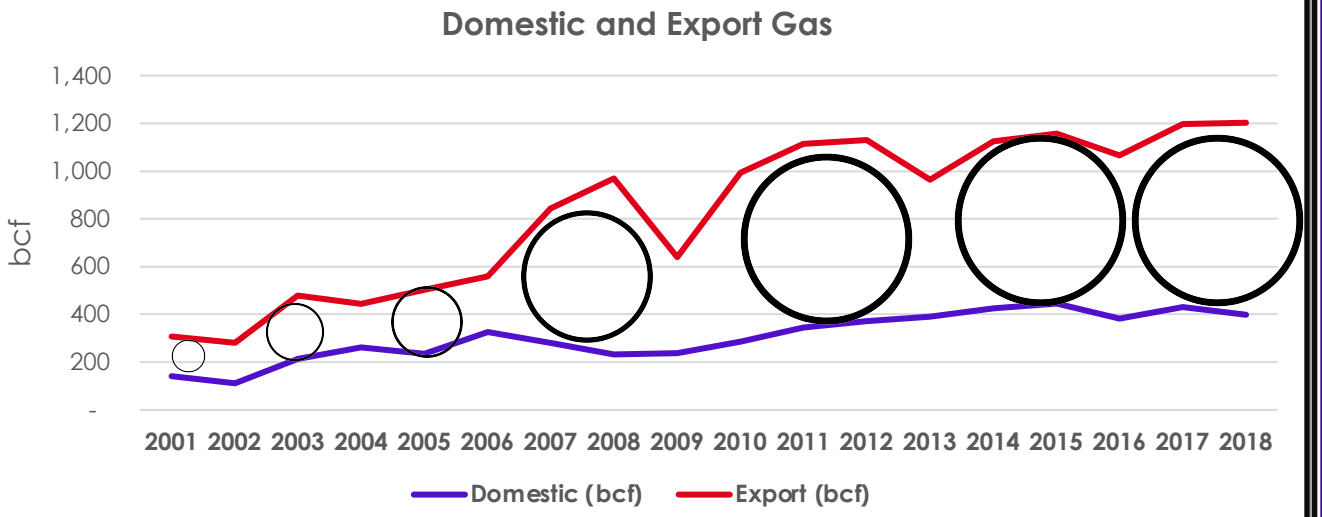
Year/Decade of Gas

- Gas Flare Commercialisation Programme- 900mmscf of gas for commercialisation
- Auto-Gas Policy- seeks to convert no fewer than one million vehicles from diesel/gasoline fired to gas
- Infrastructure (AKK)/Gas Transportation Network Code – A critical enabler of the domestic gas market
- Petroleum Industry Bill currently with the National Assembly
- Central Bank of Nigeria/MPR Intervention Facility for the National Gas Expansion programme -

Year/Decade of Gas

Key Statistics: Rebalancing Domestic/Export Gas Ratio





a. *Increase in gas production of 965bcf from 2001-2018 which represents 50% growth with NAG contributing 83% of the total growth.*

a. *Gas Export grew by 895bcf (93% of total production growth) during the same leaving 7% for domestic market*

a. *Flared gas quantity has dropped by circa 67% over the years while Gas re-injected spiked by 106% from 336bcf to 695bcf*

b. *Domestic market share of total gas utilised at 15% has not changed while export moved from 32% in 2001 to 46% in 2018*

