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**CONSULTATION DOCUMENT**  
**ON**  
**NATURAL GAS INDICATIVE PRICES FOR STRATEGIC INVESTMENTS**

**Disclaimer**

This document is a working document of the EWURA for consultation and does not prejudice the final form of any future decision.

20 December 2016  
Dar es Salaam

## EXECUTIVE SUMMARY

1. This Consultative Document has been prepared by the Energy and Water Utilities Regulatory Authority (EWURA) to solicit views, comments and views to Consultation Document issued by EWURA in preparation of natural gas Indicative Prices for Strategic Investments only. The Indicative Prices for the rest of customers need time to determine and shall be dealt with during the third quarter of FY2016/17 when Tanzania Petroleum Development Corporation (TPDC) and other service providers submit to EWURA the tariff applications. The work involves getting raw data from service providers, verifying and balancing tariffs to determine appropriate Indicative Prices based on cost recovery principles. The infrastructures involved are very expensive and the investments made, need to be recovered over 20 to 40 years.
2. There are four natural gas processing plants and three transmission pipelines. The first natural gas processing plant has the capacity of 105 million standard cubic feet per day. The second processing plant is located on Songo Songo Island capable of processing 140 MMscfd of natural gas. The third processing plant is located at Mnazi Bay capable of processing 10 MMscfd of gas. The fourth processing plant which is located at Madimba has the capacity of 210 MMscfd. The first transmission pipeline of 232 km long from Songo Songo Island to Dar es Salaam is capable of delivering 105 (105 MMscfd) of natural gas; the second one of 28.5 km long from Mnazi Bay to Mtwara is capable of delivering 27 MMscfd of natural gas; and the third one of 548 km long from Madimba to Dar es Salaam capable of delivering 784 MMscfd of natural gas.
3. The Government has been inviting foreign investment to run the industrial economy but investors demand the indicative price of natural gas the business could be transacted. Indicative Prices are defined as maximum costs that the natural gas end-users anticipate paying or consider reasonable to pay for a particular good or service. It could refer to a situation-
  - (a) when a licensee sells at a price just below the main price of its competitor; or
  - (b) where a licensee sells good or service at a large discount to a previously advertised reference price.
4. Pursuant to Sections 2 and 20 of the Tanzania Investment Act (Cap. 38 of the Laws of Tanzania) as amended by the Finance Act, 2014 and the Finance Act, 2015 Strategic Investment is defined as an industry that the Government considers to have significant multiplier effects on the growth of the country's economy, these may include cement, steel reinforcement bars, roofing sheets, fertilizer manufacturing, and petrochemicals.
5. The Parliament enacted the Petroleum Act, 2015 (Cap. 392) and thereafter, Minister for Energy and Minerals made the Petroleum (Natural Gas Pricing) Regulations, 2016. In October 2016, the Ministry of Energy and Minerals called for

service providers in the upstream, midstream and downstream sub-sectors to strategize on the implementation of the Regulations. The upstream service providers were to meet with the Tanzania Petroleum Development Corporation (TPDC), negotiate the wellhead price and TPDC to pool the wellhead natural gas prices into a single wellhead price to be approved by the Petroleum Upstream Regulatory Authority (PURA). Also midstream and downstream service providers were to submit to EWURA applications for natural gas processing, transmission and distribution by 21<sup>st</sup> November 2016, the date set by the Ministry of Energy and Minerals for all service providers to submit input data to calculate Indicative Prices. No service provider submitted the input data, applications for natural gas processing, transmission or distribution services or proposals for Indicative Prices.

6. The stakeholders/investors in the Strategic Investments are in urgent need of the Indicative Price, and the Government expect EWURA to come up with natural gas Indicative Prices by 30<sup>th</sup> December 2016. In the absence of the required input data EWURA has decided to develop this consultation document to consult the general public and service providers on the appropriate Indicative Prices for strategic investments in the natural gas sector as provided hereinafter.

7. You are invited to comment on the views reflected in this document. These views are only an indication of the approach EWURA may take, do not form its final position. The responses to this consultation document will provide important guidance to EWURA in reaching a final position on Indicative Prices to Strategic Investments.

8. In replying to these questions, please indicate the expected impact described in each section of this document on your activities or the activities of firms in your jurisdiction, including estimates of administrative or compliance costs. Please also state reasons for your answers and provide, to the extent possible, evidence supporting your views.

9. In order to assist in the evaluation of your contribution, we would appreciate if you could maintain the structure of this document and indicate clearly the question you are responding to in any additional material you might want to provide.

10. You are invited to reply to this online questionnaire by **27<sup>th</sup> December 2016** at the latest. You are also reminded that any information submitted to EWURA will be made public.

**Target Audience:**

11. The natural gas customers, processors, shippers, aggregators, transmitters, distributors, suppliers, and relevant industry stakeholders.

**Related Documents:**

- (a) The Petroleum Act, 2015 (Cap. 392 of the Laws of Tanzania);
- (b) The Energy and Water Utilities Regulatory Authority Act, 2001 (Cap. 414 of the Laws of Tanzania);

- (c) The Tanzania Investment Act, 1997 (Cap. 38 of the Laws of Tanzania);
- (d) The Finance Act, 2014 (Part X amending Cap. 38 of the Laws of Tanzania);
- (e) The Finance Act, 2015 (Part X amending Cap. 38 of the Laws of Tanzania);
- (f) The Petroleum (Natural Gas Pricing) Regulations, 2016 (Government Notice No. 285 of 7<sup>th</sup> October 2016)

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## 1. INTRODUCTION

1. This Consultative Document provides explanations and questions posed by the Energy and Water Utilities Regulatory Authority (EWURA) to the general public and appropriate service providers (strategic investors, other natural gas customers, upstream service providers, midstream and downstream service providers, and the relevant Government authorities) regarding the Indicative Prices for Strategic Investments.

