INNOVEX DEVELOPMENT CONSULTING LTD

"ESTABLISHMENT OF WHOLESALERS' AND RETAILERS' MARGINS IN THE TANZANIA PETROLEUM DOWNSTREAM INDUSTRY"

FINAL REPORT

OCTOBER 2020

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List of Abbreviations

BLN	Billion
BPS	Bulk Procurement System
CAPEX	Capital Expenditure
COCO	Company Owned Company Operated
CODO	Company Owned Dealer Operated
DODO	Dealer Owned Dealer Operated
DWT	Dead Weight Tonnage
EWURA	Energy and Water Utilities Regulatory Authority
FOB	Freight On Board
LPG	Liquefied Petroleum Gas
MLN	Million
NBS	National Bureau of Statistics
NCPI	National Consumer Price Index
OMC	Oil Marketing Companies
OPEX	Operational Expenditure
PBPA	Petroleum Bulk Procurement Agency
RAB	Regulatory Asset Base
SADC	Southern African Development Community
TAT	Transporters Association of Tanzania
TANROADS	Tanzania National Road Agency
TATOA	Tanzania Truck Owners Association
TAPSOA	Tanzania Petrol Station Owners Association
USDc	United States Dollar Cents
US$	United States Dollar
TRA	Tanzania Revenue Authority
TZS	Tanzania Shilling
TZS/Kg	Tanzania Shilling per Kilogram
TZS/L	Tanzania Shilling per Litre
W.E.F	With Effect From
WLP	White Liquid Product

Executive Summary

In June 2006, the Government of the United Republic of Tanzania established the Energy and Water Utilities Regulatory Authority (EWURA) through EWURA Act Cap 414 of 2001 as a self-governing independent multi-sectoral regulatory authority. EWURA is granted responsible for technical and economic regulation of the electricity, petroleum, natural gas and water sectors in Tanzania pursuant to Cap 414 and sector legislation.

Functions of EWURA include among others, licensing, tariff review, monitoring performance and standards with regards to quality, safety, health and environment in order to promote effective competition and economic efficiency, protecting the interests of consumers and promoting availability of regulated services to all consumers including low income, rural and disadvantaged consumers in the regulated sectors.

As part of its responsibilities, EWURA contracted INNOVEX Development Consulting Ltd to develop an appropriate methodology for determination of Wholesalers and Retailers margins including the prudent costs of operations and a fair return on investment with the methodology that ensures reliable and sustainable supply of petroleum products while attracting local and international investors to the market.

This exercise aimed at engaging EWURA licensees that at the time of this study were 114 OMCs, 1681 retailers, 11 LPG wholesalers, 10 LPG super dealers and 133 transporters of oil and gas products in Tanzania. During the study, some challenges on data collection were faced such as; lack of cooperation from industry players to share their information, delays in submission of the requested data, partial submission of data, incorrect submission of data, significant resistance from some industry players to provide data, and inability to locate over half of the retailers (182 out of 306 of the sample agreed with EWURA). Some of the reasons causing difficulties in locating industry players included: change of contacts and physical addresses without notifying the regulator, incomplete and outdated database of industry players and their information by the regulator.

Analysis of this study was performed on the information that was collected and helped to give a realistic view of the industry in the country but also in view of what is happening in other neighbouring countries. The data also showed that there are tensions between wholesalers and retailers in some aspects of business, and also the lack of adequate compliance by industry players with EWURA requests for information. Noticeably, only 12 OMCs, 4 retailers and 4 LPG wholesalers submitted to the INNOVEX or EWURA, the requested information.

Using consultant's expertise in view of the limited data collected from the industry, consultant experience in the sector, benchmarking study done on Kenya, Uganda, Zimbabwe, Malawi, Namibia, Zambia, Botswana and South Africa as well as industry best practice, it is recommended that OMC's margin to increase to up to a maximum of TZS 124/- per litre, from TZS 119 per litre that is currently applicable. It is also being recommended that retailer's margin to be increased to TZS 127 in urban areas and TZS 141 in rural areas. The retailers' margins are in line with experience from other countries where retailer's margins are higher than OMCs.

Excerpt of Table 16: Summary of Findings for OMCs

Measurement	Unit of Measure		Rationale
RAB per litre	TZS	220.40	Based on trended and depreciated original cost (TZS 31.251 billion) over a minimum efficient number of litres of 200 million.
WACC	12%		In nominal terms
WACC* RAB per litre	TZS	26.45	Calculated 12% of TZS 220.40
OPEX per litre:	TZS	77.30	Actual average as reported, with efficiency adjustments
Taxes per litre	TZS	7.93	30% of WACC* RAB = 30% of 26.45 = 7.93
Depreciation per litre	TZS	12.10	Annual depreciation expense on trended and depreciated original cost asset base

Total per litre	TZS	123.78	27 + 77 + 8 + 12 = 124

Source: INNOVEX calculations

The Consultants calculations further show that retailers' margins should be based on typical urban and rural stations, which have distinct cost profiles. Like the wholesaler margin, a Regulatory Asset base was established, comprising of a station canopy, buildings, pumps and storage tanks, to which inventories are added. Following the same methodology, operational costs, and taxes. Combining all the components of a margin yields the following margins for an urban and rural station.

Excerpt of Table 28: Retailers Margin

Cost component	Unit	Urban	Rural
WACC*RAB	TZS	62,786,985	20,077,138
Total Opex (including annual depreciation)	TZS	261,732,200	66,650,000
Company taxes	TZS	18,836,095	6,023,141
Annual Depreciation	TZS	38,533,864	9,121,891
Total:			
Allowable revenue (excluding cost of sales)	TZS	387,366,043	102,394,171
Allowable revenue per litre = Margin	TZS	127	141

Source: INNOVEX calculations

As was expected, a marked difference in the costs per litre faced by rural versus urban stations was noted. The above margin of TZS 127/- for urban retail stations and of TZS 141/- for rural stations further reinforces the Consultant's recommendation that the retailer's margin should be higher than the wholesaler's margin, as is the case in other countries cited in the region. It is further recommended that the Retailers' Margin be imposed as a maximum margin, thereby encouraging competition between retailers where possible.

For LPG sector, the consultant recommends the regulator to regulate at a wholesale level with a margin of TZS 1,382/- per kilogram when proper information monitoring system is established and reliable data can be collected. On the side of Super Dealers with a margin determined at TZS 53/- and Dealers at TZS 370/- per kilogram can be left without regulation until such time reliable data can be obtained for such segments and the market at large.

On the side of transporters of oil and gas products, EWURA is advised to apply a distance factor of TZS 0.2011 per litre per kilometre to all the regions and districts of the country while increasing the local transport charge in Dar es Salaam to TZS 15 per litre as the analysis in this report suggest.

It is highly recommended that EWURA enforces licensee information submission on a regular basis for its database development. A reliable licensees' database would ensure that EWURA could perform many sector analyses using in-house skills and by pass the need to hire consultants for some of its decisions.

It is imperative that the industry submits regular and accurate data to the regulatory. To this end, INNOVEX suggests facilitating regular data collection through introduction of regulatory reporting, typically captured in Regulatory Accounts, a prescribed Chart of Accounts or a Regulatory Reporting Manual. These would be accompanied by or incorporated in cost allocation rules aimed at separation of the regulated and non-regulated businesses of a regulated entity as well as the correct allocation of costs to each regulated activity. In this manner, industry players would be required to submit relevant information to the regulator at a specific time interval allowing for evidence-based decision-making at regular intervals.