Deepening the Reforms/Initiatives: Focus Areas

I. Review of the Royalty Rates in the Petroleum Industry Bill (PIB) for Gas produced and used in-country.

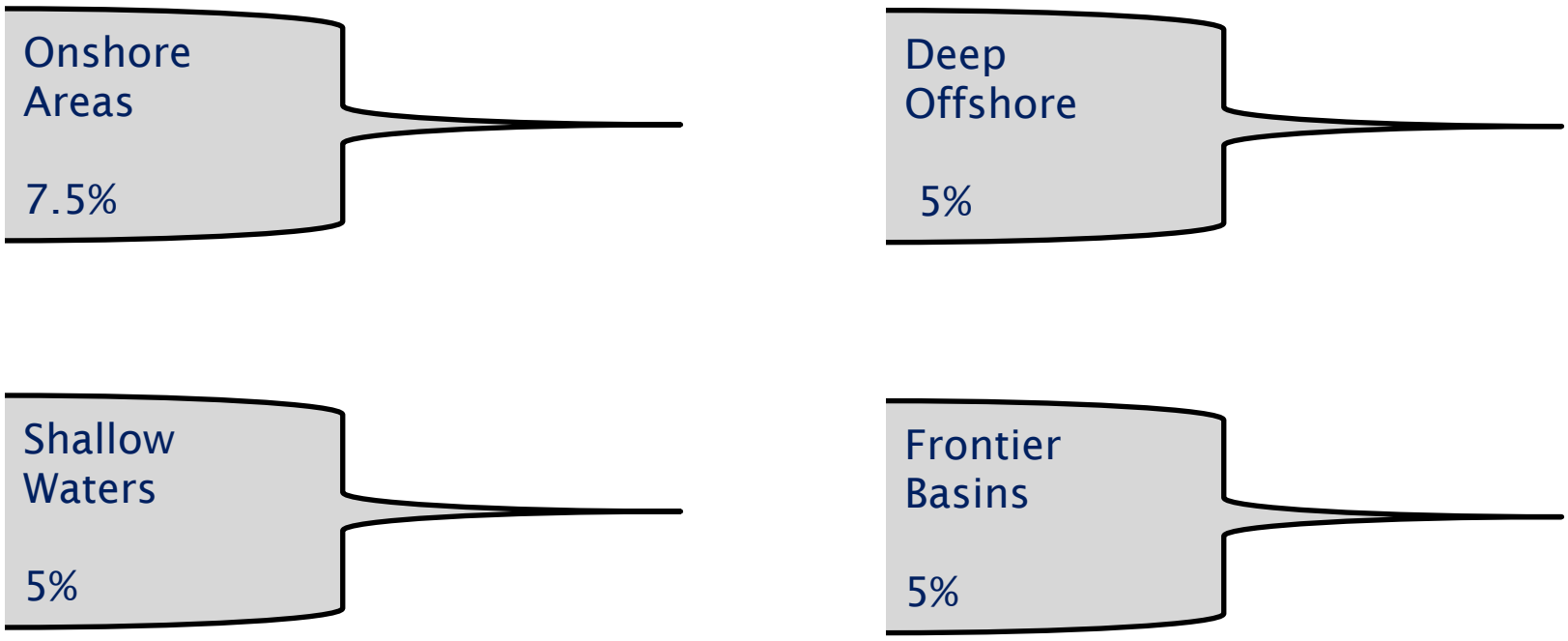
II. Review of the Nigerian Gas Transportation Network Code

III. Introduction of economic rationality into domestic gas pricing

IV. Address FX Risk across the value chain including payment for gas in naira as well a the burden of dollar dominated acquisition facility in the power sector through possible intervention

V. Clear, realistic triggers and timeline for transition to a "Willing Buyer, Willing Seller" pricing arrangement -*"when there are sufficient number of wholesale traders in the domestic gas market' one of the triggers .*

Gas Royalty : Domgas



Recommendation – 0% Royalty rate on domestic gas. Any fiscal impact on government revenue to be offset by increased revenue from taxes on incremental volumes

Gas Transportation Network Code: *A Few Highlights*

"As key enabler of the domestic gas market, the headline vision is to help deliver grow gas infrastructure, expand gas utilisation, curb gas flaring, and provide codes to standardise the gas value chain in line with global best practices"

- ✓Access to the system is provided in a way that creates an efficient, level playing field.
- ✓Allocation of all the transmission pipeline capacity within the system using an approach called 'Open Access'
- ✓This means that all entities that want to use some of that capacity have an equal and fair chance of getting it.
- ✓Access to the system by any company wanting to transport gas through the System must be a party to the Network Code except for non-code arrangement
- ✓Forms the basis of the commercial contract arrangements between gas transporter(s) and shippers and other clearly defined parties.
- ✓It defines the commercial rights and responsibilities of all providers and users of the gas transportation system.

Gas Transportation Network Code: Any Fundamental Change?

Scope of the Network Code

For the purpose of the Code, system means the pipeline systems known as the Escravos-Lagos Pipeline System, the Oben-Ajaokuta Pipleine System, the Obiafu/Obrikom-Oben pipeline System system owned by the operator

National Gas Policy 2017

There will be open access to all pipelines and other essential midstream infrastructure, whether located offshore or onshore and the petroleum industry and government will consider the type of network code that is required.

- Clear definition of the common set of standard conditions governing access arrangement between the operator and shippers which includes: processes, capacity allocation, nomination, balancing amongst others
- Capacity Transfer – Capacity released to the secondary market offering potential users of the unused capacity opportunities to secure gas delivery/output
- System balancing – operational efficiency and gas market liquidity enhancement procuring gas more flexibly, agilely reselling their gas holdings in response to market conditions.