2. The pricing of natural gas was deregulated on 31<sup>st</sup> December 1999, since then, the natural gas pricing was set by the negotiations between the buyers and sellers. There are more than eight pricing principles involved during the negotiations; many if not all, had no reference to the investment made in Tanzania. The pricing has been mimicking the prices of alternative energy in the market, but they are too diverse from US\$3.17 to US\$16.25 per million British thermal units (MMBtu). Table 1 below depicts the natural gas pricing trend in Tanzania.

**Table 1: Natural Gas Price Differences in Tanzania (in US\$/mcf)**

<b>Service Provider</b>	<b>Type of Gas</b>	<b>Reference Price</b>
TPDC (Songas, Somanga Fungu)	Protected Gas	0.65*
TPDC (Households - Mikochehi)	Additional Gas	3.17
TPDC (Transportation)	Additional Gas	14.03
TPDC (TANESCO)	Throughput Gas	5.14
PAET Limited (TANESCO, Wazo)	Additional Gas	3.48/5.98
PAET Limited (Industries)	Additional Gas	9.34
PAET Limited (Commercial Sector)	Additional Gas	16.25
M&P (TANESCO Mtwara)	Throughput Gas	5.36
M&P (Madimba Gas Processor)	Throughput Gas	3.00

\* US\$0.65/mcf for Energy Charge is payable to TPDC. The Capacity Charge is paid by TANESCO, hence the total price being equivalent to US\$4.20/mcf. Songas is reimbursed US\$3.55/mcf for initial investment.

3. The Parliament enacted the Petroleum Act, 2015 with an emphasis that the Minister for Energy and Minerals has to make appropriate regulations to provide the guidance on how natural gas could be priced. Section 165 provides that pricing of natural gas shall be in accordance with method prescribed in the regulations and shall take into account international best practice. That the Minister for Energy and Minerals shall ensure that-

- (a) the pricing structure provides incentives for promoting investments while sustaining supply and demand for natural gas;
- (b) the natural gas prices to strategic industries and households are affordable and predictable;
- (c) an appropriate pricing structure is in place which encourages economic use of system capacities in the natural gas value chain; and
- (d) natural gas pricing takes into account the Natural Gas Utilisation Master Plan.

4. In October 2016, the Minister for Energy and Minerals made the Petroleum (Natural Gas Pricing) Regulations, 2016 which were published in the Government Notice No. 285 dated 7<sup>th</sup> October 2016. Three weeks later, the Ministry invited all stakeholders to participate in the process that would facilitate review of natural gas prices. All service providers (Tanzania Petroleum Development Corporation, Maurel et Prom, Songas Limited, PanAfrican Energy Tanzania Limited) running natural gas production facilities; the natural gas infrastructures (the processing plants, transmission pipelines, and distribution network systems), and those marketing and selling natural gas to end users were invited to submit their applications and proposals for Indicative Prices.

5. While EWURA has powers under Section 29(2) of the Petroleum Act, 2015 to determine and enforce tariffs, rates, charges and fees payable by a licensee in respect to regulated activities, Section 164 of the Petroleum Act, 2015 provides that-

“EWURA shall, before determining tariffs, rates or charges for natural gas, conduct an inquiry.”

Regulation 21 empowers EWURA to at least once a year, and two months before the end of year, issue the indicative natural gas prices, transmission and non-transmission tariffs.

6. Regulation 30 empowers EWURA to publish the approved natural gas prices or cause them to be published in widely circulated newspapers in both Kiswahili and English languages. Sub-regulation (1) cautions that subject to unforeseen hardship to strategic industry, the Government may make direct financial intervention or pass the subsidy policy addressing the price volatility issues affecting the fertiliser projects and other strategic investments. At the moment, there is no any Natural Gas Subsidy Policy in place.

7. Sub-regulation (2) provides that the natural gas for strategic industry have to be determined by summing up the wellhead price discounted by not more than thirty five percent of the wellhead price, the processing and transmission, and distribution tariff, supply and marketing margins and other strategic investments. For non-fertiliser strategic investments the formula shall be-

$$IGP_x = ((1 - DR_x) \times WHP_x) + GPT_x + GTT_x + GDT_x + M_x$$

where,

IGP<sub>x</sub> means Indicative Gas Price to strategic investment that is not fertiliser project for year X;

DR<sub>x</sub> means discount rate not more than 35% for year X;

WHP<sub>x</sub> means the pooled wellhead gas price for year X;

GPT<sub>x</sub> means the natural gas processing tariff for year X;

GTT<sub>x</sub> means the natural gas transmission tariff for year X;

GDT<sub>x</sub> means the natural gas distribution tariff for year X; and

M<sub>x</sub> means a series of margins from marketing and supply margins to strategic investment margin for year X.

8. To determine GDT<sub>x</sub> and GTT<sub>x</sub> above, costs allocations models are Postage Stamp Model (PSM) and Capacity Weighted Distance Model (CWDM) as provided for under Regulations 13 and 14 therein. GPT<sub>x</sub> will be determined by Non-transmission service method, considering the cost reflectivity test under Regulation 7. In absence of the current data from the service providers, EWURA shall make use of information gathered from stakeholders in September through December 2014 when determining the TPDC natural gas processing and transportation tariff. Instead of using the PSM as done before when calculating GTT<sub>x</sub>, EWURA will apply CWDM.

