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PETROLEUM ACT
(CAP. 392)

REGULATIONS

(Made under sections 165 and 258(1))

PETROLEUM (NATURAL GAS PRICING) REGULATIONS, 2016

PART I
PRELIMINARY

Citation

1. These Regulations may be cited as the Petroleum (Natural Gas Pricing) Regulations, 2016.

Application

2.-(1) These Regulations shall apply to Mainland Tanzania.

(2) These Regulations shall govern pricing of natural gas for:

(a) domestic market; and

(b) cross border markets.

(3) For the purpose of subregulation (2):

(a) "domestic market" means the utilisation of natural gas for power generation, industrial heating, household, transportation, commercial and non-commercial institutions and petrochemicals usage; and

(b) "cross border markets" means regional markets connected to the domestic market by pipeline.

Interpretation

3.-(1) In these Regulations, unless the context otherwise requires-

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"Act" means the Petroleum Act;

"allowed revenue" means the sum of transmission and non-transmission services revenue which the service provider is entitled to recover;

"barrel oil equivalent" means the volume of liquid or gaseous hydrocarbon having an energy content of 1,400,000 kilocalories, which is equal to that of a barrel of crude oil;

"capacity" means the maximum flow, expressed in standard cubic meters per time unit or in energy unit per time unit, to which the network user is entitled in accordance with the relevant provisions of the transport contract;

"capacity-weighted distance model" means setting the allowed revenue and creating a segmented network representation;

"compressed natural gas" also described as "CNG" means a natural gas, predominantly methane (CH_4) that has been compressed to less than one percent of its volume it occupies at standard atmospheric pressure and stored in a high-pressure container, usually at 20.684 to 24.821 MPa;

"cost driver" means the factor of the transmission system operator's activity which is correlated to the costs of such transmission system operator, such as distance, technical capacity or forecasted contracted capacity;

"consultation document" means the document prepared by EWURA inviting the public for comments and views on the draft document;

"distribution" means the activity of receiving, treating and delivering gas through an interconnected system of gas pipelines that has a maximum operating pressure under normal conditions not exceeding ten bar gauge and any other approved equipment;

"distribution tariff" means a fee determined by EWURA based on fee proposals by local distribution operators. The distribution fee calculation is similar to the transmission tariff calculation, which includes coverage of construction and operation costs and appropriate margins and taxes;

"domestic natural gas market" means the domestic natural gas suppliers and customers;

"end user prices" means the retail prices that natural gas consumers pay to local distributors;

"entry-exit split model" means a system for third party access to natural gas transmission network whereby a network user book capacity at entry points and exit point independently, whereas natural gas can be injected at entry point and made available for offtake at exit point on a full independent basis;

"entry point" means a point into an entry-exit system, either from an adjacent entry-exit system or from an LNG facility, production facility, storage facility, distribution network or from a third country, that is subject to network tariffs;

"exit point" means a point out of an entry-exit system either into another entry-exit system or into a distribution network, storage facility, transmission-connected consumer or to a third country, that is subject to network tariffs;

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"EWURA" means the Energy and Water Utilities Regulatory Authority established under section 4 of the Energy and Water Utilities Regulatory Authority Act;

"inter transmission system operator" means a legal person who coordinate the activities of natural gas transmission between the transmission systems of two or more countries;

"indicative natural gas price" means the cost that consumers anticipate paying or consider reasonable to pay for a particular good or service, it could refer to a situation-

(a) when a licensee sells price just below the main price of its competitor; or

(b) where a licensee sales a good or service at a large discount to a previously advertised reference price;

"investment signal" means any piece of information which helps the investor to make a better and informed investment decision;

"legal metrological control" means legal control of measuring instruments or systems, metrological supervision and metrological expertise;

"liquefied natural gas" also described as "LNG" means a natural gas, predominantly methane, CH_4 that has been converted temporarily to liquid form for ease of storage or transportation;

"licensee" means a holder of a licence granted by the Minister or EWURA under the Act;

"LNG facility capacity" means capacity at an LNG terminal for the liquefaction of natural gas or the importation, offloading, ancillary services, temporary storage and re-gasification of LNG;

"locational signal" means the application of a differential pricing mechanism applied to specific entry or exit points in order to achieve an efficient operation of the transmission system in order to encourage investment in the transmission system;

"matrix approach" means the second most applied cost allocation model that support the entry-exit access model, that is leading to an entry-exit split that equals 25:75 percent, indicating that a large share of the revenue is recovered through the exit tariffs;

"Metering station" means an assembly of metering instrument or systems dedicated to determination of measured quantities;

"Minister" means the Minister responsible for petroleum affairs;

"natural gas" means any naturally occurring mixture of hydrocarbons in gaseous state, principally methane with varying quantities of ethane, propane, butane and other gases used as fuel or feedstock, whether:

(a) pressurised to be transported and distributed through pipelines, lateral lines and spur line;

(b) compressed in special cylinders or vessels, to be efficiently transported or stored as compressed natural gas (CNG) by special trucks or ships; or

(c) liquefied using special facilities, to be efficiently transported as liquefied natural gas (LNG);

"natural gas processing" means removal of condensate, cryogenic operations to extract butane, propane and natural gas liquids (NGLs), impurities and water; odorize or otherwise prepare gas for transportation, shipping, or liquefaction;

"non-transmission service tariff methodology" means the methodology applied to the associated non-transmission services revenue with the aim of deriving a tariff for a given non-transmission service;

"non-transmission services" means the regulated services other than transmission services that are provided by the transmission system operator and shall include natural gas processing, compression, storage, liquefaction and re-gasification;

"non-transmission services revenue" means the part of the allowed or target revenue which is related to the provision of non-transmission services and is recovered by non-transmission tariffs;

"multiplier" means the factor applied to the respective proportion of the reference price in order to calculate the reserve price for a non-yearly standard capacity product;

"postage stamp methodology" means the most straightforward of all cost allocation methodology that support the entry-exit

access methodology; it is a single uniform tariff applied to either the entry points or the exit points, as this tariff should recover the allowed revenue, the costs are allocated to entry and exit points in proportion to the booked capacity; it is widely used methodology in the transmission services pricing prior to the introduction of the entry-exit regime;

"PURA" means the Petroleum Upstream Regulatory Authority established under section 11 of the Act;

"reference price methodology" means the methodology applied to the part of the transmission services revenue to be recovered from capacity-based transmission tariffs with the aim of deriving reference prices;

"regulatory account" means the account aggregating under- and over-recovery of the transmission services revenue under a non-price cap regime;