The consultant also recommends the regulator to consider the impact of business models on retailers and vertical integration. It could be done by assessing approaches to prevent allowing a holder of a wholesaler licence to be able to obtain a retailer licence as well. This is because the COCO business model allows an OMC to cut cost overlaps and gain advantages from its vertical integration harming competition in the market with CODOs and DODOs. This is under the assumption that the objectives of the Tanzanian Government are, among others, to ensure a thriving small business dependent fuel retailer sector rather than a vertically integrated fuel supply industry controlled by a few oil companies. It is important therefore that in addition to ownership controls, the regulator may consider to enforce on appropriate margin sharing arrangement where appropriate for the CODO operating model, as international experience shows that this model makes retailers particularly vulnerable to margin squeeze.

Lastly the study found that, as is the case in many SADC countries, the liquid fuels sector consists of divergent levels of market power at different levels of the value chain. For this reason, the regulator should be empowered to exercise the extent of its mandate in order to ensure the effective market operation of this industry. The recommendations in this report aim to assist the regulator in the achievement of that goal.

1 Introduction and Context

1.1 Introduction

INNOVEX Development Consulting Ltd (INNOVEX) has been awarded the contract by the Energy and Water Utilities - Regulation Authority (EWURA) for establishment of the wholesalers and retailers' margins in the Tanzania petroleum downstream industry. An Inception Report was submitted earlier on outlining the approach to the study and agreement by the parties. A Draft Report was submitted in December 2019, covering all aspects of the Terms of Reference. A meeting was held on the Draft Report on 31st January 2020 and revised thereafter along with repeated modelling and additional data collection to produce this Draft Final Report.

1.2 Report Structure

Below is the format in which this Revised Draft Report has been prepared and submitted:

- Cover Page – Bearing name of the consultant and title of the assignment only - INNOVEX.
- Table of Contents–That shows all the sections included in the report together with reference page numbers.
- Executive Summary – This section has given an overview of the general report.
- Section 1 – Introduction and Context: This section provides context of the review of the establishment of wholesalers and retailers margins including the background of the project and study objectives.
- Section 2 – Methodology and Approach: This section provides a summary explanation of study approach and actual activities conducted including data collection, data analysis and reporting.
- Section 3 - Wholesale Margin Calculation: This section covers the analysis of the data collected from wholesalers (OMCs) and the recommended margin calculation method.
- Section 4 - Retail Margin Calculation: This section contains an overview of the data collection efforts and outlines the approach to the data analysis
- Section 5 – Transport Cost
- Section 6 – LPG Pricing Study
- Section 7 - Benchmarking Study: This section provides an overview of the approach to margin regulation in eight (8) comparator countries in relation to Tanzania. The benchmark countries identified for the EWURA benchmarking study are: South Africa, Zimbabwe, Kenya, Uganda, Malawi, Namibia, Zambia, and Botswana.
- Section 8 – Findings and Recommendations: This section contains a summary of the most important findings of the study, such as the data submitted to the regulator suggesting that OMCs are not making appropriate returns whilst their annual financial statements clearly demonstrate the opposite and outlines pertinent issues to be resolved. These issues involve inter alia the following:
  - The effect of different business models on margin sharing;

- Vertical integration and fair competition;
- Facilitating regular data collection;
- Regulatory reporting according to prescribed regulatory reporting rules;
- Licensee database development; and
- Enforcement of EWURA's legal mandate.

- Section 9 – Annexes: This covers annexes that include data, analysis made and other relevant information to support the main report.

1.3 Background Information

EWURA is an autonomous multi-sectorial regulatory authority established by the EWURA Act, Cap 414 (2001) of the laws of Tanzania. It is responsible for technical and economic regulation of electricity, petroleum, and natural gas sub-sectors of the energy sector, as well as the water sector in Tanzania.

The functions of EWURA include among others: tariff review, licensing, monitoring performance and standards with regards to quality, safety, health and environment. EWURA is responsible for promoting effective competition, economic efficiency, protecting the interests of consumers and promoting the availability of regulated services to all consumers including low income, rural and disadvantaged consumers in the regulated sectors. EWURA is also mandated to ensure that the regulated services are sufficiently available, reliable, and affordable and that service providers obtain a fair return.

The focus of this study is to develop an appropriate methodology for determination of Wholesalers and Retailers margins including the prudent costs of operations and a fair return on investment with the methodology. Based on the information by EWURA, the Tanzanian petroleum downstream sub-sector has 114 licenced Oil Marketing Companies (OMCs) and 1,681 licenced retail outlets dealing with petroleum white liquid products. Amongst the OMCs, some own petroleum depots while others rely on hospitality arrangements. The investments made by OMCs and their business operations differ with varying complexities as some are operating according to multinational standards; others are operating in accordance with the minimum required standards; some capital investments were made quite some time ago; while others are relatively new.

In the retail segment, there are different forms of business arrangements whereby some of the retail outlets are owned and operated by OMCs (so-called COCOs – Company Owned and Company Operated), some are owned by OMCs but operated by independent operators (CODOs – Company Owned and Dealer Operated) and some are owned and operated by independent petrol station operators (DODOs – Dealer Owned and Dealer Operated). It is important that these differences in models of operations need to be considered in determining the margins for Wholesalers and Retailers in the downstream petroleum segment and enforced by EWURA for a successful co-existence of these operating models.

In the regulation of petroleum product prices, EWURA prepared a petroleum pricing formula which was published in the Government Gazette No. 5 of 9 January 2009. The formula is applicable for pricing petroleum white liquid products. The formula is based on a cost-plus methodology where the price of petroleum products covers all the costs and taxes in the supply chain plus a margin for business operators (i.e. Wholesalers and Retailers). The formula has been subsequently amended to accommodate changes in fiscal policy and operational costs. The latest margins study was carried out in the year 2013 with the margins being revised annually thereafter in consideration of inflation. The current margins are shown in Table 1 below.

Table 1: Current Margins of OMCs and Retailers and Transport Charges for Local (Dar es Salaam)

Item	Petrol - (PMS) TZS /l	Diesel - (AGO) TZS /l	Kerosene (IK) TZS /l
OMC's Overheads and Margins	119.00	119.00	119.00
Retailers Margin	105.00	105.00	105.00
Transport Charges (Local)	10.00	10.00	10.00

Source: Government Notice Published On 2018EWURA, CAP Prices as at Wednesday 2 May 2018

Since the previous price review the margins have been adjusted as follows:

Table 2: Historical Margin Adjustments of OMCs and Retailers and Transport Charges for Local (Dar es Salaam)

Item	Jan 2012 – Dec 2013	Jan 2014 – Feb 2015	Mar 2015 – Feb 2016	Mar 2016 – Mar	Apr 2017 – Apr 2018	May 2018 - May 2019	Current
	TZS/L	TZS/L	TZS/L	TZS/L	TZS/L	TZS/L	TZS/L
OMC's Overheads and Margins	111 + 'transition cost coverage to OMCs' of 13.00 = 124.00	106	110	113	116	118	119
Retailers Margin	57.60 + 'transition cost coverage to retailers' of 6.50 = 64.10	92	95	98	101	103	105
Transport Charges (Local)	10	10	10	10	10	10	10

Source: EWURA, Schedule petroleum pricing formula, 15 December 2011, EWURA, CAP Prices w.e.f. Wednesday 7 Jan 2014, EWURA, CAP Prices w.e.f. Wednesday 4 March 2015, EWURA, CAP Prices w.e.f. Wednesday 2 March 2016, EWURA, CAP Prices w.e.f. Wednesday 5 April 2017, EWURA, CAP Prices w.e.f. Wednesday 2 May 2018, EWURA, CAP Prices w.e.f. Wednesday 5 August 2020

From the above, it's apparent that a restructuring of the retailers' margin against that of the wholesalers' margin has been implemented. The initial price restructuring in 2014 reduced the wholesalers' margin from the January 2012 - January 2014 margin of 124 TZS/L by 14.5% to 106 TZS/L. Thereafter the OMCs' margin was indexed using the non-food CPI from National Bureau of Statistics (NBS) as recommended in the 2013 study, resulting in an average annual growth rate of 1.95%. Similarly, the retailers' margin was increased from 64 TZS/L to 92 TZS/L in January 2014, a once off increase of 43.8%, and thereafter increased at an average annual growth rate of 2.8%.