9. Without prejudice to Regulation 30(2), the discounted wellhead price for fertiliser projects shall base on the netback price calculation of the product produced by strategic investment and using the formula (contained in the Fifth Schedule to the Petroleum (Natural Gas Pricing) below-

$$GP_x = GRP_x + [P_r \times (AUP_x - URP_x)]$$

where,

GP<sub>x</sub> means the natural gas price for a fertiliser project in US\$/MMBtu, the ceiling being US\$7.50/MMBtu restricting and maintaining the cost of production at sustainable level;

GRP<sub>x</sub> means the natural gas reference price or floor price equal to US\$2.60/MMBtu;

P<sub>r</sub> means the premium the seller's participation of urea price, up to twenty five percent (25%) applicable from year 2020;

AUP<sub>x</sub> means the actual Urea (Granular) FOB Middle East in US\$/MT;

URP<sub>x</sub> means the Urea Reference Price of US\$250/MT (minimum acceptable price to achieve and maintain an acceptable level of return from the project.



10. The Indicative price will be determined in Entry Indicative Price and Exit Indicative Price, bearing in mind the Entry/Exit split set at 50:50 respectively, as provided under Regulation 11. This means, at the shipping moment, the shipper shall pay 50% of the tariff, and pay the balance 50% at the exit. The former payment is take or pay, while the latter is paid upon receipt. Notwithstanding the prescribed price reference methodology, EWURA may, upon the expiry of one year from the coming into force of the Regulations, approve any other price reference methodology other than those prescribed in the Regulations.

## **2. PURPOSE OF CONSULTATIVE DOCUMENT**

11. This Consultative Document is on how best the Petroleum (Natural Gas Pricing) Regulations, 2016 could be implemented. It is designed to raise issues and questions that need to be answered in order for EWURA to set Indicative Prices. The Document aims to provide a framework for focused Indicative Price discussions. It puts forward options which are designed to stimulate a response from the public and interested parties. It is essential for all relevant parties to be involved in the consultation process. Consultation is now the hallmark of EWURA, and this principle is strongly subscribed to under Section 164 of the Petroleum Act, 2015. EWURA shall approve other reference price methodology based on the following criteria, where-

- (a) the use of the prescribed reference price methodology proves failure to the satisfaction of EWURA; or
- (b) the required information for use in the existing reference price methodology is not available.

12. Comments are invited from all interested parties to reach EWURA by no later than **27<sup>th</sup> December 2016** and can be forwarded through post office to-

Director General,  
Energy and Water Utilities Regulatory Authority,  
7<sup>th</sup> Floor of LAPF Tower, Opposite to Makumbusho Village, Kijitonyama,  
P.O. Box 72175, DAR ES SALAAM.

or through email under: [info@ewura.go.tz](mailto:info@ewura.go.tz).

13. Prices of natural gas in Tanzania were liberalised in 1999, hence it is done heterogeneously. Some indexing natural gas to heavy fuel oil (HFO) prices, some negotiating arbitrary number tied to US Consumer Price Index, while others set prices transparently considering the cost of service throughout the gas value chain. The main customer at a moment (consuming about 80% of delivered natural gas) is the electric power generation followed by industries (consuming about 20% of delivered natural gas) all located in Dar es Salaam. Some challenges have evolved on how TPDC could make the huge capacity useful to the economy. Some industries are located closer to the gas fields, hence claiming to be considered when pricing for the

transmission network. Recent acceptance of a fertiliser company to buy natural gas and produce urea fertiliser domestically, poses another challenge.

14. The natural gas is one of fuel sources liberalised by the Government of Tanzania (GoT) on 31<sup>st</sup> December 1999. Since then, GoT never set prices. Tanzania has started using natural gas to its economy in July 2004 based on long negotiated agreements between GoT, TPDC, Tanzania Electric Supply Company (TANESCO) and private parties to Songas Limited (Globeleq Energy, PanAfrican Energy, CDC Group, and Tanganyika Development Finance Company Ltd.). At that time, two types of natural gases were sold to a number of customers, the Protected Gas (87% of Maximum Annual Quantity paid on take or pay basis as Capacity Charge, 13% of sold natural gas paid as Energy Charge) and Additional Gas (sold on 20 to 25% discounted price of alternative fuel such as Heavy Fuel Oil (HFO)). Since then, various regulated service providers, including Maurel et Prom and TPDC, adopted a number of ways to set natural gas prices. Natural Gas Prices in Tanzania range from US\$3.17 to US\$16.25 per thousand cubic feet (Mcf).

15. For the last 10 years, Dar es Salaam has been served by one gas pipeline from Songo Songo Island about 232 km South of Dar es Salaam. In 2007, Artumas Group & Partners acquired a franchise of Lindi and Mtwara to be operated by the private sector. The natural gas prices negotiated by TPDC and Artumas Group & Partners under the Production Sharing Agreement (PSA) set as a bundled figure for commodity, processing and transportation from Mnazi Bay to Mtwara. Later on, Artumas Group & Partners was acquired by Wentworth Resources and Maurel et Prom, and sold its interests in Mtwara Power Plant to TANESCO, and those in the PSA to Maurel et Prom.

16. Five years ago from 2011, TPDC was approached by Dangote Cement Company, situated in Mtwara about 40 km north of Mnazi Bay, for natural gas sales. While the first reaction by TPDC, was for Dangote Cement Company to pay US\$8.20/mcf, the buyer was of opinion to pay about US\$4.00/mcf. Since then TPDC and Dangote Cement Company have been at impasse regarding gas pricing. Dangote Cement Company, claims to be-

- (a) one of Strategic Investments identified by the Government of Tanzania;
- (b) located only 40 km from the gas source hence it is not ready to pay a price equivalent to those located at 540 km away; and
- (c) willing to pay for the commodity charge, plus the gas processing tariff and a distance-to-virtual point tariff for transport costs.