"regulatory period" means the time period for which EWURA sets the general rules for setting transmission tariffs;

"secondary adjustment" means the adjustment to demonstrate the extent to which the pricing methodology is consistent with the pricing principles and explain the reasons for any inconsistency between the pricing methodology and the pricing principle, to signal the economic costs of service, recover any shortfall and to compete vigorously with alternative energy sources;

"specification natural gas" means natural gas with such quality as may be agreed between producer and buyer in the agreement;

"strategic industry" means an industry that the Government considers to have significant multiplier effects on the growth of the country's economy including power generation, fertilizer manufacturing and petrochemicals;

"Strategic Investor" shall have the meaning ascribed to it under the Tanzania Investment Act; Cap.38

"target revenue" means the sum of expected transmission services revenue for the provision of services by the transmission system operator within a given time period;

"tariff period" means the time period during which a particular level of reference price is applicable, which minimum duration is one year and maximum duration is the duration of the regulatory period;

"transmission" means delivering of natural gas from processing, re-gasification or storage facilities using pipelines that have a normal operating pressure exceeding 10 bar gauge, special trucks, ships or any other means;

"transmission services" means the regulated services that are provided by the transmission system operator within the entry-exit system for the purpose of transmission;

"transmission services revenue" means the part of the allowed or target revenue which is related to the provision of transmission services and is recovered by transmission tariffs;

"transmission system operator" means a legal person who carries out the functions of transmission of natural gas and is responsible for operating, maintaining, and where necessary developing the transmission system in a given area;

"transmission tariff" means the tariff determined by EWURA, based on tariff proposals by natural gas transmission pipeline operators;

"wellhead" means a component at the surface of natural gas well that provides the structural and pressure containing interface for the drilling and production equipment;

"wellhead natural gas price" means the price for specification natural gas as determined by PURA or relevant agreements or contracts, as the case may be; and

Cap.340 "WMA" means the Weights and Measures Agency established under the Executive Agency Act.

PART II
THE NATURAL GAS PRICING PRINCIPLES

Pricing principles

4.-(1) The natural gas pricing mechanism shall be based on the following principles:

(a) objectivity;
(b) cost reflectivity;
(c) non-discrimination;
(d) prudence of expenditure;
(e) economic efficiency;
(f) non cross-subsidisation;
(g) reliability and quality of service;

(h) fair return on invested capital;
(i) capacity allocation to the most valued use;
(j) transparency;
(k) predictability;
(l) Accountability;
(m) practicability;
(n) availability of data;;
(o) cost of competing or alternative fuel; and
(p) strategic nature of projects.

Factors for consideration in gas pricing

5. The pricing of natural gas for domestic and cross border market shall, in addition to the best international natural gas pricing practices, take into consideration-

(a) the investment and operations costs for natural gas exploration, appraisal, field development, plus a fair profit margin, also referred to as the "cost-plus appropriate 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.

PART III
TRANSMISSION AND NON-TRANSMISSION SERVICES AND TARIFFS

Transmission services

6.-(1) Transmission services revenue shall be attributed by the following criteria:

(a) the costs of such services are caused by the cost drivers of both capacity and distance; or
(b) the costs of such services are related to the regulated asset base for the provision of transmission services.

(2) The transmission services revenue shall be recovered by capacity-based transmission tariffs set on the basis of reference prices.

(3) Without prejudice to subregulation (2), the transmission services revenue may be recovered by the following commodity-based transmission tariffs set separately from each other:

(a) a flow-based charge calculated as follows-

(i) based on forecasted or historical allocations and set in such a way that it is the same at all entry points and the same at all exit points;

(ii) levied for the purpose of covering the costs mainly driven by the quantity of the natural gas flow; and

(iii) expressed in monetary terms.

(b) a complementary revenue recovery charge as follows-

(i) calculated on the basis of forecasted or historical allocations and in accordance with the applicable rules;

(ii) levied for the purpose of revenue recovery;

(iii) applied at points other than interconnection points; or

(iv) applied after EWURA makes an assessment of its cost-reflectivity and its impact on cross-subsidisation between interconnection points and points other than interconnection points.

(4) The EWURA shall aggregate delivery points annually at the same or close geographical location (or zones set at 100 kilometres apart) into a single "connection point" on the transmission system with a single price.

(5) For the purpose of promoting efficient use of the transmission system, the transmission services revenue may be recovered by alternative transmission tariffs applicable for a given specific standard capacity product to be approved by EWURA.

Non-transmission services

7.-(1) The non-transmission services revenue shall be recovered by non-transmission tariffs applicable for a given non-transmission service as follows:

(a) cost-reflective, non-discriminatory, objective and transparent; or

(b) charged to the beneficiary of a given non-transmission

service with the aim of minimizing cross-subsidisation between network users.

(2) Notwithstanding subregulation (1), where no beneficiary of a given non-transmission service can be identified, the costs for such service shall be allocated to all network users.

PART IV
REFERENCE PRICE METHODOLOGIES

Types of reference price methodology

8.-(1) The primary reference price methodology adopted for use under these Regulations shall be as follows:

(a) the postage stamp price methodology; and

(b) the capacity weighted distance methodology.

(2) The postage stamp methodology shall be used to set price in the distribution system.

(3) The capacity weighted distance methodology shall be used in calculating prices for transmission services.

Criteria for primary reference price methodology

9.-(1) In considering a reference price methodology proposal, one of the following criteria shall be applied:

(a) minimise cross-subsidisation between network users; or

(b) provision of investment signals.

(2) In considering the postage stamp methodology proposal, one of the following criteria shall be applied-

(a) at least two third of the amount of transmission capacity is used by domestic or by cross-border network users; or

(b) the absolute value of the difference between the average distance calculated as set out, *mutatis mutandis*, for all domestic exit points and for all cross-border exit points, calculated in accordance with the formula set out in the First Schedule to these Regulations.

(3) In considering the capacity weighted distance methodology proposal, one of the following criteria shall be applied:

(a) better cost-reflectivity of the resulting reference prices;

(b) better locational signals; or

(c) efficient use of the transmission system.

Reference price

10.-(1) The reference price methodology shall be applied

methodology

jointly by all transmission system operators within an entry-exit system.

(2) Where a commodity based transmission tariff is used under paragraph (a) of subregulation (3) of regulation 9 and where secondary adjustment is used, such secondary adjustment shall be applied jointly by all transmission system operators within an entry-exit system.

(3) When planning entry-exit system mergers, intermediate steps may be implemented allowing for different primary reference price methodologies to be applied separately to each transmission system operator within the entry-exit systems concerned.