Gas Transportation Network Code: Expanding the Scope

Upstream and Midstream Pipeline Networks

- Constitutes an important component of the gas value chain and are therefore relevant to the general aim of domestic gas utilisation

- Fields of marginal economic viability and capital-intensive nature of gas transportation infrastructure requires a broader scope of access to upstream pipeline networks and related facilities

Therefore, the NGTNC Regime be expanded for full coverage of the Domestic Gas Market by 2022 in line DPR's phased/modular plan

Unbundling

- An important principle of the gas policy is that there will be a full legal separation of gas infrastructure ownership and operations

- A general duty imposed on system operators/unbundled transmission undertakings to operate, maintain and develop under economic conditions the secure, reliable and efficient transmission

- Must not discriminate between system users especially in favour of their related undertakings

Gas Transportation Network Code: Expanding the Scope

Shipper's Daily Quantity Input ("SDQI")- Shipper Daily Quantity Input – quantity of gas treated as delivered by a Shipper to the System on that Day at a System Entry Point

INPUT QUANTITIES/ENTRY POINT DAILY QUANTITY DELIVERED("EPDQD")

EPDQD =CQD+NCQD+OBAA

- ✓ Code Quantity Delivered ("CQD")
- ✓ Non-Code Quantity Delivered ("NCQD")
- ✓ Operating Balance Allocation ("OBA") – positive or negative depending on whether the inventory is to be increased or decreased

Shipper's Daily Quantity Output ("SDQO") - Shipper Daily Quantity Output - is the quantity of gas treated as offtaken by a Shipper at a System Exit Point

OUTPUT QUANTITIES/EXIT POINT DAILY QUANTITY DELIVERED("EPDQO")

EPDQO =CQO+NCQO+OBAA

- ✓ Code Quantity Offtaken ("CQO")
- ✓ Non-Code Quantity Offtaken ("NCQO")
- ✓ Operating Balance Allocation ("OBA") – positive or negative depending on whether the inventory is to be increased or decreased

- *The upstream pipeline networks not only play an important role in optimising the operations of the system in overcoming constraints in system capacity (OBAA);*
- *It plays a crucial role in defining the total quantity/volume of gas that passes through the system (EPDQD)*

Gas Pricing: The Thorny Issue

- Building consensus around what constitutes an appropriate pricing is always a contentious issue

- Price Indicators that have been put forward or experimented in in Nigeria include;

  - ✓ Indexation of domestic gas to OECD CPI and alternative fuels such LPFO and crude oil;
  - ✓ Export Parity Price
  - ✓ Rate of Return Pricing

- Rate of Return though conceptually good but with huge flaws in implementation especially with respect to ***Averch-Johnson effect***

- As regional price levels for gas clearly shows, gas reserve profile bears direct relationship with domestic prices of natural gas globally

- Should domestic gas prices reference prices in gas-rich countries or Export Parity Price or a hybrid to better align the interest of domestic consumers and producers?

Proposed Gas Pricing: Differentiated Pricing

Differentiated Pricing

Different categories for pricing purposes created for a commodity that is largely composed of the same standard molecules of one carbon atom and four hydrogen atoms atom (methane)