17. In May 2016, the Ministry of Energy and Minerals accommodated the applications by Ferrostaal Industrial Projects GmbH (jointly with Haldor Topsoe A/S of Denmark and Fauji Fertilizer Company Ltd. of Pakistan), and Helm AG GmbH, both of German as an investor in the petrochemical complex and the first fertiliser production in Tanzania. Ferrostaal intends to be operational in 2020, producing 1.3

million tonnes of fertiliser per annum. The National Social Security Fund (NSSF), Minjingu Mines & Fertiliser Ltd. and TPDC are local partners to Ferrostaal. While Ferrostaal poses the gas price limit to be US\$1.5/MMBtu, TPDC is struggling to find the best way it can set a counter proposal of natural gas price. On the other hand, EAST COAST has lodged a dispute against PanAfrican Energy, claiming that the natural gas price offered by PanAfrican Energy to EAST COAST is on high side. EAST COAST has appealed to EWURA to resolve the disputes.

18. The Ministry of Energy and Minerals made the Petroleum (Natural Gas Pricing) Regulations, 2016. A wide section of stakeholders was reached in September 2016 to provide comments including Government Ministries, Departments and Agencies (MDAs); natural gas service providers; academicians; research institutions; industries; Non-Government Organisations and the Media. On 30th September, 2016 the Minister for Energy and Minerals signed the Petroleum (Natural Gas Pricing) Regulations 2016 and published in the Government Gazette No. 285 on 7<sup>th</sup> October, 2016 (the Regulations).

19. EWURA undertakes to set the first reference prices for Strategic Investments by 31<sup>st</sup> December 2016. The natural gas pricing mechanism being implemented is prepared based on the principles outlined under Regulation 4 of the Petroleum (Natural Gas Pricing) Regulations, 2016. In addition to the best international natural gas pricing practices, the natural gas pricing for domestic market, takes into consideration-

- (a) the investment and operations costs for natural gas exploration, appraisal, field development, plus a fair profit margin;
- (b) the pricing structure which provides incentives for promoting investments while sustaining supply and demand for natural gas
- (c) natural gas pricing for strategic industries and domestic households are affordable and predictable;
- (d) natural gas pricing that takes into account the use of environmentally friendly fuels;
- (e) the pricing structure that encourages economic use of natural gas throughout the value chain; and
- (f) such other considerations as may be determined by demand and supply forces within and outside Mainland Tanzania.

20. The key components of natural gas pricing include the following-(i) raw input of natural gas price at the wellhead; (ii) allowed cost of services (processing, transmission, distribution, marketing and sales) of natural gas; (iii) supplying, marketing and future investment margins; and (iv) statutory taxes and levies.

### 3. WHAT IS STRATEGIC INVESTMENT?

21. It is important to recapitulate what Strategic Investments are in plain language based on Tanzania Investment Act, 1997. The Act states under Section 2(2), as has been amended from time to time-

“The business specified for the purpose of that section which may enjoy the benefits and protection provided under that Act, are those which-

- (a) if wholly owned by a foreign investor or if a joint venture, the minimum investment capital is not less than Tanzanian Shillings equivalent of US dollars five hundred thousand (US\$ 500,000); or
- (b) if locally owned , the minimum investment capital is not less than Tanzanian Shillings equivalent of US dollars one hundred thousand (US\$100,000).

22. Notwithstanding the changes under Section 2(2) of the Tanzania Investment Act, 1997, the Parliament enacted the Finance Act, 2014 and 2015 which further amended Section 20 of the Tanzania Investment Act, 1997 to read as-

“(1) For the purpose of promoting identified strategic or major investments, the Minister, may by order published in the Gazette, and after consultation with appropriate government authorities and after consultation with the Minister for Finance, specify specific in addition to the benefits provided under section 19 of this Act for any period which the Board may specify.

(2) The benefit conferred under subsection (1), shall not apply to office equipment, stationaries, furniture, sugar, beverages, spirits, tiles, non-utility motor vehicles, crockeries, air conditioners, fridges, petroleum products, cutleries, beddings and electronic equipment.”

(3) Where the Ministers do not agree on any issue or matter in accordance with the provisions subsection (1); the Minister shall within one month from the date of the consultations referred to in subsection (1), submit the matter to the President for consideration.

(4) Notwithstanding section 2(2), a business shall be regarded as strategic or major investment if-

- (a) locally owned, the minimum investment capital is not less than Tanzanian Shillings equivalent to twenty million US dollars (US\$ 20,000,000);
- (b) wholly owned by a foreign investor or is a joint venture, the minimum investment capital is not less than Tanzanian Shillings equivalent to fifty million US dollars (US\$ 50,000,000).

(5) The Government may identify projects and grant special strategic investment status.

(6) Special strategic investment status may be granted to projects which meets the following criteria-

- (a) a minimum investment capital of not less than the equivalent in Tanzanian Shillings of three hundred million US dollar (US\$ 300,000,000);
- (b) investment capital transaction is undertaken through a registered local financial and insurance institutions;
- (c) at least one thousand five hundred direct local employment is created with satisfactory number of senior positions in projects that does not require high and sophisticated technology; and
- (d) capability to significantly generate foreign exchange earnings, produce significant import substitution goods or supply of important facilities necessary for development in the social, economic or financial sector.

(7) Upon grant of special strategic investment status to a project, the Minister shall propose to the National Investment Steering Committee additional specific fiscal incentives.