(4) In implementing intermediate steps under subregulation (3), an impact assessment and a cost benefit analysis may be carried out prior to implementing such steps.

(5) Notwithstanding subregulation (1) and subject to subregulation (3), EWURA may direct that the primary reference price methodology be applied separately to each transmission system operator within an entry-exit system.

(6) Where the application of the reference price methodology is used under subregulation 8(3)(b) the reference price methodology shall be applied separately by each transmission system operator within an entry-exit system.

(7) EWURA shall establish an effective inter-transmission system operator compensation mechanism.

(8) EWURA may give directives under subregulation (5) on the following conditions-

(a) where an effective inter-transmission system operator compensation mechanism is established with the aim of-

(i) preventing detrimental effects on the transmission services revenue of the transmission system operators involved and its recovery; and

(ii) avoiding cross-subsidisation between different groups of network users; or

(b) where separate application ensures costs correspond to those of an efficient transmission system operator.

Entry- exit split

11.-(1) The EWURA shall set entry-exit split as part of the directive for the entry-exist system.

(2) Where regulation 6 is applied, entry-exit split shall be set by EWURA for each transmission system operator involved.

(3) Where the entry-exit split is used as a parameter of the reference price methodology, it shall be derived from the application of formula specified under the First Schedule to these Regulations.

(4) Notwithstanding subregulations (2) and (3), EWURA may apply an entry-exit split other than 50/50 where-

(a) it is based on cost drivers such as distance, technical capacity and forecasted contracted capacity; and

(b) it fulfils the following minimum objectives, that is-

(i) it minimises cross-subsidisation between network users, in particular between cross-border and domestic network users;

(ii) it does not create barriers to cross-border trade;

(iii) it avoids differences between the allowed revenue and the actual obtained revenue.

(5) Where the entry-exit split is not used as a parameter of the reference price methodology, it shall be derived from the application of formula set out in the First Schedule to these Regulations.

Reference Price Methodology Application

12.-(1) Notwithstanding the prescribed price reference methodology in these Regulations, EWURA may, upon the expiry of one year from the coming into force of these Regulations, approve any other price reference methodology other than those prescribed in these Regulations.

(2) The EWURA shall approve other price reference 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 price reference methodology is not available.

Postage stamp methodology

13.-(1) The relevant parameters for postage stamp methodology shall include, but not be limited to-

(a) the part of the distribution network services revenue to be recovered from capacity-based distribution network

tariffs;

(b) the forecasted contracted capacity at each entry point and at each exit point; and

(c) where applicable, the entry-exit split as set out by EWURA.

(2) Where the entry-exit split is used as a parameter of the reference price methodology, the initial or final reference prices, as relevant, shall be derived from the following sequential steps:

(a) by identifying the part of the distribution network services revenue to be recovered from capacity-based distribution network tariffs at all entry points and the part of the distribution network services revenue to be recovered from capacity-based distribution network tariffs at all exit points by applying the entry-exit split;

(b) by identifying the part of the forecasted contracted capacity for all entry points and the part of the forecasted contracted capacity for all exit points; and

(c) by dividing the resulting value referred to in paragraph (a) by the resulting value referred to in paragraph(b) in accordance with the respective formulas set out in the First Schedule to these Regulations.

(3) Where the entry-exit split is not used as a parameter of the reference price methodology, the initial or final reference prices, as relevant, shall be derived from the following sequential steps:

(a) by identifying the transmission services revenue to be recovered from capacity-based transmission tariffs at all entry points and all exit points;

(b) by identifying the part of the forecasted contracted capacity for all entry points and the part of the forecasted contracted capacity for all exit points;

(c) by dividing the resulting value referred to in paragraph (a) by the sum of the values referred to in paragraph (b) in accordance with the formula set out in the First Schedule to these Regulations; and

(d) by multiplying the resulting value referred to paragraph (b) by the respective value referred to in paragraph (c), in order to establish the entry-exit split.

Capacity

14.-(1) The capacity weighted distance methodology shall

weighted distance methodology

be used in calculating prices for transmission services.

(2) The relevant parameters for capacity weighted distance methodology shall include, but not be limited to-

(a) the allowed part of the transmission services revenue to be recovered from capacity-based transmission tariffs;

(b) the forecasted contracted capacity at each entry point or a cluster of entry points and at each exit point or a cluster of exit points;

(c) where entry points and exit points can be combined in a flow scenario, the distance between an entry point or a cluster of entry points and an exit point or a cluster of exit points; and

(d) the entry-exit split referred to in regulation 7.

(3) Where some entry points and some exit points cannot be combined in a flow scenario, the relevant combinations of entry points and exit points shall be used as an additional parameter.

(4) The initial or final reference prices, as relevant, shall be derived in the sequential steps as set out in the Second Schedule to these Regulations.

(5) The reference price methodology to be applied shall be subject to approval by EWURA and shall be-

(a) one of the primary reference price methodologies may be complemented by a secondary adjustment detailed; or

(b) reference price methodology other than set out in paragraph (a) of subregulation (2).

(6) Where a secondary adjustment is applied after the application of the primary reference price methodology, the result of such methodology shall be the initial reference prices.

(7) Where a secondary adjustment is applied only as a step of the primary reference price methodology, the result of such methodology shall be the final reference prices.

(8) Secondary adjustments may be applied after the application of the primary reference price methodology and as a step thereof.

(9) The same reference price methodology shall apply to all entry and an entry-exit system.

(10) The EWURA shall, within one year as from the coming into force of these Regulations, issue a recommendation on reference price methodologies other than provided for in this Part as

well as relevant parameters and criteria for choosing such methodologies.

(11) The EWURA shall, within five years from the coming into force of this Regulation, publish a report on the applied reference price methodologies.

Secondary price adjustment

15. Where the conditions prescribed under regulations 16(1), 17(1) and 18(1) dictate, there shall be a secondary adjustment of the natural gas prices.

Categories of secondary price adjustment

16.-(1) The categories of the secondary price adjustment shall be as follows:

(a) equalization;

(b) benchmarking; and

(c) storage.

(2) In considering a secondary adjustment proposal, the criterion whether a given secondary adjustment better meets the objectives of the applied primary reference price methodology shall be applied.

Equalisation

17.-(1) The conditions for the application of equalisation shall be one of the following:

(a) contribute to security of supply;

(b) enhance stability of transmission tariffs;

(c) foster competition in the retail market; or

(d) foster competition and encourage the use of renewable energy.