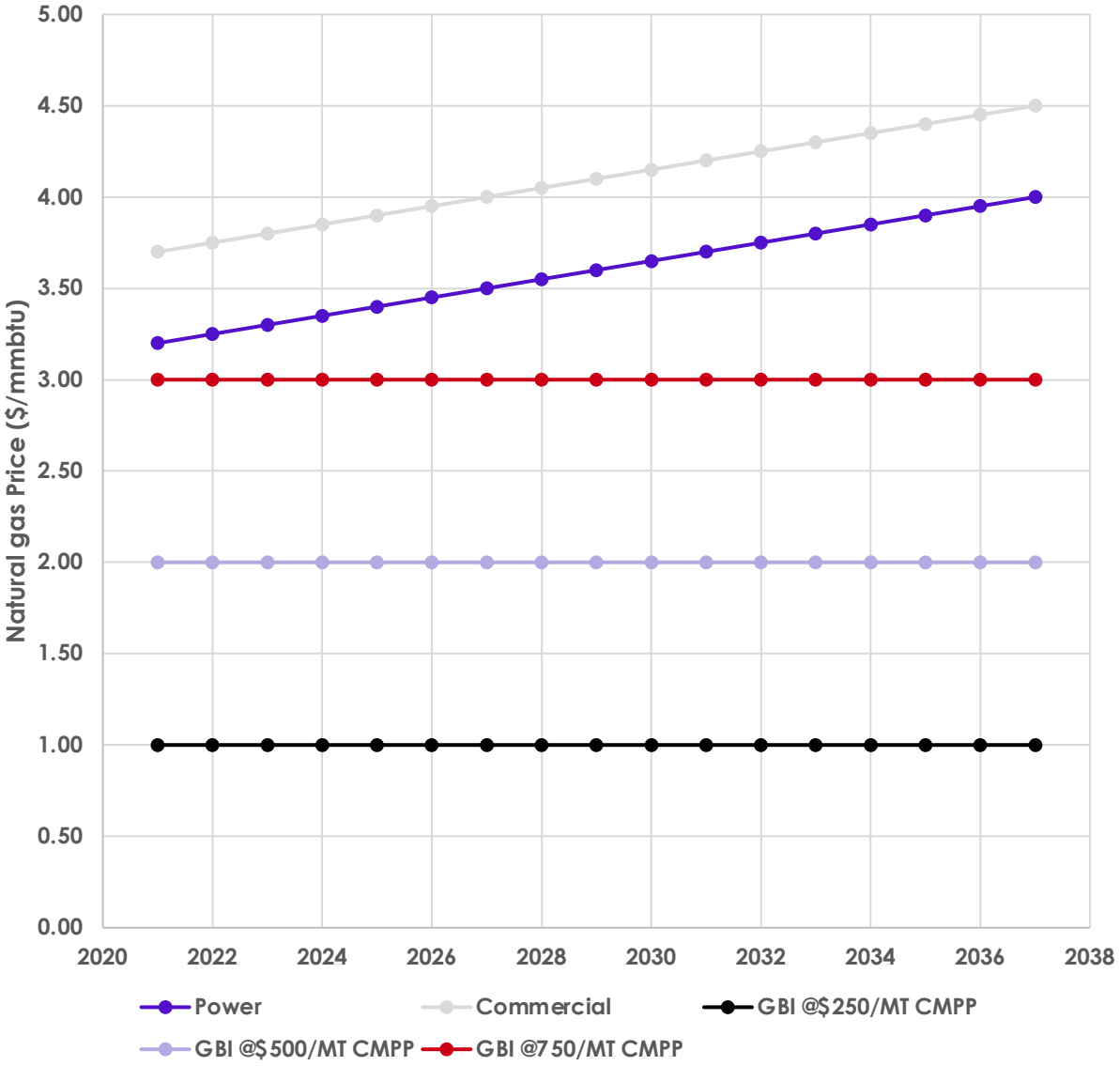
- ✓ Power Sector
- ✓ Commercial Sector
- ✓ Gas-Based Industries (GBI)

Gas Based Industries (GBI)

CP = NRP * (1 + EPF) <=EPP

Where -

a. *CP is the applicable gas price in $/Mmbtu*
b. *NRP is the National Reference Price which is $1.00/Mmbtu*
c. *EPF is the End Product Factor which is described by the following formula (CMPP – PRP)/PRP*
d. *CMPP is the Average Current Month End Product Price in $/MT*
e. *PRP = Product Reference Price in $/MT i.e. dollar per metric tonne which varies depending on the industry*



Proposed Gas Pricing: Changes in Sectoral Consumption/Price Projections

- *Incremental fertilizer capacity (ammonia and urea) estimated at about Fertilizer Plant – 6.2 mtpa minimum.*
- *Total incremental demand for natural gas to increase to circa 122 bscf/annum*
- *Sectoral Gas Consumption ratio likely to change in favour of GBI*