(8) Where the National Investment Steering Committee approves additional specific fiscal incentives the Minister for Finance shall confer such additional fiscal incentives as approved by the National Investment Steering Committee under an order published in the Gazette.

(9) The National Investment Steering Committee may review every project conferred additional specific fiscal incentives in respect of compliance of incentives granted and advised the Government on whether or not to continue issuing the incentives.”

23. To start with, let us mention some strategic investment in cement production. Dangote Industries (Tanzania) Ltd. is a Tanzania Cement Company, a subsidiary of Dangote Cement Group. It is a largest cement factory in Tanzania, was registered by Tanzania Investment Centre (TIC) as strategic investor in 2011. It constructed and commissioned in December 2015. The cement plant located in Mtwara (about 400 km south of Dar es Salaam or 40 km from Madimba, Mtwara), with about 500 million tonnes of limestone reserves, enough for 149 years, the plant is capable of producing large amounts of high-quality 32.5 and 42.5 grade cements to meet local market needs at competitive prices, as well as surrounding export market by sea. Dangote Industries Tanzania has a capacity of producing 3.0 million tonne per annum of cement plant. It needs 40 million standard cubic feet of natural gas to heat the clinker

and run a 75 MW power plant. Dangote has invested over US\$ 600 million in the cement factory, which will employ over 10,000 direct and indirect employees.

24. With an estimated population of 50 million, Tanzania's portland cement consumption is around 50 kg per capita per annum (equivalent to 2.5 million tonne of cement) which is well below South Korea (of 1,000 kg per capita per annum), the global average (of 536 kg per capita per annum in 2012) and low even Africa (of 61 kg per capita per annum cement consumption). Tanzania's economy is expected to grow at an estimated 7.0% over the next five years, supported by manufacturing, mining and tourism sectors. The improving performance of the economy has fuelled strong growth in cement demand and the prospects remain favourable, given the linear relationship between economic growth and cement consumption. High-quality cement manufacturing is the prime focus of Dangote Cement in Tanzania. Dangote plans to double its cement capacity in Tanzania to 6.0 million metric tonnes by 2019, indicating confidence<sup>1</sup> in the outlook of the country's construction industry.

25. In addition, the Government through TPDC invited fertiliser manufacturing plants to come and invest in Mtwara and Lindi. Ferrostaal Fertilizer (Tanzania) is a joint venture group<sup>2</sup> of Ferrostaal Industrial Projects GmbH (German), Haldor Topsoe A/S (the Danish industrial catalyst producer), Fauji Fertilizer Company Ltd. (Pakistan), Tanzania Petroleum Development Corporation (TPDC), the National Social Security Fund (NSSF), and Minjingu Mines & Fertilisers Ltd (Tanzania). When negotiations are concluded, the parties to fertiliser plant intend to investment up to US\$ 1.9 billion. They plan to produce 1.3 million metric tonnes of fertiliser per annum when the plant begins operation in 2020. The plant will manufacture fertilizer in Lindi Region whereby 80% of the ammonia outputs will be exported. It will enable Tanzania to monetise its huge (57.25 trillion of natural gas) reserves in the production of ammonium fertiliser as well as create at least 5,000 jobs, and boost agricultural productivity.

26. Haldor Topsoe was found in April 1940. It is a world leader in catalysis and surface science. The company employs some 2,800 employees and achieved revenue of DKK 5,685 million (equivalent to US\$ 1.0 billion) in 2014. Despite the negative market conditions affecting its entire industry, it is positive that in 2015 Haldor Topsoe maintained a strong operating cash flow (DKK 750 million equivalent to US\$ 106.439 million). Again, Ferrostaal Industrial Projects is an international project developer and EPC service provider for the realisation of industrial plants. It owns companies in around 40 countries and employs over 2,700 employees. Fauji Fertiliser Company Ltd (FFC) is a public limited company of Pakistan. It manufactures and markets its own Urea products as well as Urea & DAP of its subsidiary company, and imported DAP, SOP and Boron. FFC was found in 1954. Generally, the foreign investors are strong companies to come to Tanzania.

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<sup>1</sup> Bloomberg Intelligence (2016): Africa's cement industry is expanding fast, the analysis by Sonia Baldeira. <http://www.bloomberg.com>

<sup>2</sup> Haldor Topsoe (2015), The Annual Report of Haldor Topsoe for 2015

27. Helm Fertiliser Corporation is wholly owned subsidiary of Helm AG of Hamburg, German. It distributes and markets fertilisers throughout America. Helm AG is Germany-based family owned company found over 110 years ago. Tanzania plans to construct US\$1.5 billion fertilizer plant in Mtwara. Helm AG team up with the local authorities in Mtwara Region to use natural gas as their main raw material to produce about 3,900 metric tonnes of urea and 2,200 metric tonnes of Ammonia. The plant is expected to begin its operations in 2020 and will provide 5,000 direct and indirect jobs during the construction and operation period. The plant is expected to boost the national economy with the agricultural sector benefiting the most. About 80% of the manufactured fertilizer will be exported.

28. A strategic investment is a transaction that is closely related to joint ventures. In strategic investments, one or two or three companies make an investment in a joint venture. These companies enter into agreements that are designed to serve shared business goals. The aim may be to gain access to a particular product or technology that the start-up company is developing, or to support young companies that could become customers for the corporation products. Strategic Investments have to be planned well, respected, and the agreements entered therein have to be respected. EWURA framework for consultation is open, simple and transparent. The current one is aiming at setting Indicative Prices of natural gas for Strategic or Major Investment as defined in Section 20 of the Tanzania Investment Act, (Cap. 38) and as amended by the Financial Act, 2014 and 2015.