(2) The equalisation shall be carried out by applying the same reference price within a homogenous group of network users comprised of the following entry or exit points:

(a) entry interconnection points;

(b) exit interconnection points;

(c) domestic entry points;

(d) domestic exit points;

(e) entry points from storage facilities;

(f) exit points to storage facilities;

(g) entry points from LNG facilities;

(h) exit points to LNG facilities; and

(i) entry points from production facilities.

(3) When deciding to apply equalisation, the consultation document shall be prepared by EWURA and include a justification for changing the locational signals, if any, created after the application of the primary reference price methodology.

(4) "Homogenous group of network users" as used under these Regulations means a group of natural gas distribution network end-users with similar natural gas consumption characteristics.

Benchmarking

18.-(1) The conditions for the application of secondary price adjustment through benchmarking on a case-by-case basis shall include the following:

(a) where there is effective pipeline-to-pipeline competition between the transmission system operators;

(b) where the result of the application of the primary reference price methodology is not sufficient for meeting the competitive level of transmission tariffs;

(c) where there is a need to increase the amount of contracted capacity at a given entry or exit point; and

(d) where the result of its application better meets the set out objectives.

(2) Benchmarking shall be considered to be applied, when the consultation document includes the following:

(a) the justification for the possibility to apply the benchmarking; and

(b) the explanation of the consequences of decreased transmission tariffs for-

(i) the other transmission tariffs; and

(ii) the entry-exit split derived after the application of the primary reference price methodology.

(3) Subject to subregulations (2) and (5), benchmarking shall be carried out by EWURA by decreasing transmission tariffs at a given entry point or exit point so that the resulting value meets the competitive level of transmission tariffs.

(4) Where the forecasted capacity sales at the points at which benchmarking is carried out are not expected to ensure obtaining of the allowed revenue, the transmission tariffs at other entry points or exit points may be increased.

(5) Upon request of the transmission system operator on tariff or price adjustment to EWURA, EWURA may:

(a) review the tariff or price submission;
(b) reject the tariff or price submission;
(c) adjust tariff or price submission; or
(d) approve the tariff or price submission and set the price cap.

(6) Where there is no price cap regime, the transmission system operator may, at his own initiative or after consultation with stakeholders, take a decision on carrying out the benchmarking, provided that before taking such decision, EWURA has been consulted.

Storage

19. When EWURA sets the reference prices at entry points from and exit points to storage facilities, the following shall be taken into consideration:

(a) the net benefits that the storage facilities may provide to the transmission system;
(b) the need to promote efficient investment in the transmission system; and
(c) the need to minimise detrimental effects on cross-border trade.

Cost allocation test

20.-(1) The cost allocation test shall be applied to the transmission services revenue and shall be based on the cost drivers derived from:

(a) distance;
(b) technical capacity; or
(c) forecasted contracted capacity.

(2) Where commodity-based transmission tariffs referred to in regulation 7 are proposed, the cost allocation test shall also be based on the direction of natural gas flow.

(3) The cost allocation test shall demonstrate the degree of cross-subsidisation between domestic and cross-border network users based on the proposed reference price methodology.

(4) The cost allocation test shall be carried out taking into consideration of as per formulas set out in the Third Schedule to these Regulations.

(5) The transmission services revenue to be obtained from domestic network users at entry points shall be calculated as follows-

(a) the actual amount of capacity attributed to the provision of transmission services to cross-border network users at entry points shall be deemed equal or proportionate to the amount of capacity attributed to the provision of transmission services to cross-border network users at exit points;

(b) the amount of capacity determined as set out in paragraph (a) shall be used to calculate the transmission services revenue to be obtained from cross-border network users at entry points; and

(c) the difference between the overall transmission services revenue to be obtained at entry points and the resulting value referred to in paragraph (b) shall be equal to the transmission services revenue to be obtained from domestic network users at entry points.

(6) Where more than one cost driver is identified as relevant, the combination of such cost drivers shall be used taking into account the following:

(a) the total number of cost drivers shall be minimised;

(b) the relative importance of all cost drivers shall be demonstrated; and

(c) where distance is used as a cost driver, the weighted average distance shall be used.

(7) Where the results of the calculation referred to in subregulation (3) exceed ten percent, EWURA shall provide the justification on the decision.

(8) Where the reason for such excess originates from the proposed charge referred to in regulation 7, the value or the application of such charge shall be reviewed so that the results of the calculation referred to in subregulation (3) do not exceed ten percent.

Indicative gas prices

21. EWURA shall, at least once a year, and two (2) months before the end of year and issue the indicative natural gas prices and transmission and non-transmission tariffs.

PART V
NATURAL GAS PRICING MECHANISM

The wellhead natural gas pricing

22.-(1) The natural gas transfer price or wellhead natural gas price that producers charge eligible and non-eligible customers of the domestic market shall include:

(a) exploration cost;

(b) development costs;

(c) production costs; and

(d) reasonable profit margins for each activity.

(2) The costs shall include the depreciation of existing and new investments and specific capital reinvestments necessary to continue the same activities.

(3) The Aggregator shall pool the wellhead prices from different producers and calculate a single wellhead price for all its customers.

(4) PURA shall review and approve the wellhead price proposed by the aggregator under subregulation (3).

(5) In determining natural gas transfer prices, PURA shall review and approve the proposals made by the producer.

(6) The terms, conditions and procedures defined by PURA shall specify the parameters to be adjusted for each activity.

(7) The determination of indicative wellhead natural gas prices shall be done annually.

(8) Upon determination of the indicative wellhead natural gas prices, the domestic sales prices, excluding taxes of natural gas for the calendar year in question shall be announced by PURA by notice in the *Gazette*.

(9) An identical natural gas price, excluding taxes and levies, shall be applied by upstream natural gas producers to the supply of all eligible and non-eligible domestic customers, including the natural gas aggregator.

Computation of royalties, taxes, levies and fees

23.-(1) Wellhead natural gas price used in calculating royalties, taxes, levies and fees, shall be the natural gas price defined, namely-

(a) in the case of contracts for export of natural gas-

(i) the price appearing on the contract, if that price is above or equal to benchmark price defined in

regulation 18; and

(ii) in the opposite case under subparagraph (i), the wellhead natural gas price shall equal to the benchmark price;

(b) in the case of a contract to sell natural gas of domestic market the sale price of natural gas applied to domestic market shall be the price in effect during the calendar year; and

(c) in the case of natural gas purchased for assisted recovery purposes, the wellhead natural gas price shall be the price freely negotiated between a buyer and seller.