The cost of transporting petroleum products from the depots at the receiving terminals to retail outlets in all districts and townships were determined in 2009 at 10 TZS/L for local Dar es Salaam and has remained unchanged since.

The Bulk Procurement System (BPS) regulations name LPG as one of the products that should be procured through the Bulk Procurement System. Once all preparations of procuring LPG through the BPS are finalized, EWURA intends to set cap prices for LPG products. This also requires a prescribed price build-up.

1.4 Objective of the Assignment

The overall objective of this assignment is to independently develop an appropriate methodology for determination of Wholesalers and Retailers margins including the prudent costs of operations and a fair return on investment with the methodology ensuring that: it promotes reliable and sustainable supply of petroleum products in the country at affordable prices; and it attracts local and international investors in the petroleum downstream sub-sector by creating a conducive environment for investments.

1.5 Scope of the Work

The Consultant was expected to undertake the following activities:

a) To determine the investment cost of petroleum service providers in Tanzania Mainland. Specific tasks involved were:

- To establish the cost and level of investment (capacity) in the wholesale segment of the petroleum

white liquid products supply chain in relation to the minimum licensing requirements for petroleum depots;

- To establish the cost and level of investment in the retail segment of the petroleum white liquid products supply chain in relation to the minimum licensing requirements for petroleum retail stations; and
- To comment on the adequacy and utilization of the installed infrastructure in the wholesale and retail segments of the petroleum white liquid products supply chain in relation to the demand in the market.

b) To determine prudent operating costs for petroleum service providers in Tanzania Mainland. Specific tasks included:

- To determine the average annual operating and maintenance costs for each business segment i.e., Wholesalers and Retailers of petroleum white liquid products, providing a detailed breakdown of cost components including staff costs, utilities costs, surveyor costs etc.;
- To determine the average annual financing costs for each business segment i.e., Wholesalers and Retailers petroleum white liquid products, detailing the nature of each cost including LC costs, bank charges, overdrafts etc.; and
- To determine the amount of all statutory payments made by Wholesalers and Retailers detailing each statutory payment.

c) To determine the formula for pricing LPG imported and distributed in Tanzania Mainland. Specific tasks were:

- To establish the cost and level of investment in the wholesale segment of the LPG supply chain in relation to the minimum licensing requirements; determine the average annual operating and maintenance costs for each business segment i.e. Wholesalers, Super Dealers and Dealers of LPG, providing a detailed breakdown of cost components including staff costs, utilities costs, surveyor costs, etc.;
- To determine the average annual financing costs for each business segment i.e. Wholesalers, Super Dealers and Dealers of LPG, detailing the nature of each cost including LC costs, bank charges, overdrafts etc.; and comment on the adequacy and utilization of the installed infrastructure in the LPG supply chain in relation to the demand in the market. Develop and recommend the appropriate LPG pricing formula.

d) To establish reasons for limited participation of pre-qualified bidders in the BPS tenders

e) To determine the transportation costs for distribution of petroleum white liquid products and LPG from the port of discharge to the Tanzania Mainland Districts and Township. Specific tasks included:

- To establish the transport charge to every district and township; and Recommend a methodology and frequency for periodic reviews of the transport charge.

f) To recommend an appropriate methodology for the determination of fair margins applicable to all business segments in the supply chain for petroleum white liquid products and LPG in Tanzania Mainland:

- To provide the methodology used in determining margins for Wholesalers and Retailers of petroleum white liquid products and Wholesales, Super dealers and Dealers of LPG in three East African Countries and three SADC countries;
- To develop a methodology which includes a financial model for determination of the margins for each business segment in the petroleum downstream industry for petroleum white liquid products and LPG;
- To compute recommended margins for each business segment in the petroleum downstream industry for petroleum white liquid products and LPG in Tanzania Mainland;
- To recommend appropriate retail margins for attracting investments of retail outlets in rural areas; and
- To recommend a methodology and frequency for review of the recommended margins

Figure 1: Scope of Work as Requested by EWURA

SCOPE OF WORK (SUMMARY)

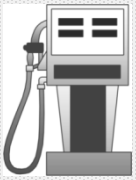
OMCs

Investment Costs, Statutory Payments, Financing Infrastructure, Adequacy BPS participation, Margin, Review Frequency.

Transporters

Costs, Transport Charges, Review Frequency.

Retailers



Investment Costs, Statutory Payments, Financing Infrastructure, Adequacy, Urban Margin, Rural Margin, Review Frequency.

LPG Companies

Investment Costs, Statutory Payments, Financing Infrastructure, Adequacy, LPG Wholesale Margin, LPG Super Dealer Margin, LPG Dealer Margin.

1.6 Data Collection Process

With reference to the scope of work and proposed methodology of the consultant, data collection was aimed to include; Desk Literature Review, Key Informant Interviews and Focus Group Discussions of the downstream petroleum industry. In addition, the data collection exercise involved variety of stakeholders, such as the government, importers (Oil Marketing Companies - OMCs), retail outlets, and other actors dealing with petroleum white liquid and LPG, the customers, and the Regulatory Authority itself.

It was initially expected of the client to provide access to all relevant information needed to facilitate the performance of the consulting assignment, including all licensees' contacts and part of financial information submitted to EWURA as the regulator of the industry. This information was provided by EWURA, complemented with the results of Key Informant Interviews, Group Discussions and Literature Review was used to facilitate and provide inputs for the Margin Study.

The consultant and the client held an inception meeting before it was agreed on a sample size as per below table;

Table 3: Sample Size as Agreed by the Client at the Inception Stage

S/N	Industry Player	Population	Agreed Sample
1	OMC	114	All
2	Retailers	1681	306
3	LPG Wholesalers	11	All
4	LPG Super Dealers	10	All
5	Transporters	133	20%

During the field work data collection phase, that spanned more than 6 months, the consultant experienced a number of challenges including;

i.) Lack of reliable contact details for licenced OMCs and Retailers.

ii.) Lack of sufficient cooperation from industry players including OMCs, Retailers, LPG companies and Transporters. Most of the companies were initially hesitant towards the exercise. The consultant attended stakeholders' meetings and conducted field visits to individual companies to counter the challenge. Some reasons for the non-participation were cited as follows;

- Companies lacked resources to dedicate to compiling requested data and allocating staff to that particular exercise would cost the company time and resources; and

- General hesitation and concern about sharing financial information with an independent consultant and the potential to fall into unintended authorities.