#### **4. LEGAL BASIS FOR DIRECTION OF NATURAL GAS PRICING**

29. The Petroleum (Natural Gas Pricing) Regulations, 2016 sets out a number of directions to Mainland Tanzania on natural gas entry/exit tariff methodology, its inputs and related policy matters. As EWURA is obligated under the Petroleum (Natural Gas Pricing) Regulations, 2016 concerning common rules for the internal market in natural gas, as a minimum to approve a methodology that is used for network tariffs for connections onto the system. Section 165 of the Petroleum Act, 2015 provides the Minister for Energy and Minerals with powers to make the Petroleum (Natural Gas Pricing) Regulations, 2016 to determine natural gas pricing guidelines.

30. The roles of EWURA are spelt out in section 30(2)(f) of the Petroleum Act, 2015 that EWURA shall approve applications for tariffs and prices. Section 143(1)(g) states that EWURA shall revoke a licence where the licensee violates the tariffs, rates and charges established by EWURA. Section 149(1)(a) requires EWURA to prescribe the terms and conditions attached to tariffs, rates and charges for natural gas transportation. Section 155(4) states that a distribution licensee has to provide distribution services to third parties in order allow natural gas to be supplied to any eligible end-user at tariffs endorsed by EWURA, which takes into consideration the Natural Gas Utilisation Master Plan. Section 163(3) requires EWURA to prescribe tariffs and terms attached to them. Under Section 164, EWURA is required to conduct inquiries before determining tariffs, rates or charges for natural gas

31. Regulations 10 through 21 of the Petroleum (Natural Gas Pricing) Regulations, 2016 requires EWURA to oversee implementation of reference price methodology, Entry/Exit split, Postage Stamp methodology, Capacity Weighted Distance methodology, secondary price adjustment, categories of secondary price adjustment, equalisation, benchmarking, storage, cost allocation test, and Indicative Gas Pricing. Regulations 24 through 30 requires EWURA to review, approve and publish in widely circulated newspapers in both Kiswahili and English languages. Regulation 32 empowers EWURA to supervise, inspect, monitor and enforce the Regulations on Indicative Gas Price. Regulations 34 and 35, empowers EWURA to regulate quality and quantity of natural gas, and make rules and guidelines.

32. Regulation 22 requires the aggregator to pool the wellhead prices from different producers (upstream service providers) and calculate a single wellhead prices for all its customers. PURA is mandated to review and approve the wellhead price proposed by the aggregator. Regulation 33 empowers PURA to supervise, monitor, inspect and enforce the Regulations on wellhead gas prices. Regulation 37 requires PURA to process the exemptions.

## **5. DIRECTIONS TO NATURAL GAS ENTRY/EXIT TARIFF METHODOLOGY**

33. This section outlines Tanzania directions to natural gas industry on the matters relating to natural gas Entry/Exit Tariff Methodology and associated matters. This includes-

- (a) the choice of methodology;
- (b) the expansion constant values;
- (c) annuitisation factor;
- (d) rescaling of tariffs;
- (e) treatment of K-factors;
- (f) decision on related matters; and
- (g) entry/exit split.

### **5.1 THE CHOICE OF METHODOLOGY**

34. The Natural Gas Pricing Methodology directs the natural gas industry to implement both the Capacity Weighted Distance Methodology for the transmission systems and the Postage Stamp Methodology for the distribution network systems in Mtwara, Lindi and Dar es Salaam. In line with the requirements of those methodologies, the natural gas industry must use a forward looking unit cost matrix that is reflective of the unit costs for each path between each entry point and all exit points.

### **5.2 THE EXPANSION CONSTANT VALUES**

35. One of the inputs into both the Capacity Weighted Distance Methodology and Postage Stamp Methodology are Expansion Constants (unit costs) for determination



of a numerical value for the cost of expanding the system to allow unit (MMBtu) of natural gas to flow a certain distance (km) i.e. the Long Run Marginal Cost. After considering the feedback received as part of the consultation process, EWURA considers that the values established in the Draft Decision will be appropriate.

### **5.3 ANNUITISATION FACTOR**

36. In the Draft Decision to be proposed by EWURA, it will include an Annuitisation Factor. The Annuitisation Factor is the annual payment made to remunerate the return of and on capital as well as associated operating costs of delivering gas to the system, whilst taking into account a depreciation profile of an asset.

### **5.4 RESCALING OF TARIFFS**

37. Where the primary tariffs calculated do not recover or over recover the Required Revenue to be obtained from Entry Points or from Exit Points then tariffs will be rescaled upwards or downwards as necessary via the application of a secondary adjustment known as additive or subtractive rescaling with the purpose of achieving recovery of the Required Revenue.

### **5.5 TREATMENT OF K-FACTOR**

38. It is expected that there would be under/over recoveries at the existing Entry and Exit points that will require correcting in the coming years. In the Draft Decision Order EWURA shall consider retaining separate K-Factors for the current Entry Points and Exit with the aim of moving towards a single K-Factor across the system after a transition phase. The aim of this was to allow the over/under recoveries that had arisen in the natural gas years 2015/16 and 2016/17 to be attributed to the relevant entry and exit tariffs. Examination of the expected under/over recoveries for the gas years 2015/16 and 2016/17 will suggest the overall size of the over/under recoveries to be kept so small.

### **5.6 DECISION ON RELATED POLICY MATTERS**

39. In addition to the directions to natural gas industry on natural gas entry/exit tariff methodology and inputs, there are further policy decisions which the Ministry of Energy and Minerals now directs the natural gas industry to implement that have an impact on the tariffs that network users will see as outlined below. In determining these directions to natural gas industry EWURA is attempting to ensure that the status quo for network users is maintained as much as possible.