(2) When the wellhead natural gas prices are expressed in US dollars, the average selling rate of the month during which prices were tallied, as published by the Bank of Tanzania, shall be used for conversion into Tanzania Shillings.

(3) The conversion in barrel oil equivalent shall be announced by PURA.

Price for domestic market

24.-(1) The natural gas prices for domestic market shall be calculated in US dollars and converted in Tanzania Shillings.

(2) The natural gas price formulation shall consist of the wellhead natural gas price, processing and transmission tariff, distribution tariff, supply and marketing margins.

(3) The following customers shall constitute domestic market:

(a) power generation industry;

(b) commercial and non-commercial institutional customers;

(c) industrial heating and feed stocks customers;

(d) transport sector;

(e) residential customers; and

(f) strategic industry.

(4) The criteria used to categories the distribution of natural gas to customers shall be as set out in the Fourth Schedule to these Regulations and shall be based on the consumers installed capacity or as a maximum flow rate.

Natural gas

25. The pricing of natural gas for residential customers shall

pricing for residential customers

be calculated at a price unit of energy of natural gas discounted by thirty five percent of equivalent energy capacity of charcoal price.

Natural gas pricing for commercial and non-commercial institutions

26.-(1) The pricing of natural gas for commercial and non-commercial institutions shall be calculated at price unit energy of natural gas discounted by thirty percent of Liquefied Petroleum Gas or Heavy Fuel Oil price, as the case may be.

(2) Each regulatory zone established by EWURA shall have different natural gas price referred to under regulation 24(1).

Natural gas Pricing for Power Generation

27.-(1) The pricing of natural gas for power generation shall take into account the sum of wellhead natural gas price, processing and transmission tariffs, distribution tariff, supply and marketing margins.

(2) Eligible customers may negotiate the wellhead prices with the gas producers and pay tariffs of contracted capacity and use of the regulated services which are gas processing, transmission and distribution approved by EWURA.

(3) The end-user natural gas price shall be calculated as follows:

$$DP = W + P + T + D + M$$

where,

DP means the delivered natural gas price for specific end-user (US$/GJ or equivalent);

W means the wellhead natural gas price negotiated by the upstream service provider and TPDC (in US$/GJ or equivalent), which is reviewed by the PURA;

P means the natural gas processing tariff (in US$/$m^3$ or equivalent) approved by EWURA;

T means the natural gas transmission tariff (in US$/$m^3$ or equivalent) approved by EWURA;

D means the natural gas distribution tariff (if any) in US$/$m^3$ or equivalent approved by EWURA; and

M means the natural gas marketing and supply fees negotiated by a seller and buyer (in TZS/m^3), and reviewed by EWURA.

(4) The end-user natural gas prices established under subregulation (3) shall differ from one zone to another.

(5) The EWURA shall publish in the Gazette the approved

natural gas prices and cause the sellers of natural gas to publish the same in a wide circulated newspapers in both Kiswahili and English languages.

Natural gas Pricing for industrial heating

28.-(1) The natural gas price for industrial heating shall be in Tanzanian Shillings based on the prevailing market price of alternative fuel discounted by not more than thirty percent of alternative fuel price.

(2) Alternative fuel referred to in subregulation (1), shall mean the fuel used by an industry which includes Heavy Fuel Oil, diesel, Liquefied Petroleum Gas, and includes all cost prudently incurred by the vendor up to the point of delivery published in the Gazette by EWURA.

(3) The end-user natural gas prices established under subregulation (1) shall differ from one zone to another.

(4) The EWURA shall publish the approved natural gas prices or cause the sellers of natural gas to publish the same in wide circulated newspapers in both Kiswahili and English languages.

Pricing of compressed natural gas

29.-(1) The compressed natural gas (CNG) for automobile shall be determine from the prevailing price of current fuel (gasoline retail price) discounted by forty percentage of the prevailing gasoline retail price.

(2) The end-user natural gas prices under subregulation (4) shall differ from one zone to another.

(3) EWURA shall publish the approved natural gas prices or cause the sellers of natural gas to publish the same in widely circulated newspapers in both Kiswahili and English languages.

Natural gas pricing for Strategic Industry

30.-(1) Subject to unforeseen hardship to strategic industry, the Government may make direct financial interventions or pass the subsidy policy addressing the price volatility issues affecting the fertiliser projects and other strategic investments.

(2) The natural gas price for strategic industry shall be determined by summing up the wellhead natural gas price discounted by not more than thirty five percent of the wellhead price, the processing and transmission, distribution tariff, supply and marketing margins and other charges as determined by EWURA.

(3) Without prejudice to subregulation (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 provided for in the Fifth Schedule to these Regulations.

(4) The end-user natural gas prices established under subregulation (2), shall differ from one zone to another.

(5) The EWURA shall publish the approved natural gas prices or cause to be published in widely circulated newspapers in both Kiswahili and English languages.

PART VI
OBLIGATION OF LICENSEE

Prohibited acts

31.-(1) The licensee shall not:

(a) manipulate the market natural gas price in collusion to the detriment of the rights and interests of other licensees or consumers;

(b) dump the lower-than-the-cost price with the intention to disrupt the normal production and management order to the detriment of the public interests.

(c) manipulate natural gas price;

(d) lure consumers or other operators to conclude transactions by employing falsified or misleading natural gas pricing means;

(e) practice natural gas price discrimination towards other licensees;

(f) procure, sell commodities or provide services at prices raised or reduced in disguised form by adopting such means as raising or lowering the grade.

(2) A person who contravenes the provisions of this regulation commits an offence and shall on conviction be liable in accordance with the provisions of sections 240 and 241 of the Act.

PART VII
MONITORING AND ENFORCEMENT

Price supervision and inspection by EWURA

32.-(1) The EWURA shall conduct supervision and inspection on natural gas prices and take appropriate action against any violation.

(2) In conducting price supervision and inspection,

EWURA may exercise the following powers:

(a) inquire from any person and demand any document, information, material or testimony relating to inquiry;

(b) inspect the books of accounts, invoices, vouchers, documents and other materials relating to the matter under inquiry;

(c) investigate the properties of any person under inquiry;

(d) order suspension of the licensee's activities relating to inquiry; and

(e) register for safekeeping in advance circumstances that the evidences may be destroyed and lost or may be difficult to obtain.

Price supervision and inspection by PURA

33.-(1) The PURA shall conduct supervision and inspection on natural gas prices and take appropriate action against any violation.