- It was also found out that over half of the retailers could not be reached. Together with efforts made by the consultant to work with EWURA, TAPSOA and the use of other retailers to assist in contacting fellow retailers, only 124 contacts for retail stations were made. The remaining could not be located.

iii.) Transporters, who are not regulated by EWURA but are rather licenced by the Tanzania Revenue Authority (TRA), did not cooperate, despite the consultant working closely with two of transporters' associations namely; Tanzania Truck Owners Association (TATOA) and Transporters Association of Tanzania (TAT).

The lack of data made it necessary for the consultant to utilise alternative methods of arriving at the objectives of the study as underlined in this report. The analysis of this study was based on the data collected, supplemented by industry expertise from INNOVEX team members and research organisations yielding assumptions and the derivation of industry standard capital cost items and operational expenditure.

2 Methodology and Approach

This section presents the methodology applied to undertake the assignment, specifically was designed to meet the Terms of Reference. The section also gives detailed information on the experience with the implementation of the agreed methodology and data collection methods.

2.1 Preparatory Phase

a) Inception Report

In conducting the assignment, INNOVEX has reviewed the following documents with information on:

i. The model for setting of wholesale and pump prices of petroleum products (the petroleum pricing formula);
ii. The proposed pricing formula for LPG i.e. wholesale price, super dealer price, and retail price;
iii. The margins for wholesalers and retailers of white petroleum products from 2013 to 2019;
iv. Reports of previous assignments on setting of margins of wholesalers and retailers of white petroleum products;
v. List of wholesalers and retailers of white petroleum products
vi. List of wholesalers, super dealers and dealers of LPG
vii. Standard license conditions for all wholesalers, retailers of white petroleum products;
viii. Standard license conditions for all wholesalers, super dealers and dealers of LPG;
ix. The Bulk Procurement system;
x. The Energy and Water Utilities Regulatory Authority (Petroleum Products Prices Setting) (Amendment) Rules, 2018 ;
xi. The Petroleum Products Pricing Setting Rules and the applicable pricing formula.
xii. Petroleum prices published by EWURA from January 2009 to December 2012
xiii. Petroleum Act, 2015, Cap 392
xiv. The Petroleum (Licensing Fees) Rules, 2018 GN. 721
xv. The Petroleum (Wholesale, Storage, Retail and Customer Installation Operations) Rules, 2018 GN 380
xvi. The Petroleum (Liquefied Petroleum Gas Operations) Rules, 2018 GN 376
xvii. The Petroleum (General) Regulation, 2011 GN 163
xviii. The Petroleum (Bulk Procurement) Regulations, 2017 GN 198
xix. Petroleum Retail Operations Village & Townships Rules GN No 14 of 2017
xx. EWURA Act Cap 414 of 2001
xxi. Documents with information on the BPS (history, rationale, mechanism, institutional arrangements, quantities supplied from its inception to 2018, regulation of the BPS, etc.)
xxii. Documents with information on the Petroleum Bulk Procurement Agency PBPA (history, rationale, mechanism, institutional arrangements, regulation of the PBPA, etc.)

This stage of the assignment was completed and led to the preparation of the Inception Report that was submitted in June 2019 and agreed to with EWURA and other stakeholders.

b) Regulatory Best Practices in Margin Determination

Regulation is intended to render outcomes that simulate those that occur in competitive markets, although not in 'perfectly competitive markets' as these rarely occur in the real world. The role of the regulator involves to replicate the market conditions in a competitive market so that consumers of petroleum products are charged a fair price. A firm in a perfectly competitive market only earns its marginal cost. This means that the price of a product should equal the additional cost of producing an extra unit of output. By this policy, a producer charges, for each product unit sold, only the addition to total cost resulting from materials, direct labour and the required rate of return.

However, in an infrastructure industry capital costs tend to be high, lumpy and indivisible, which means that a marginal cost approach may not cover all the prudently incurred costs of an operator. An average cost calculation, that allows the operator to recover its operational expenditure, its capital expenditure and a reasonable return, should therefore be regarded as more appropriate.

As EWURA sets prices of petroleum products it aims for an outcome in which all the regulated companies in the supply chain (i.e. OMCs, retailers and dealers) recover their efficient operational costs; earn a reasonable return on their capital; as well as a return of the capital invested (through depreciation). The Authority, therefore, must set a margin, to cover these expenses. A margin refers to the difference between the unit cost of purchasing/marketing a product and the price of the product, in this case a litre of petroleum product. The margin is intended to ensure that the players recoup their prudently incurred costs and earn a reasonable return on their investment.

It follows that the essence of the margin determination methodology employed is to set a margin level, for each category of companies i.e., OMCs, retailers and LPG wholesalers, LPG super dealers, and LPG dealers, high enough to cover the efficient costs necessary to meet obligations to provide service at acceptable standards, and earn a reasonable return on the investment for its owners and lenders.

The margin review methodology used is called Rate of Return or Revenue Requirement methodology. The Rate of Return method permits OMCs and retailers to pass through those operating costs that the regulator finds to be reasonable and necessary to ensure that an adequate level of service is provided to customers. To the passed-through operating costs, the regulator adds an appropriate return on capital that the undertaking has invested to build plant and facilities that the Regulator finds are "used and useful". The plant and facilities are the rate base or Regulatory Asset Base ("RAB").

The utility's weighted cost of capital (debt and equity) is utilised to calculate an appropriate rate of return on the RAB. The regulator is expected to exclude assets that are not necessary 'used and useful' from the RAB. The consultants' review of the companies' costs is based on the trend in the previous years (in this case up to 6 years) actual costs, adjusted for "known and measurable" changes (for example, a forthcoming pay rise negotiated by the union).

In addition, the costs are to be screened in order to determine whether they are allowable. It has to be determined whether or not all costs contributing to the revenue requirement are just, necessary and reasonable. That means classifying the costs into allowable or disallowable costs. This means determining whether a cost is:

- Appropriate (related to the regulated entity);
- Necessary (required to provide product and service at an acceptable level); and
- Reasonable (similar to what the cost would have been had it been provided in a competitive market).

Only those costs that meet these three tests are allowed to be included in the revenue requirement and recovered from the consumer through the margin. The costs that shall be disallowed are noted in the questionnaire and then reported accordingly.

The revenue requirement methodology combines a company's costs and allowed rate of return to develop a revenue requirement. This revenue requirement then becomes the target revenue for setting prices i.e. margins. The revenue requirement is expressed by the following formula:

$$RR = RAB*WACC + E + D + T$$

Where:

• RR	Revenue requirement (Allowable Revenue)
• E	Operating and maintenance expenses
• D	Annual depreciation expense (the return of capital)
• T	Taxes, all taxes not counted as operating expenses
• RAB	Rate base, the amount of capital or assets the utility dedicates to providing its regulated services
• WACC	Allowed rate of return, the cost the utility incurs to finance its rate base. This includes both debt and equity return

The variables that make up the revenue requirement methodology are discussed in detail below:

i. The Regulatory Asset Base (RAB)

This consists of the assets of the licensee, including all fixed assets and working capital such as inventories, receivables etc. We recommend that licensees be required to provide asset valuations of their respective Regulatory Asset Bases (based on the trended and depreciated original cost).

The following asset categories have been identified for the downstream liquid fuels industry.