### **5.7 ENTRY/EXIT SPLIT**

40. In this Consultation Document as part of the principles underpinning natural gas pricing reforms, EWURA indicates that in line with the remuneration of a single system that it would move to a 50:50 Entry/Exit split. At the time, the rationale behind this proposed split is based on the fact that every molecule that enters must exit. Hence, the 50:50 split seemed appropriate in the Tanzanian gas market context. In

addition, the Petroleum (Natural Gas Pricing) Regulations, 2016 suggests a 50:50 split as a default unless other splits are justified by EWURA.

## **5.8 CAPACITY/COMMODITY SPLIT**

41. In this Consultation Document, EWURA indicates that there was no firm view on the appropriate Capacity/Commodity split to apply from October 2016. This was because although the Draft Petroleum (Natural Gas Pricing) Regulations, 2016 envisaged zero capacity charges, this requirement is expected to be binding until the Indicative Gas Price review is in force.

42. Under the proposed methodology, Commodity forecasts are to be calculated separately for each Entry Point and for Exit. The Commodity charge shall be calculated by dividing 10% of the revenues associated with an Entry Point or 10% of the Exit revenues by the forecast Commodity bookings at each. From 2016/17 onwards applying an Entry/Exit split of 50/50 for revenues, a single Commodity charge will be charged at all Entry Points based on the sum of Commodity forecasts at all Entry Points. Similarly a single Commodity charge will be charged at all Exits based on the Commodity forecasts at Exit.

## **5.9 POSTALISATION OF EXIT TARIFFS**

43. EWURA indicates in this Consultation Document that it would continue to postalise the domestic Exit tariffs via the application of the Equalisation secondary adjustment. The postalisation tariff consists of a capacity and commodity charge that applies for use of the natural gas transmission network. The tariff is set to give each pipeline owner their appropriate rate of return while also recovering their operating costs. Forecast capacities/demands set at the outset of the natural gas year are based on expected commodity use of natural gas. It is proposed to have a 90/10 capacity/commodity split to recover the allowable revenue on the system.

## **6. IMPACT ASSESSMENT OF THE GAS ENTRY/EXIT TARIFF METHODOLOGY**

44. This section addresses a request that an Impact Assessment should be conducted to assess the impact of network tariffs at each Entry and Exit across the different customer categories at the existing Entry Points. EWURA shall ensure that on certain matters the status quo is broadly maintained to ensure minimal impact or redistributive effects across network users.

45. Some of the issues considered in the Consultative Document (such as the entry exit split) should be an ex-post outcome of an Impact Assessment. Therefore, the decision on the Capacity/Commodity split and the Entry/Exit split are influenced by an analysis of the effects across different network users. The scenarios presented below compare a “do-nothing” scenario and the chosen Capacity Weighted Distance Methodology and Postage Stamp Methodology with the 2016/17 tariffs. This section sets out the Impact Assessment based on certain assumptions and inputs.

46. It should be noted that the assumptions below relating to revenues and forecasts are based on information available at the time when the Impact Assessment was conducted. These forecasts may change when actual tariffs are set in December 2016.

- (a) a Capacity/Commodity split of 90:10 across all scenarios;
- (b) an Entry/Exit split of 50:50 for the chosen Capacity Weighted Distance Methodology;
- (c) Updated Required Revenue of US\$ 70 million. These are the forecast revenues anticipated as of December 2017.
- (d) for 2015/16 the forecast bookings at Exit were 145 MMscfd and the forecast bookings at Entry were 145MMscfd. These results in an Entry to Exit booking ratio of 0.75 i.e. for every unit of Exit booked 0.75 of corresponding Entry is booked.
- (e) for the 2016/17 “do nothing” and Capacity Weighted Distance Methodology the forecast bookings are 180MMscfd for Exit and 180MMscfd at Entry. This results in an Entry to Exit booking ratio of 0.66.
- (f) the impact on different users has been modelled using Madimba Entry and Exit, as well as Somanga Fungu Entry.
- (g) a range of network users have been assumed with differing Load Factors 10.

## 7. TARIFF STRUCTURES

47. Under the Entry/Exit Model, capacity contracts for input and withdrawal are separated and independent of one another – there is no linked contract path. Service entitlement is to bring natural gas into the system (entry capacity) or to remove natural gas from the system (exit capacity) and such services can be obtained by the same or different network users. The regulations, however, can be implemented under different transmission tariff regimes. In this section the tariff regime the following characteristics represent different tariff regimes-

(a) **Application of Entry/Exit Charge**

On account of Entry/Exit system, entry and exit capacities being decoupled, it is possible to price either both the entry and exit points or only one of them.

(b) **Application of Capacity and Commodity Charge**

In network industries access prices might be set using two different bases: the reserved capacity and the volumes transported. When using the amount of capacity reserved for charging access to the network,

one often speaks about the capacity charge (or demand charge), whereas when the transported volumes serve as the basis for the tariff setting, it is called a commodity charge (or energy charge). Frequently, a combination is applied.

(c) **Locational Differentiation**

In an Entry/Exit system, tariff setting can be based on a uniform approach where tariffs for different network points are set equally or based on location differentiation where the tariffs differ for every entry and exit point or 100 km zone.

(d) **Customer Differentiation**

This next characteristic concerns differentiation in the tariffs applied to network points. For example, different tariffs can be applied to capacity products with different duration (daily, monthly, quarterly, or annually). In other cases, tariffs can be dependent on the specific properties of the connected party. Such properties can be, for example, the annual consumption, delivered pressure or natural gas quality. The use of tariffs which are differentiated for particular consumer groups can be discriminatory and effectively create a barrier to entry.