(2) In conducting price supervision and inspection, PURA shall have the following powers of:

(a) monitoring and evaluating performance in petroleum activities including investment, cost of services, regularity of outputs and availability of crude oil and natural gas for domestic supply;

(b) ascertaining the cost of oil and natural gas due to licence holder and other contractors;

(c) conducting audit in relation to costs on exploration, development and production;

(d) summoning any person to produce or provide any information that PURA may require in discharging its duties or functions; and

(e) doing all things which are necessary or desirable to give effects of the provisions of these Regulations.

PART VIII
QUALITY AND QUANTITY OF NATURAL GAS

Quality and Quantity of natural gas

34.-(1) All natural gas delivered or to be delivered by shipper at entry point for distribution through natural gas distribution network by licensee shall conform to natural gas parameters as per applicable specifications and range of natural gas

composition as declared by the licensee operating the transmission pipeline.

(2) All natural gas entering natural gas distribution networks shall be within the range of natural gas distribution operating pressure and temperature for it to flow in distribution network.

(3) The entry pressure and temperature at all entry point shall be mutually agreed between the shipper and licensee operating the transmission pipeline.

(4) The WMA shall conduct legal metrological control on natural gas quantity at metering stations.

(5) All natural gas introduced into a pipeline transmission system shall be of a quality consistent with that set out in the Fifth Schedule to these Regulations or any other standards set by a competent authority.

(6) The EWURA shall monitor natural gas quality and standards, as well as promote reliability and affordability of natural gas.

(7) Tanzania Bureau of Standards shall prescribe standard of quality for natural gas conveyed through transmission and distribution pipelines.

(8) Where natural gas to be delivered at any entry point does not comform to natural gas specification (off-specification natural gas), the shipper shall inform the respective pipeline operator promptly of the deviation from natural gas specification.

(9) The pipeline operator shall have the right to refuse off-specification natural gas at entry point, but may accept such specification.

(10) Where natural gas received at entry point is off-specification, the pipeline operator shall have the right to suspend completely or partially receipt of natural gas from the shipper with immediate effect until the pipeline operator is satisfied that natural gas which the shipper is able to deliver to natural gas distribution network is within natural gas specification.

(11) Notwithstanding the subregulation (10), in the event off-specification natural gas has entered into natural gas transmission network, the transmission pipeline operator may make enquiries to the shipper as to whether the shipper, end-user or customer is willing to accept off-specification natural gas.

Shipper's right

35.-(1) The shipper shall have the right to accept or refuse delivery of off-specification natural gas at exit points.

(2) The licensee operating the transmission system may dispose of off-specification natural gas that has entered into natural gas transmission if it is unsafe for integrity of the network in order to protect the natural gas distribution network and other facilities.

(3) The cost incurred to manage the off-specification natural gas shall be borne by the shipper who injected the natural gas into the transmission network and the same shall not form part of the natural gas price.

(4) The EWURA shall, in consultation with Tanzania Bureau of Standards, approve technological specifications, standards and quality control norms for all natural gas imported into or produced in Mainland Tanzania.

PART IX
GENERAL PROVISIONS

Rules and guidelines

36.-(1) The EWURA may make rules and guidelines for better implementation of these Regulations.

(2) The EWURA may, in consultation with relevant institutions, issue guidelines with respect to:

(a) price calculation methodologies, as part of Natural Gas Network Codes; and

(b) forms required under these Regulations.

Exemptions

37.-(1) The PURA may, with the approval of the Minister and by order published in the Gazette, exempt any person or class of persons from complying with regulation 23 for any specified period:

(a) generally or to such an extent as may be specified in the order;

(b) unconditionally or subject to such conditions as may be specified in the order;

(c) subject to section 260(3) of the Act, existing Production Sharing Agreements and Gas Supply Agreement granted under the Petroleum (Exploration and Production0 Act.

(2) Without prejudice to the generality of subsection (1)(b), the conditions of an exemption may require any person carrying on any activity in pursuance of the exemption:

(a) to comply with any direction given by PURA as to such

matters as are specified in the exemption order or are of a description so specified;

(b) to do or not to do such things as are specified in the exemption order or are of a description so specified, except in so far as PURA consents to his doing or not doing them; and

(c) to refer for determination by PURA such questions arising under the exemption as are specified in the exemption order or are of a description so specified.

(3) Where any condition of an exemption granted to a class of persons is not complied with by any person of that class, PURA may give to that person a direction declaring that the exemption is revoked, in so far as it relates to that person, to such extent and from such date as may be specified in the direction.

(4) An exemption order shall continue in force unless it is revoked for such period as may be specified in the order.

(5) In granting an exemption under this section, PURA shall act in a manner so as not to discriminate between members of a particular class.

PART X
MISCELLANEOUS PROVISIONS

General offences

38.-(1) Any person who contravenes the provisions of these Regulations or fails to do any act for which no specific penalty is prescribed, commits an offence and shall be liable for a fine not less than twenty million shillings.

(2) Notwithstanding subregulation (1), any licensee who fails to comply with an order of suspension in relation to any regulated business, transfers, conceals or destroys properties registered for safekeeping in accordance with these Regulations commits an offence of economic and organized crime prescribed under section 240(4) of the Act.

Dispute settlement

39. Any dispute arising under these Regulations shall be dealt with in accordance with the provisions of section 247 of the Act.

PART XI
TRANSITIONAL PROVISIONS

Transitional Provisions

40. Within twelve months after the commencement of these Regulations, any person engaged in natural gas activities shall be required to comply with the requirements of these Regulations.

FIRST SCHEDULE

(Made under regulation 9(2))

FORMULAR FOR CALCULATING WEIGHTED AVERAGE DISTANCES

(1) The calculation of the average distance between one entry point and exit points or between entry points and one exit point shall be carried out in accordance with the weighted average approach, where the distance shall be weighted against the technical or forecasted contracted capacity of a given point and shall be calculated as follows-

(a) for the weighted average distance for an entry point, as the sum of the products of the weight of each exit point and the distance from this entry point to each exit point, divided by the sum of the weights of each exit point-

$$AD_{En} = \frac{\sum \text{all Ex } CAP_{Ex} \text{x } D_{En,Ex}}{\sum \text{all Ex} CAP_{Ex}}$$

where

AD_{En} is the weighted average distance for an entry point;

CAP_{Ex} is technical capacity or forecasted contracted capacity, as relevant, of an exit point;

$D_{En,Ex}$ is the distance between a given entry point and a given exit point.