Wholesaler specific assets (where applicable):

- Land and Buildings
- Plant and equipment
    - Storage tanks (primary tanks at the port of receipt; secondary tanks inland)
    - Storage tanks under construction
    - Transmission pipelines and auxiliary infrastructure (e.g. pipeline inspection gadgets)
    - Transmission pipelines under construction
    - Pump stations and auxiliary infrastructure (platforms, electricity supply, security etc)
    - Pump stations under construction
    - Allowance for funds used during construction
    - Heavy equipment or power operated equipment
- Office furniture and fixtures
- Intangible assets (Motor Vehicles)
- Inventories

Liquid fuel retailers' specific assets:

- Canopy Structure and floor
- Building Structures
- Fuel pumps
    - Traditional technology

  - Pumps with 'Pay at pump' technology
- Storage tanks
- On site pipelines
- Inventories

i i . *Operating and Maintenance Expenses (E)*

These are operating and maintenance expenses that are being incurred by the regulated entity. According to the methodology, these expenses must be deemed to be prudently incurred in the provision of the core business or service, that is, throughput and storage. The costs that shall be disallowed are noted in the questionnaire and the reported accordingly.

i i i . *Annual Depreciation Expense (D)*

The annual depreciation expense, is an annual accounting charge for wear, tear, and obsolescence of plant. There is no cash outflow involved. Depreciation can be viewed as representing the setting aside of income to provide for the future replacement of fixed assets. As assets are used their value reduces. They become worn out, run down or obsolete and need replacing in order to maintain or improve the productive efficiency of the business. Depreciation is charged to the income statement, thus reducing the reported profit for the year.

The following should be noted with respect to depreciation. A licensee should charge depreciation by using the straight-line method. Monthly depreciation charges under the straight line method are calculated by applying the annual percentage rate of depreciation to the depreciation base as of the first of each month and dividing the result by 12, or by applying the annual percentage rate of depreciation to the depreciation base at the beginning of the company fiscal year and dividing the result by 12.

The choice of depreciation method is closely linked to the method of asset valuation of the regulated assets. There is a range of approaches that can be applied in different settings and the most common in a regulated energy infrastructure setting is either historical cost or trended original (historical) cost. Replacement cost approaches are typically limited to regulated industries with a downward sloping long run marginal cost curve, such as telecommunications rather than energy infrastructure. Historical cost approaches accurately reflect the actual costs of the assets, but do not allow the regulated entity to replace the asset with a new asset at current prices when the asset in question is fully amortised. In other words, the historical cost approach allows the entity to make a return on and of its investment (via the WACC and the depreciation) but does not reflect the replacement cost of the asset at the end of its economically useful life.

Hence, whereas replacement cost approaches arguably provide the regulated entity with a return of an investment cost that is higher than its actual investment, historical cost, may prove to be a disincentive to investment. In order to strike a balance between these extremes, many regulators choose to index the historical cost of an asset, typically with an appropriate inflation measure. This way, the asset cost increase is approximated, whilst not overinflating asset values. The appropriate manner to the Regulatory Asset Base is to decrease the value of the asset with a straight-line depreciation and to increase the value of the depreciated asset with inflation. This is referred to as trended depreciated original cost.

The consultant recommended the trended depreciated original cost approach to asset valuation, which is contained in the depreciation worksheet of the accompanying financial model. The depreciation rate should be based on the estimated service life of plant, as developed by a study of the company's history and experience (taking into account all relevant factors including variations in use, increasing obsolescence or inadequacy) and such engineering, economic or other depreciation studies and other information as may be available with respect to future operating conditions.

In the accompanying financial model, the consultant has identified the asset categories and suggested the regulator prescribes economically useful lives for the various industry specific assets of wholesalers and retailers. The consultant recommends to the regulator to use the following economically useful life for wholesale assets:

Table 4: Recommended Asset Economic Useful Life for Wholesalers:

Asset category - Wholesale					
Canopy Structure including roofing, footing and the interchange system of the filling point	Storage tanks (primary tanks at the port of receipt; secondary tanks inland)	Transmission pipelines and auxiliary infrastructure (e.g., pipeline inspection gadgets)	Pump stations and auxiliary infrastructure (platforms, electricity supply, security etc.)	Heavy equipment / power operated equipment	Allowance for funds used during constructio n
30 years	40 years	40 years	15 years	5 years	n/a

Table 5: Recommended Asset Economic Useful Life for Retailers:

Asset category – Retail				
Fuel pumps		Storage tanks	On site pipelines	Allowance for funds used during construction
Traditional technology	Pay at pump technology			
15	15	40	40	n/a

It must be noted that ideally the economically useful life should be an independently verified factual economically useful life, taking into account the company's past experience of asset deterioration and the manufacturer's assessment of the life expectancy of the asset with regular maintenance as per manufacturers' guidelines. Specific circumstances may lead to faster or slower deterioration of the remaining expected life, and this should be verified by an engineering and accounting study for large assets. Where this is not feasible, the regulator may prescribe general economically useful lives per asset category. The lifespans contained here are recommended average economically useful life in the absence of extensive industry wide studies in the country.

The appropriate depreciation rate should be used in calculating depreciation charges to reflect the different estimated useful life of the respective assets in each class of assets. It is important that the correct sequence be following when trending and depreciating the assets. The annual depreciation does not stay constant but is corrected for inflation by using a write up, as is the original cost, both of which are then used to calculate the accumulated depreciation on the asset to arrive at the trended depreciated original cost, as well as the correct depreciation charge for the current year.

iv. *Taxation (T) – Statutory Payments*

This refers to the taxes or statutory payments that are not in the fuel pump price. Also, these taxes/statutory payments are not counted as operating expenses. Table 6 presents the fuel pump price build up that shows the statutory payments that are included in the pump price for white products

that are not included in the calculation of the margin.

Table 6: Pump Price showing All Statutory Payments in the Fuel Price (under sub-heading "Government Taxes")

EWURA Revision No. 4 Document Name: Petroleum Products Cap Price Template - Dar Es Salaam					
DAR ES SALAAM - CAP PRICES WEF FROM WEDNESDAY, <05 JUNE 2019>					
GN NO. 163/2018					
Weighted Average of Actual Exchange Rates of the Previous Month (M-1) plus the Difference between the Weighted Average of Actual Exchange Rates of the Previous Month (M-1) and that of the three			Exchange Rate		2,270.31
	WT Average Actual Conversion Factors of the Previous Month (M-1):		0.7513	0.8257	0.7975
			Petrol (MSP)	Diesel (AGO)	Kerosene (IK)
	DESCRIPTION	UNI	PRICE	PRICE	PRICE
	Weighted Average Platt's FOB	TZS/L	1,154.39	1,158.79	1,132.32
Plus	Weighted Average Premium as Per Quotation	TZS/L	70.95	58.17	102.22
Sub-Total	COST CIF DAR	TZS/L	1,225.35	1,216.95	1,234.54
	LOCAL COSTS PAYABLE TO OTHER AUTHORITIES				
	Wharfage $10/MT + 18% VAT	TZS/L	20.13	22.12	21.37
	Railway Development Levy (1.5% CIF)	TZS/L	18.38	18.25	18.52
	Customs Processing Fee (TZS 4.80/Lt)	TZS/L	4.80	4.80	4.80
	Weights & Measures Fee (TZSs. 1.00/Lt)	TZS/L	1.00	1.00	1.00
	TBS Charge	TZS/L	1.24	1.24	1.24
	Regulatory Levy	TZS/L	6.10	6.80	3.50
	Petroleum Marking Cost ($6.077/CM VAT inclusive)	TZS/L	13.80	13.80	13.80
	Demurrage Cost (1.4442 USD/MT)	TZS/L	2.56	2.81	2.71
	Ocean Losses (DAP Terms)	TZS/L	-	-	-
	Surveyors Cost (Actual weighted Average TENDERED Rate)	TZS/L	0.06	0.04	0.06
	Financing Cost (1.00% CIF)	TZS/L	12.25	12.17	12.35
	Evaporation Losses (0.5% MSP, 0.30% AGO % IK) CIF	TZS/L	6.13	3.65	3.70
	TOTAL LOCAL COSTS (LC)	TZS/L	86.44	86.68	83.04
	GOVERNMENT TAXES (Attributed to Fuel and included in the Pricing Formula)				
	Fuel Levy	TZS/L	313.00	313.00	-
	Excise Duty	TZS/L	379.00	255.00	465.00