CP = NRP * (1 + EPF) <=EPP

Where -

a. *CP is the applicable gas price in $/Mmbtu*
b. *NRP is the National Reference Price which is $1.00/Mmbtu*
c. *EPF is the End Product Factor which is described by the following formula (CMPP – PRP)/PRP*
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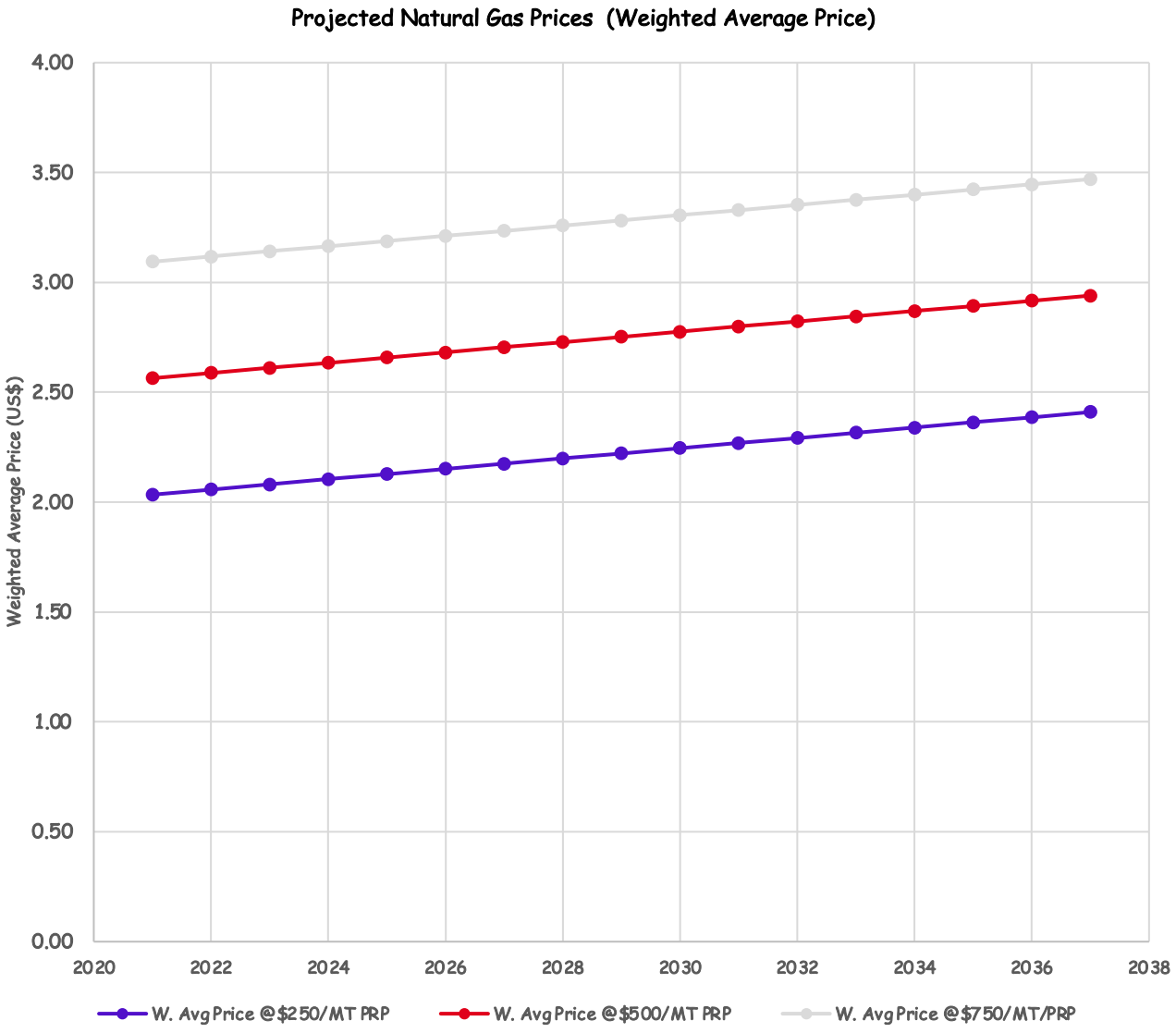
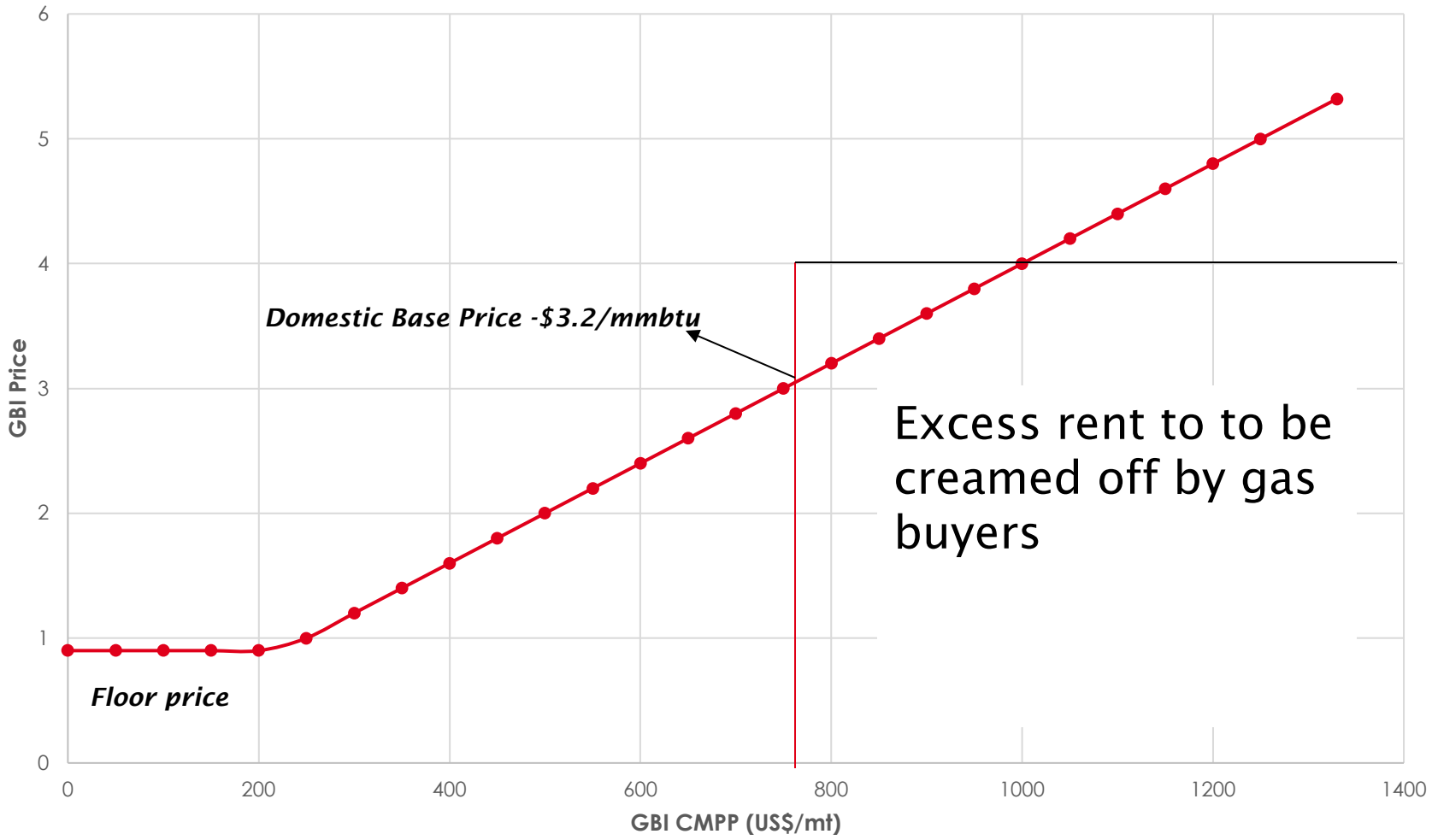
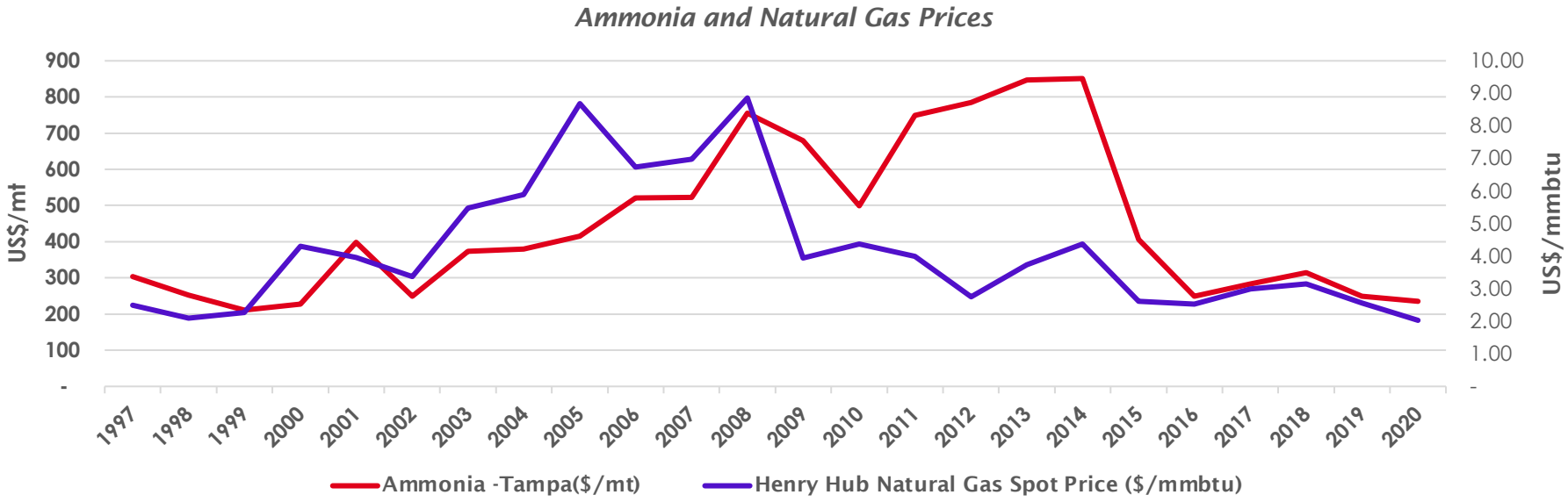