## 7.1 INDICATIVE GAS PRICE FOR NON-FERTILISER STRATEGIC INVESTMENTS

48. As indicated in paragraph 7 above, for non-fertiliser strategic investments the formula under Regulation 30(2) shall be-

$$IGP_{2017} = ((1 - DR_{2017}) \times WHP_{2017}) + (GPT + GTT + GDT + M)_{2017}$$

where,

$IGP_x$  means Indicative Gas Price to strategic investment that is neither fertiliser project nor power generation for year 2017;

$DR_x$  means discount rate at 30% for year 2017;

$WHP_x$  means the pooled wellhead gas price for year 2017 which is calculated at US\$2.10/MMBtu. The Government will contribute US\$0.90 through the Subsidy Fund to the aggregator reimbursing it for gas sold;

$GPT_x$  means the natural gas processing tariff for year 2017 and shall be kept at US\$0.95/MMBtu;

$GTT_x$  means the natural gas transmission tariff for year 2017 and shall be kept at US\$0.80/MMBtu (the entry charge being US\$0.40/MMBtu, while the Exit Charge is set at US\$0.40/MMBtu);

$GDT_x$  means the natural gas distribution tariff for year 2017 and shall be kept at US\$0.20/MMBtu; and

$M_x$  means a series of margins from marketing and supply margins to strategic investment margin for year 2017 and will be kept at US\$0.20/MMBtu.

In above view, the Indicative Gas Price to strategic investment that is not fertiliser project for year 2017 within 100 km from Madimba is **US\$4.25/MMBtu**;

49.  $GDT_{2017}$  (under Postage Stamp Methodology) for 2 km determined by EWURA it would be US\$0.20/MMBtu, hence it should be assumed to remain intact for the year 2017. Again, the  $GTT_{2017}$  should be determined through calculation using Capacity Weighted Distance Model (CWDM) with single entry at Madimba and two exits within the first 100 km which provides the Entry Charge of US\$0.40/MMBtu and Exit Charge of US\$0.40/MMBtu.  $GPT_{2017}$  will be determined by Non-transmission service method, considering the cost reflectivity test under Regulation 7. During February 2015, the GPT was determined by EWURA at US\$0.99/MMBtu. In absence of the current data from the service providers, EWURA shall make use of information gathered during September through December 2014.

## **7.2 INDICATIVE GAS PRICE FOR THE FERTILISER INVESTMENTS**

50. Without prejudice to Regulation 30(2), the discounted wellhead price for fertiliser projects has to base on the netback price calculation of the product produced by strategic investment and using the formula (contained in the Fifth Schedule to the Petroleum (Natural Gas Pricing) below-

$$GP_{2017} = GRP_{2017} + [P_r \times (AUP_{2017} - URP_{2017})]$$

where,

The Government will contribute through the Subsidy Fund to make good the aggregator for the gas sold;

$GRP_{2017}$  means the natural gas reference price or floor price equal to US\$2.60/MMBtu;

$P_r$  means the premium the seller's participation of urea price, up to twenty five percent (25%) applicable form year 2020;

$AUP_x$  means the actual Urea (Granular) FOB Middle East Future Quotes is averaged at US\$233.92/MT;

$URP_x$  means the Urea Reference Price of US\$250/MT (minimum acceptable price to achieve and maintain an acceptable level of return from the project.

$GP_{2017}$  means the natural gas price for a fertiliser project calculated at (US\$1.42/MT) which is set at a floor price of US\$2.60/MMBtu.

**Table 2: Urea (Granular) FOB Middle East Future Quotes**

Month	Prior Settle (US\$/MT)	Month	Prior Settle (US\$/MT)
Dec 2016	230.00	Jun 2017	230.00
Jan 2017	245.00	Jul 2017	195.00
Feb 2017	245.00	Aug 2017	238.00
Mar 2017	241.50	Sep 2017	238.00
Apr 2017	236.00	Oct 2017	238.00
May 2017	232.50	Nov 2017	238.00

Source: <http://www.cmegroup.com>

51. The Government will contribute US\$0.40/MMBtu for the cost of natural gas in addition to US\$0.95/MMBtu for natural gas processing, US\$0.90/MMBtu for gas transmission, US\$0.20/MMBtu for natural gas distribution and US\$0.20/MMBtu as margin to TPDC. The total gas price for the fertilizer companies operating at 200 km from Madimba will be US\$5.29/MMBtu that will be paid to TPDC. The fertiliser companies will pay US\$2.60/MMBtu and the Government through the Subsidy Fund will pay US\$2.69/MMBtu for the natural gas sold to fertiliser companies. Through negotiations, the Government will recover the amount paid for subsidy from the sales of fertiliser, taxes, and other general benefits accruing on multiplier effects.

## **8. CONCLUSION AND NEXT STEPS**

52. In conclusion, EWURA deem it appropriate that the natural gas industry be provided with innovations in pricing mechanism. Upon collecting responses from the general public and key stakeholders, EWURA will complete the Final Order to be discussed after the Exit Conference scheduled for 27<sup>th</sup> December 2016. The outcome will be gazetted on Friday, 30<sup>th</sup> December 2016. During the third quarter, EWURA will carry out a similar assignment to cover the Indicative Gas Prices for the remaining customers namely- residential, commercial, non-commercial, power generation and CNG for transport and commercial users. You are invited to respond to this Consultation Document.

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**Energy and Water Utilities Regulatory Authority (EWURA)**

20 December 2016, Dar es Salaam.