	Petroleum Fee	TZS/L	100.00	100.00	150.00
Sub-T	TOTAL GOVERNMENT TAXES	TZS/L	792.00	668.00	615.00
Plus	OMC's Overheads & Margins	TZS/L	118.00	118.00	118.00
	Charges payable to Executive Agencies	TZS/L	1.03	1.03	1.03
	Service Levy payable to LGAs (0.3% of turnover net of excise duty and VAT in wharfage and petroleum marking cost)	TZS/L	5.53	5.51	4.76
	WHOLESALE PRICE CAP (DSM)	TZS/L	2,228.35	2,096.17	2,056.37
Plus	Retailers Margin	TZS/L	103.00	103.00	103.00
	Charges payable to Executive Agencies	TZS/L	5.44	5.44	5.44
	Transport Charges (Local)	TZS/L	10.00	10.00	10.00
	Service Levy payable to LGAs (0.3% of turnover net of excise duty and VAT in wharfage and petroleum marking cost)	TZS/L	5.91	5.88	5.13

Table 7: Petroleum Pricing Formula for LPG Products with Statutory Payments included

Weighted Average of Actual Exchange Rates of the Previous Month (M-1) plus the Difference between the Weighted Average of Actual Exchange Rates of the Previous Month (M-1) and that of three months ago (M-3)			Exchange Rate		
			3 Kg	6 Kg	15 Kg
DESCRIPTION		Unit	Price	Price	Price
	FOB: Weighted Average Saudi Aramco Contract Price of the Previous Month (M-1) for Butane (80%) and Propane (20%)	TZS/Kg			
Plus	Weighted Average Premium as per Quotation (Freight + Insurance + Premium + Security)	TZS/Kg			
Sub Total	COST CIF DAR	TZS/Kg			
	Wharfage (1.6% of CIF + VAT)	TZS/Kg			
	Railway Development Levy (1.5% of CIF)	TZS/Kg			
	GCLA Chemical Permit (0.5% of FOB)	TZS/Kg			
	TBS Certification (0.2% of CIF)	TZS/Kg			
	Regulatory Levy	TZS/Kg	3.5	3.50	3.50
	Weights & Measures Fee	TZS/Kg	2.	2.00	2.00
Sub Total	Government Authority Charges	TZS/Kg			
	Actual Demurrage Cost	TZS/Kg			
	Surveyors Cost (Actual Weighted Tendered Rate)	TZS/Kg			
	TIPER Fees (TZS/Kg, VAT inclusive)	TZS/Kg			
	Financing Cost (1% of CIF)	TZS/Kg			
	Evaporation Losses (1% of CIF)	TZS/Kg			
Sub Total	Local Charges	TZS/Kg			
Sub Total	Landed Cost – DSM	TZS/Kg			

	Wholesale Operating Cost (including bridging cost) plus Margin	TZS/Kg	960	770.00	620.00
Sub Total	WHOLESALE PRICE	TZS/Kg			
	Distributor's Cost-Plus Margin (including transport cost from Depot to Distributors/ Super Dealers)	TZS/Kg	300	300.00	300.00
Sub Total	DISTRIBUTOR/ SUPER DEALER PRICE	TZS/Kg			
	Retailer's Margin (e.g., transport cost from Distributor to End User)	TZS/Kg	400	400.00	400.00
Sub Total	RETAIL PRICE	TZS/Kg			

i. *Return On Capital (r)*

The return on capital (r) is a function of two principal elements, that is, the cost of capital and value of the assets employed. Basically, the level of return required by the financial market (debt and equity) is the cost of capital. The Weighted Average Cost of Capital (WACC) is the minimum acceptable return on investment required by lenders and shareholders. The information required to derive the cost of capital is challenging due to the fact that the capital market in Tanzania is still in its infancy stage of development.

The return on capital aims to provide a reasonable profit, normally expressed as a return on the assets used in operating the business. A company always has two options for profits, it can choose to distribute it to shareholders as dividends or it can reinvest the funds in the business, to guarantee future growth.

The cost of capital is determined by two means. For debt financing (capital), the consultant studied the interest rate on all the debt contracted by each entity i.e., letters of credit, bank loans, overdraft etc. The consultant then determined the range or average interest rate for each segment. For equity financing, the consultant analysed the expected rate of return on equity for shareholders in each business segment. Thereafter, for each business entity and business segment the average rate of return is determined.

This analysis resulted in a WACC assumption of 12%, in nominal terms, which is post-tax for the equity component and pre-tax for the debt component, a so-called 'Vanilla WACC.'

The Consultants used the Capital Asset Pricing Model (CAPM) to determine the relevant Weighted Average Cost of Capital (the WACC). The CAPM allows to estimate an expected return on an investment, which is equal to the risk-free rate of return plus a risk premium. The risk premium is moderated by the Beta for the relevant industry (technically, the covariance of the returns in the relevant industry compared to the returns in the overall market, or the sensitivity of a particular company shares to the overall market).

CAPM is calculated according to the following formula:

Ke - Cost of equity = Risk-Free Rate + (B Market Risk premium)*

Where: The Market Risk Premium equals the Market Returns – the Risk-Free Rate of Return.

Ra = Expected return on a security

Rrf = Risk-free rate

Ba = Beta of the security

Rm = Expected return of the market

Note: "Risk Premium" = (Rm – Rrf)

The WACC is then calculated by multiplying the share of Debt divided by the sum of Debt plus Equity with the Cost of Debt (Kd) and adding this to the Cost of equity multiplied by the share of Equity divided by the sum of Debt plus Equity.

D/(D+E) * Kd + E/(D+E) * Ke

Where:

• D/(D+E)	Weight of Debt
• Kd	Cost of Debt
• E/(D+E)	Weight of Equity
• Ke	Cost of Equity

The Cost of Equity for Tanzania is derived as follows:

Risk-free rate = 20 year Tanzania Government Treasury Bonds (August 2020) = 15.49%

Market return = Stock Market Returns (DSE) for the past 4 years (2016 to 2019) = 11.89%

Beta = Oil / gas distribution sector, calculated by New York University (January 2020) = 1.02

This results in a Cost of Equity of 15.49 + (1.02 * (11.89 -15.49)) = 11.83%

15.49%	Risk Free Rate	20-year Government Treasury Bonds	August 2020
11.89%	Market Return	Stock Market Returns (DSE)	2016 to 2020
1.02	Beta	NYU Cost of Capital	January 2020
Ke	11.83%		

The Cost of Debt for Tanzania is based on average lending rates by commercial banks to private sector in Tanzania, as published by the Bank of Tanzania in its Annual Report (for the year ended 30th June 2019), which is the mid-point between 14.96% and 17.77%, which is 16.33%. Post tax of which becomes 11.43%.

Table 8: Lending Rates from commercial banks to private sector per Year

Lending Rate	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average	Post Tax Lending Rate
Overall bank lending rate to private sector	14.96%	15.56%	15.86%	16.29%	16.10%	15.96%	17.77%	17.42%	17.06%	16.33%	11.43%

Source: Bank of Tanzania Annual Report for the year ended 30th June 2019.