(b) for the weighted average distance for an exit point, as the sum of the products of the weight of each entry point and the distance to this exit point from each entry point, divided by the sum of the weights of each entry point-

$$AD_{Ex} = \frac{\sum \text{all } EnCAP_{En} \text{ x } D_{En,Ex}}{\sum \text{all } EnCAP_{En}}$$

where:

AD_{Ex} is the weighted average distance for an exit point;

CAPEn is technical capacity or forecasted contracted capacity, as relevant, of an entry point;

DEn,Ex is the distance between a given entry point and a given exit point

(2) The absolute value of the difference between the average distance calculated as set out, for all domestic exit points and for all cross-border exit points, shall be calculated in accordance with the formula-

$$\frac{\left|AD_{DM,Ex} - AD_{CB,Ex}\right|}{AD_{Ex}}$$

where:

$AD_{DM,Ex}$ is the average distance for domestic exit points;

$AD_{CB,Ex}$ is the average distance for cross-border exit points; and

AD_{Ex} is the average distance for domestic exit points and cross-border exit points.

THE ENTRY-EXIT SPLIT IS USED AS A PARAMETER OF THE PRIMARY COST ALLOCATION METHODOLOGY

Where the entry-exit split is used as a parameter of the primary cost allocation methodology, the initial or final reference prices, as relevant, shall be calculated from-

$$T_{En} = \frac{R_{\sum En}}{FC_{\sum En}}$$

$$T_{Ex} = \frac{R_{\sum Ex}}{FC_{\sum Ex}}$$

where:

T_{En} is the reference price at entry points;

T_{Ex} is the reference price at exit points;

$R_{\sum En}$ is the part of the distribution network services revenue to be recovered from capacity-based transmission tariffs at all entry points;

$R_{\sum Ex}$ is the part of the transmission network services revenue to be recovered from capacity-based distribution network tariffs at all exit points;

$FC_{\sum En}$ is the forecasted contracted capacity at all entry points; and

$FC_{\sum Ex}$ is the forecasted contracted capacity at all exit points.

THE ENTRY-EXIT SPLIT IS NOT USED AS A PARAMETER

Where the entry-exit split is not used as a parameter of the reference price methodology, the reference price at entry and exit points shall be calculated from-

$$T_{En,Ex} = \frac{R_{\sum En,Ex}}{FC_{\sum En} + FC_{\sum Ex}}$$

where:

$T_{En,Ex}$ is the reference price at entry points and exit points;

$R_{\sum En,Ex}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all entry points and all exit points;

$FC_{\sum En}$ is the forecasted contracted capacity at all entry points; and

$FC_{\sum Ex}$ is the forecasted contracted capacity at all exit points.

SECOND SCHEDULE

(Made under regulation 14(4))

CAPACITY WEIGHTED DISTANCE METHODOLOGY

(a) The initial or final reference prices, as relevant, shall be derived from the following sequences-

(i) for an entry point, as the sum of the products of capacity at each exit point and the distance from this entry point to each exit point, divided by the sum of capacities at each exit point-

$$AD_{En} = \frac{\sum_{all\ Ex} CAP_{Ex} x\ D_{En,Ex}}{\sum_{all\ Ex} CAP_{Ex}}$$

where:

AD_{En} is the weighted average distance for an entry point;

CAP_{Ex} is the forecasted contracted capacity at an exit point;

$D_{En,Ex}$ is the distance between a given entry point and a given exit point.

(ii) for an exit point, as the sum of the products of capacity at each entry point and the distance to this exit point from each entry point, divided by the sum of capacities at each entry point-

$$AD_{Ex} = \frac{\sum_{all\ En} CAP_{En} x\ D_{En,Ex}}{\sum_{all\ En} CAP_{En}}$$

where:

AD_{Ex} is the weighted average distance for an exit point;

CAP_{En} is the forecasted contracted capacity at an entry point; and

$D_{En,Ex}$ is the distance between a given entry point and a given exit point.

(b) Calculate the weight of cost for each entry point or each cluster of entry points and for each exit point or each cluster of exit points in accordance with the following respective formulas-

$$W_{c,En} = \frac{CAP_{En} x\ AD_{En}}{\sum_{all\ En} CAP_{En} x\ AD_{En}}$$

$$W_{c,Ex} = \frac{CAP_{Ex} x AD_{Ex}}{\sum_{all\ Ex} CAP_{Ex} x AD_{Ex}}$$

where:

Wc,En is the weight of cost for a given entry point or a cluster of entry points;

Wc,Ex is the weight of cost for a given exit point or a cluster of exit points;

ADEn is the weighted average distance for an entry point or a cluster of entry points;

ADEx is the weighted average distance for an exit point or a cluster of exit points;

CAP_{En} is the forecasted contracted capacity at an entry point or a cluster of entry points;

CAP_{Ex} is the forecasted contracted capacity at an exit point or a cluster of exit points

(c) Identify the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all entry points and the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all exit points by applying the entry-exit split.

(d) Calculate the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at each entry point or each cluster of entry points and for each exit point or each cluster of exit points in accordance with the following respective formulas-

$$R_{En} = W_{c,En} \times R_{\sum En}$$

$$R_{Ex} = W_{c,Ex} \times R_{\sum Ex}$$

where:

R_{En} is the weight of cost for a given entry point or a cluster of entry points;

R_{Ex} is the weight of cost for a given exit point or a cluster of exit points;

$W_{c,En}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at an entry point or a cluster of entry points;

$W_{c,Ex}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at an exit point or a cluster of exit points;

$R_{\sum En}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all entry points; and

$R_{\sum Ex}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all exit points.

(e) Divide the resulting values referred to in paragraph (d) by the forecasted contracted capacity at each entry point or each cluster of entry points and at each exit point or each cluster of exit points in accordance with the following respective formulas-

$$T_{En} = \frac{R_{En}}{FC_{\sum En}}$$

$$T_{Ex} = \frac{R_{Ex}}{FC_{\sum Ex}}$$

where:

T_{En} is the reference price at an entry point or each entry point within a cluster of entry points;

T_{Ex} is the reference price at an exit point or each exit point within a cluster of exit points;

R_{En} is the weight of cost for a given entry point or a cluster of entry points;

R_{Ex} is the weight of cost for a given exit point or a cluster of exit points;

$FC_{\sum En}$ is the forecasted contracted capacity at an entry point or a cluster of entry points; and

FC∑Ex is the forecasted contracted capacity at an exit point or a cluster of exit points.