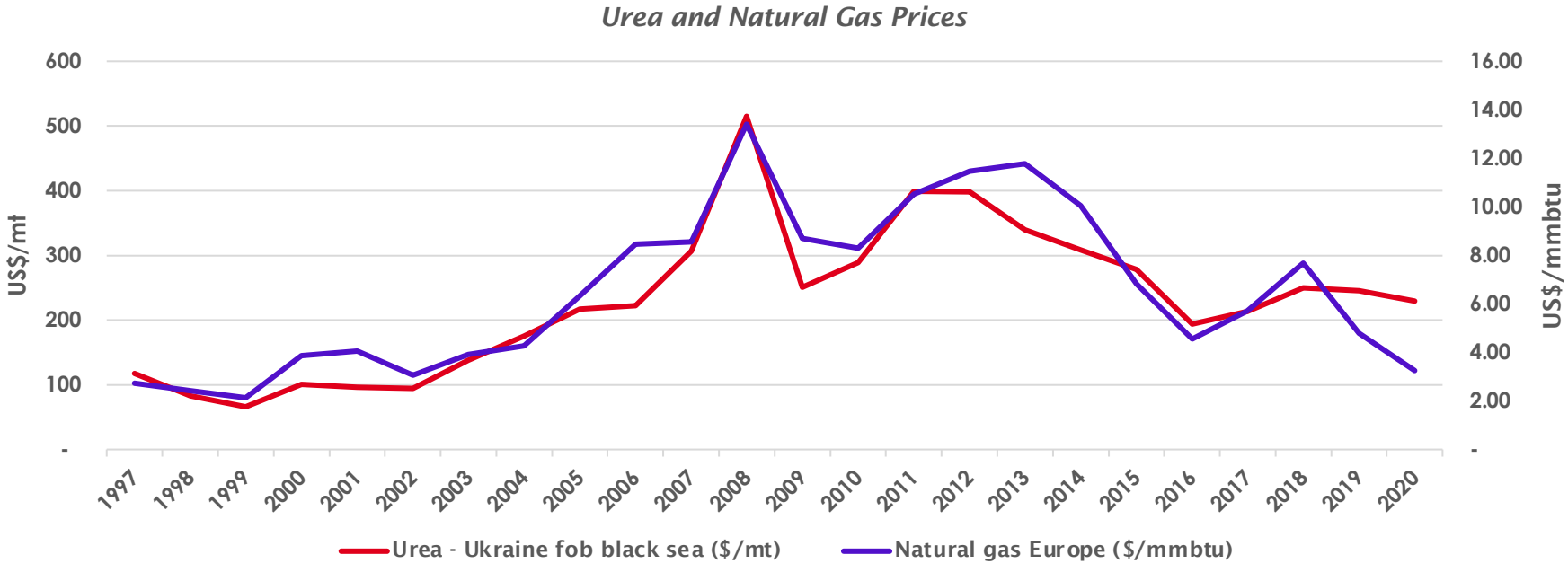
Proposed Gas Pricing: CMPP and GBI Gas Price Relationship