Hence, with the regulator recommended split of 30% Equity and 70% Debt the calculation for WACC becomes:

{30% * 11.83} + {70% * 11.43}

11.55%

Based on above analysis, INNOVEX recommends that the Regulator utilises an average WACC of 12% as a round off and the best estimate out of all viable options.

The Capita Asset Pricing Model (CAPM) formula is used for calculating the expected returns of an asset. It is based on the idea of systematic risk (otherwise known as non-diversifiable risk) that investors need to be compensated for in the form of a risk premium. A risk premium is a rate of return greater than the risk-free rate. When investing, investors desire a higher risk premium when taking on more risky investments.

ii. *Revenue Requirement computation (RR)*

The revenue requirement method aimed to compute the amount of revenues allowed in order to:

- Allow the OMC or retailers earn sufficient income to cover its reasonable and efficiently incurred operating and capital costs; and
- Provide a reasonable profit.

Reasonable and efficiently-incurred costs or prudent costs are those incurred for the direct purpose of the core business. Margin is calculated by dividing the revenue requirement by the throughput of the regulated entity. The formula for calculation of the margin is:

$$\pi = RR / V$$

Where:

π	Margin
RR	Revenue requirement
V	Volume throughput

iii. *Margin (**π**)*

A margin is the difference between the unit cost of purchasing/marketing a product and the price of the product, in this case a unit of petroleum product.

- In the case of OMCs, the margin is the amount of money they are allowed by the regulator to charge for distributing (trading in) one unit of a petroleum product.
- In the case of retailers, the margin is the amount of money they are allowed by the regulator to charge for retailing one unit of a petroleum product.
- In the case of LPG companies, the margin is the amount of money they are allowed by the regulator to charge for trading in one unit of LPG.

The margin is intended to ensure that the OMCs and retailers recoup their prudently incurred costs and earn a just and reasonable return on their investment.

iv. *Volume throughput (V)*

The throughput is the quantity of petroleum product that an OMC, transporters or retailer trade in each year. In this case, the throughput considered in determining the margin is the throughput as determined by statistical analysis.

c) Determining a Suitable Single Margin for Multiple Unique Companies in Each Category of Petroleum Companies (OMCS, Retailers and LPG Companies)

The methodology above explains how the margin can be calculated for a single regulated entity i.e. OMC or retailer. However, like most petroleum subsectors, the Tanzania petroleum downstream sub-sector has more than 114 Oil Marketing Companies (OMCs), 1,681 retail outlets, 11 LPG wholesalers and 10 LPG super dealers.

Each OMC has a unique set of costs, assets and return on capital employed. Similarly, each retailer or LPG Company has a unique set of costs, assets and return on capital employed. Thus, each OMC or retailer or LPG wholesalers has its own margin if calculated using the method above. However, the regulator must set a single margin that is suitable for all the 114 OMCs, another single margin that is appropriate for all the 1,681 retailers, a single margin for LPG wholesalers, a single margin for LPG dealers and a single margin for LPG dealers. That is, unless a differentiation would be made for remote or rural retailers to reflect the relative distance from supply sources and lower turnover.

The consultant, therefore, has to calculate an industry (average) margin for a typical OMC and an industry (average) margin for a typical retailer.

The industry margin is calculated by calculating an average of the margins of all the firms in the industry. The formula for calculation of the margin is:

$$\pi\mu = f\mu\ (\pi 1 + \pi 2 + \pi 3 + ...+ \pi n)$$

Where:

$\pi\mu$	Margin
$f\mu$	Function for calculation of average of margins of all firms
$\pi 1$	Margin of firm 1
$\pi 2$	Margin of firm 2
$\pi 3$	Margin of firm 3
πn	Margin of firm n

d) Regulatory Best Practices – The Case of a Transporter / Transport Charges

The formula for calculation of the transporter's margin is:

$$\pi = RR / V / d$$

Where:

π	Margin
RR	Revenue requirement
V	Volume throughput (quantity of petroleum product transported)
d	Distance by which white products are transported

The consultant selected a typical (average) route for transportation of petroleum products but could not establish the following from transporters:

i. the prudently incurred cost of transporting 35 m^3 of white products from the depot/terminal to the destination district;
ii. The statutory payments made in transporting the fuel;
iii. The assets used by the transporter in ferrying fuel along the route; and
iv. The required rate of return by the transporters.

In the presence of requested data, the consultant has determined the average transporter margin for all the transporters by calculating an average margin as discussed for OMCs, retailers, LPG wholesalers and LPG super dealers;

After establishing the transporter's margin, the consultant established the **transport charge** for each district by multiplying the transporter margin by the distance from each fuel receiving district (i.e., **Dar es Salaam**, **Tanga** and **Mtwara** to each of the main locations in Tanzania Mainland).

$$T_c = \pi_\mu * d$$

Where:

T_c	Transport charge to a district
π_μ	Transporter's margin
d	Distance from the fuel receiving district to the destination district

e) Regulatory Best Practice – The Case of Differentiation of Retail Margins (Urban and Rural)

In the case of retailers, the regulator required the consultant to make recommendations on the margins for retail sites in urban areas and rural areas. The consultant agreed with the regulator on a definition of urban and rural that suits the purposes on the regulator. Thereafter, the consultant worked to determine an appropriate margin that ensures investment is encouraged in rural areas. The consultant provided practical recommendations that the regulator could put in place and a way forward under **Section** 4.3.

f) Regulatory Best Practice - Calculating the Margin Based on Minimum Licensing Requirements

For OMCs, retailers, and LPG companies, the consultant worked to determine the operating costs, statutory payments, rate base assets, rate of return and hence appropriate industry margin required for each segment based on the minimum licensing requirements for each category. The consultant collected data for 13 OMCs, 4 retailers and 4 LPG wholesalers and conducted its analysis according to the data received, industry best practice, model business practices, international benchmarking study and consultant's expertise in the industry as explained in **Section** 3 to 6 of this report.

g) Regulatory Best Practice – Frequency of Review of the Margins

For all the business segments, the regulator required the consultant to determine how frequently the margins should be reviewed. The consultant has studied how different variables that determine the margin change from year to year and the drivers of that change. The consultant then made recommendations on how frequently they should be changed and the manner in which they should be changed in **Section** 3.8 and 4.5.

h) Adequacy and Utilization of Infrastructure

EWURA wishes to know the level of investment in infrastructure by OMCs, retailers and LPG companies and the Consultant's comments thereon. The consultant has considered infrastructure for storage and providing service to consumers i.e., storage tanks, fuel dispensers etc. The consultant determined this by the following means:

i. Examining storage records at depots of OMCs, retail sites, LPG storage sites;
ii. Comparing uplifts to consumption of white liquid products and LPG; and
iii. Inquiring by questionnaire from the respondents.

i) Financing of OMCs, Retailers, LPG Companies

The consultant collected information on the financing of OMCs, retailers and LPG wholesalers by the following means:

i. Examining the statement of financial position (composition of equity) of companies for 6 years i.e. share capital, reserves, current liabilities, non-current liabilities etc.;
ii. Analysing the terms of the financing i.e., interest rates, period of credit etc.
iii. Establishing what the financing was used to pay for;

Particularly, in the case of OMCs, EWURA instructed the consultant to assess the letters of credit used by OMCs to finance their product i.e., the terms of the letters of credit.