THIRD SCHEDULE

(Made under regulation 20(4))

COST ALLOCATION TEST

(a) The transmission services revenue to be obtained from domestic network users at both entry points and exit points shall be divided by the value of the relevant cost driver(s) for domestic network users in accordance with the following formula-

$$(R:DC)_{DM} = \frac{R_{DM}}{CD_{DM}}$$

where:
R_{DM} is the revenue from domestic network users; and
CD_{DM} is the value of cost driver(s) for domestic network users.

(b) The transmission services revenue to be obtained from cross-border network users at both entry points and exit points shall be divided by the value of the relevant cost driver(s) for cross-border network users in accordance with the following formula-

$$(R:CD)_{CB} = \frac{R_{CB}}{CD_{CB}}$$

where:
R_{CB} is the revenue from cross-border network users;
CD_{CB} is the value of cost driver(s) for cross-border network users.

(c) The correlation between the ratios referred to in points (a) and (b) shall be calculated in accordance with the following formula-

$$\frac{|(R:CD)_{DM} - (R:CD)_{CB}|}{[(R:CD)_{DM} + (R:CD)_{CB}]/2}$$

G.N. No. 285 (contd.)

FOURTH SCHEDULE

(Made under regulation 24(4))

CATEGORIZATION OF DISTRIBUTION OF NATURAL GAS TO CUSTOMERS

Categories of Distribution Customers

Consumer Group	**Flow rate (sm^3/hour)**	**Consumption (sm^3/annum)**
Lifeline Group	up to 2.0	up to 17,280
Residential/Transportation	equal to or more than 2 but less than 40	equal to or more than 17,280 but less than 345,600
Small Commercial	equal to or more than 40 but less than 160	equal to or more than 345,600 but less than 1,382,400
Medium/Large Commercial	equal to or more than 160 but less than 640	equal to or more than 1,382,400 but less than 5,529,600
Light/Medium Industrial	equal to or more than 640 but less than 3,240	equal to or more than 5,529,600 but less than 27,993,600
Heavy Industrial	equal to or more than 3,240	equal to or more than 27,993,600

FIFTH SCHEDULE

(Made under regulation 30(2))

NET BACK CALCULATION FORMULA

1. The natural gas price shall be directly linked with sales prince of the products (in this case urea). The seller of natural gas will directly receive a monetary benefit if the sales price of the urea increases on the international market. The higher the sales price for urea is, the higher will be the gas price.

2. This is a fair and attractive principle for both the seller of natural gas and the buyer of natural gas keeping in mind the high and low price corridors.

3. A respective floor price for natural gas is a component of such a scheme assuring the seller of natural gas a guaranteed income independently from the development of the international market of urea. Similarly to a floor price, also a ceiling price will be defined as maximum gas price based on risen urea prices.

4. The following defines a natural gas price formula which will be used for the fertilizer plant in Tanzania –

GP = GRP + [Pr x (AUP – URP)]

Whereas,

GP means the natural gas price in US$/MMBtu

GRP means the natural gas reference prince or floor price equal to US$2.60/MMBtu;

Pr means the premium the seller's participation of urea price, up to twenty five percentage (25%) applicable from year 2020;

AUP means the actual Urea (Granular) FOB Middle East in US$/MT;

URP means the urea reference price of US$250/MT (minimum acceptable price to achieve and maintain an acceptable level return from the project); and

Ceiling prince is US$7.50/MMBtu, restricting and maintaining the cost of production at a sustainable level).

SIX SCHEDULE

(Made under regulation 34(5))

NATURAL GAS QUALITY SPECIFICATION

Natural Gas Quality Specification

No.	Parameter/Component or Characteristic	Typical Analysis (Mole %)	Quality Standard Limits or Range
1.	Methane	94.9	87.0 - 99.0 mol.%
2.	Ethane	2.5	0.5 - 5.1 mol. %
3.	Propane	0.2	0.1 - 1.5 mol. %
4.	Inert gases	trace	Max. 7.0 mol. %
5.	Carbon Dioxide	0.70 mol. %	Max. 4.0 mol. %
6.	Oxygen	0.02 mol.%	Max. 0.2 mol. %
7.	Nitrogen	1.60 mol. %	Max. 5.6 mol. %
8.	Hydrogen Sulphide	-	Max. 5.7 mg/m^3
9.	Total Sulphur	-	Max. 10.0 mg/m^3
10.	Water	48.0 mg/m^3	Max. 73.0 mg/m^3
11.	Hydrocarbon DewPoint	0^oC	Max. 4.0^oC at 3500 kPa
12.	Gross Heating Value	37.8 MJ/m^3	35.1 – 42.3 MJ/m^3
13.	Wobbe Index	-	41.0 - 52.0 MJ/m^3
14.	Specific Gravity	0.585	0.57 – 0.62
15.	Temperature limits	-	2.0 – 50^oC
16.	Mercaptan Sulphur	-	Max. 5.0 mg/m^3

(1) Each amount or range assumes metric standard conditions. Where a parameter s expressed as per cubic metre (per m^3), this refers to a cubic metre at standard conditions of 101.325 absolute and 15^oC. Unless otherwise specified, pressures are gauge pressures.

(2) The natural gas must also be free, by normal commercial standards, from dust and other solid or liquid matter, waxes, gums and gum forming constituents, unsaturated or aromatic hydrocarbons, radioactive components and levels of mercury, that might cause injury to or interfere with the proper operation of equipment through which it flows.

(3) Natural gas should be technically exempt, that is, there should be no visible traces of solid and liquid particles.

(4) Specification limits are values referred to as 293.15 K (20 ºC) and 101.325 kPa (1 atm) on a dry base, except at dew point.

(5) Calorific energy of the pure reference substance is found under temperature and pressure conditions equivalent to 293.15 K, 101.325 kPa, respectively on a dry base.

(6) The Wobble index is calculated by employing the Higher Calorific Energy on a dry base, where the ASTM D 3588 method is used to obtain the Higher Calorific Energy.

(7) The Higher Heating Value (HHV), Lower Heating Value (LHV) and Woble Index (WI) shall be calculated in accordance with ISO 6976 (combustion reference conditions: 25 degrees celcius and 1.01325 bar. Volumetric reference conditions: 15 degrees celcius and 1.01325 bar). The preferred natural gas odorisation is by way of a blend of 70% Tetrahydrothiophene (THT) and 30% Tertiary Butyl Mercaptan (TBM) injected into the natural gas stream at a rate of 7 mg/m^3. Odorized gas must not contain a sulphur content higher than 70 mg/m .

Dar es Salaam,
30th September, 2016

SOSPETER M. MUHONGO,
Minister for Energy and Minerals