The floor price for GBI set at $0.90/MMBtu while the ceiling price shall be the domestic price applicable for any particular year

Ammonia/Urea and Natural Gas: Price Relationships





Dom Gas and AG Incentive: FX Risk Impact Assessment

Impact

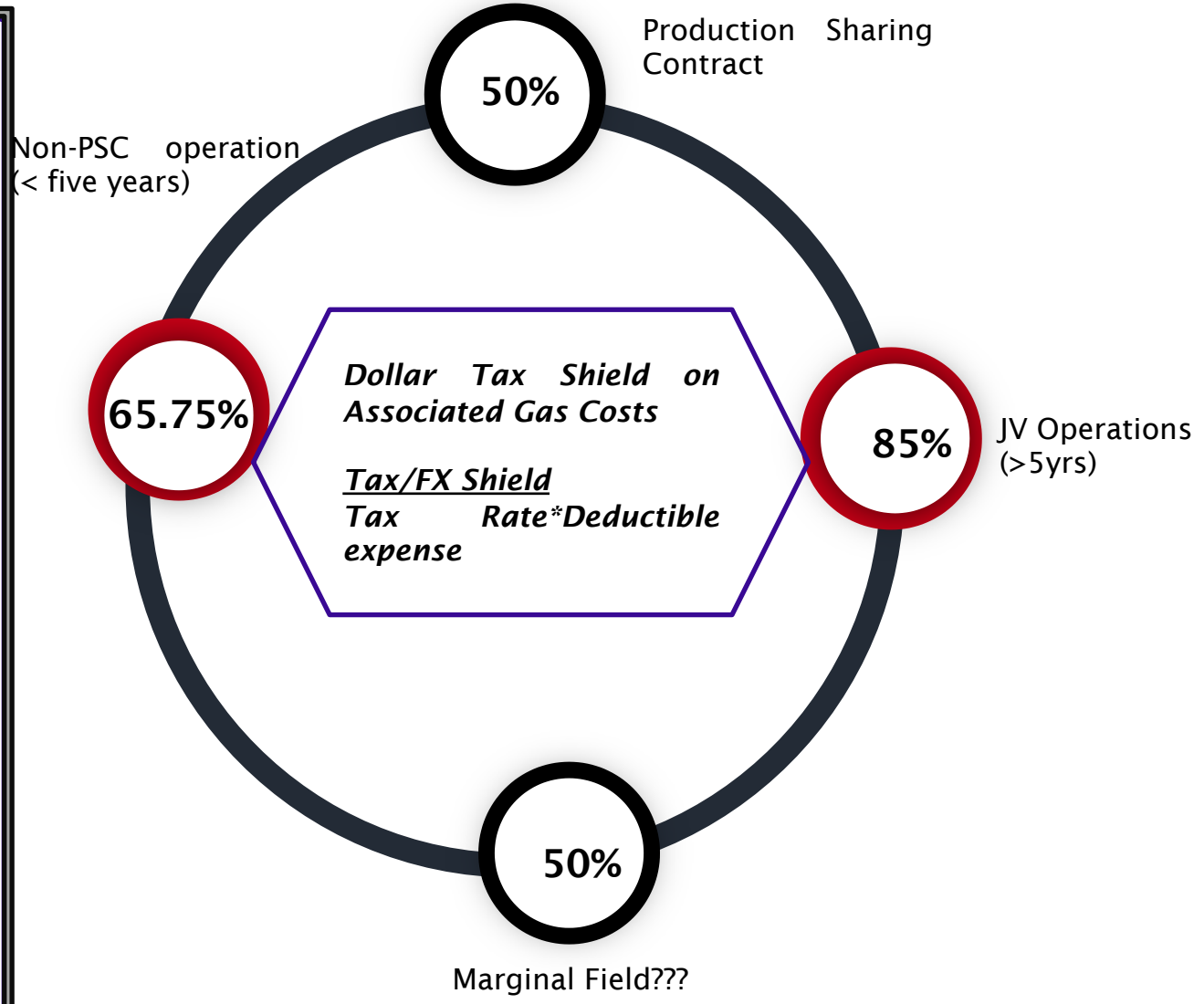
i. **AG ⟶ Export**
No FX Risk

i. **AG>=DGD(Actual):**
Embedded FX mitigation (partial)

i. **AG<DGD:**
shield less than (i) above

i. **DGSD=NAG:**
full exposure to FX risk with a caveat

In some sense, irrespective of AG/DSO ratio and local cost component of AG, there is FX risk though with varying degrees



AG-Associated Gas; NAG – Non-Associated Gas; DGD – Domestic Gas Delivery

Payment for Gas in Naira: The Burden Carriers

Key Highlights 2018

- 11 upstream players supplied *gas to the domestic market in 2018*
- *Average of 23% of total gas sold (excl NPDC volumes) was delivered to the domestic market.*
- *Payment for DomGas volumes in Naira -Seplat and Frontier Oil the hardest hit? A trend analysis provides more insight*

a. *Domestic market focused pure-play gas producers (NAG) have no S.11 PPTA (AGFA) cost offset advantage and therefore most impacted*

Upstream Suppliers	Local+IPP	Export	AG	% of Dom Gas Supplies	% Local vs AG
Shell	37,467	602,216	61,360	5.9	61.1
SNEPCO	-	37,836	43,009	0.0	0.0
Chevron	114,974	68,486	118,650	62.7	96.9
NAOC	67,673	148,118	114,141	31.4	59.3
TEPNG	-	212,891	203,122	0.0	0.0
TUPNI	-	113,716	192,183	0.0	0.0
ADDAX	-	113	34,629	0.0	0.0
Pan-Ocean	5,535	-	6,013	100.0	92.1
NPDC	16,047	-	39,705	100.0	40.4
Niger Delta	336	11,463	1,233	2.8	27.2
Platform	1,109	74	9,439	93.7	11.7
Energia	1,185	-	6,242	100.0	19.0
Seplat	117,754	-	20,745	100.0	567.6
Frontier(Savannah)	22,848	-	0	100.0	57118850.0
Newcross	-	1,788	6,487	0.0	0.0
Eroton	12,137	-	26,789	100.0	45.3
Aiteo	-	5,681	17,273	0.0	0.0
Total	397,063	1,202,383	901,020	1,599,446	

Source: DPR/NNPC Reports

mmscf

Recommendations

- Zero Royalty Rate on natural gas delivered to the domestic market
- The scope of the Nigerian Gas Transportation network be expanded for full coverage of the domestic gas market in line with DPR phased plan
- The transitional arrangement for GBI and Power Sector pricing should reflect market elements
- The gas to GBI pricing formula be reviewed – the floor and cap should be removed
- CBN special naira- denominated refinancing arrangement for acquisition facilities in the power sector to mitigate exchange rate risk


Thank you!