j) Statutory Payments of OMCs, Transporters, Retailers, LPG Companies

The consultant has collected information on the statutory payments made by OMCs, retailers and LPG wholesalers by the following means:

i. Examining the income statement (composition of equity) of companies for 6 years i.e., taxes, levies etc.;
ii. Collecting information using the questionnaire;
iii. Reviewing legal documents i.e., legislation, subsidiary legislation etc.; and
iv. Analysing the aspects of the statutory payments i.e., specific or ad valorem, rate, incidence, frequency of payment etc.

k) Pricing of LPG

In the pricing of LPG, the consultant studied the current practices in pricing of LPG i.e., prices levels, price components, frequency of adjustment etc. The consultant has then studied the supply chain for LPG i.e., sources of LPG, transportation, wholesaling, distribution, packaging, retailing etc. The consultant then proposed an appropriate method of pricing.

l) Bulk Procurement Supply Tenders

The consultant collected information from pre-qualified bidders of BPS and reasons for limited OMCs participation in BPS. The consultant held meetings with the Petroleum Bulk Procurement Agency, pre-qualified bidders and OMCs in general to find reasons for not participating in the tenders. The information was collected by interviews and questionnaires.

2.2 Execution Phase

m) Collection of Data

The collection of data was done with a questionnaire designed by INNOVEX, presented to stakeholders and approved by EWURA. The questionnaires were administered to OMCs, retailers, transporters and LPG wholesalers. All audited financial statements, management accounts and other information were asked to be collected from respondents.

Information on the methodology for determining margins in other countries was collected by contacting regulators in six (6) Southern African countries and two (2) East African countries making a total of eight comparable countries namely; Zimbabwe, Zambia, Malawi, Namibia, Botswana, Uganda, Kenya and South Africa.

n) Analysis of Data

INNOVEX was responsible for performing the analysis of the data and collecting additional information following data analysis. The analysis of data was performed as indicated in Section 3 to 6 for each class of industry players.

2.3 Reporting Phase

p) Final Report Preparation and Re-Submission

As the result of this analysis, the consultants presented a draft report to EWURA for comments and input. The consultant gathered inputs, comments and suggestions raised by EWURA and addressed them accordingly after which a revised Draft Report was submitted.

3 Wholesale: Investment Cost, Operational Cost and Margin

3.1 Choice of Regulatory Methodology

This section of the report uses overarching regulatory principles, approaches to price regulation and the analysis of the study results to develop a suggested pricing approach for the different market segments regulated by EWURA.

3.1.1 Overarching regulatory principles

In making regulations, specifically price regulations, a regulator needs to consider and take into account a range of different objectives or goals. These goals are described as follows:

Firstly, price regulations should ensure the sustainability (and financial viability) of efficient regulated firms. One of the key considerations in determining how price should be regulated is to ensure that the regulated firm, provided it's an efficient firm, remains sustainable and financially viable.[1] In absence of this, the regulated firm(s) will not be incentivised to invest and/or continue to participate in the particular sector. Therefore, the price regulation should be designed in such a manner as to ensure that the regulated firm(s) become able to recoup its prudently incurred efficient costs and be adequately rewarded for the risk of undertaking the business through an adequate return on its investment or a margin. In other words, the regulated price must allow the firm to "finance its operations and any required investment" enabling it to continue operating in future.[2]

Secondly, price regulations should promote efficiency both in respect of the supply and demand. The regulations should be designed in such a manner to ensure that the right signals are provided to investors to result in increasing efficiency and to consumers to ensure efficient consumption of the product.[3]

Finally, price regulations also have to take into account equity and fairness. Prices should be fair and reasonable and balanced between the interests to consumers and firms. Further, the prices should also not jeopardise the achievement of any universal service goals for the sector.[4] Although, the policy and legislation does emphasise the need to ensure that prices should enable investors to cover their efficient costs of operations as well as a reasonable return, qualified by the need to ensure that prices are also fair to consumers.

These objectives are recognised in the EWURA Act, Cap 14, 2001, which in Section 6 "Duties of the Authority" states that EWURA shall strive to enhance the welfare of Tanzania society by–

a) Promoting effective competition and economic efficiency;
b) Protecting the interests of consumers;
c) Protecting the financial viability of efficient suppliers;

[1] Kessides I. N., "Reforming Infrastructure: Privatization, Regulation, and Competition", A World Bank Policy Research Paper No. 28985, 2004, pg. 111.
[2] Green R. and Pardina M.R., Resetting Price Controls for Privatised Utilities – A Manual for Regulators, Economic Development Institute of the World Bank, 1999, pg. 5.
[3] See Kessides I. N., "Reforming Infrastructure: Privatization, Regulation, and Competition", A World Bank Policy Research Paper No. 28985, 2004, pg. 112-113 and Green R. and Pardina M.R., Resetting Price Controls for Privatised Utilities – A Manual for Regulators, Economic Development Institute of the World Bank, 1999, pg. 5.
[4] See Kessides I. N., "Reforming Infrastructure: Privatization, Regulation, and Competition", A World Bank Policy Research Paper No. 28985, 2004, pg. 112-113 and Green R. and Pardina M.R., Resetting Price Controls for Privatised Utilities – A Manual for Regulators, Economic Development Institute of the World Bank, 1999, pg. 5.

d) Promoting the availability of regulated services to all consumers including low income, rural and disadvantaged consumers;
e) Enhancing public knowledge, awareness and understanding of the regulated sectors
f) Taking into account the need to protect and preserve the environment."

This clearly demonstrates the commitment to (i) ensuring efficient regulated firms remain viable; (ii) ensuring equity and fairness in supply to all consumers as well as the viability of suppliers; and (iii) efficient use and supply by taking into account environmental concerns and promoting economic efficiency.

Inevitably, however, there will be tension between these objectives when the regulator decides to pursue them simultaneously. Therefore, any price regulation decision will require balancing of these objectives. Government policy for the sector will provide a key guide for the regulator on how these different objectives should be weighed – ideally it will identify which of these objectives are priorities for a particular sector.

For example, for an upcoming sector in its infancy and the aim of the government focus on development of the sector and encourage entry by firms, then ensuring sustainability and financial viability of the sector may be the first priority. This might come at the sacrifice of equity and fairness as prices may have to be set higher to encourage entry. As regulations have a direct impact on sector outcomes, regulators have to carefully consider their regulatory decisions to ensure that the decisions they make assist in achieving the desired sector outcomes.[5]

3.1.2 Price regulation approaches

A central principle of economic theory is market functioning. Where markets do not provide optimal outcomes, regulation is often introduced as a means of achieving outcomes that mimic competitive or efficient outcomes. There are many methodologies that can be utilized in price regulation, which can be broadly categorised into three approaches:

i.) Rate of Return regulation;
ii.) Price Cap or Revenue Cap regulation; and
iii.) Yardstick or Benchmark regulation.

3.1.3 Rate of return regulation

Rate of return regulation entails the regulator setting prices in such a way that the regulated firm becomes able to recover its cost of production as well as a return on capital that is sufficient to incentivise investment to maintain or expand the assets of the firm.[6]

The price is calculated by first determining the allowable revenue of the firm. This revenue is then divided by the projected number of units to be sold. A simple formula for the allowable revenue may look like the following

$$RR = (RAB \times ROR) + OPEX + T + D$$

Where:

RR	Is the required / allowable revenue

[5] See Brown A.C., Stern, J., Tenenbaum B., and Gencer D., "Handbook for Evaluating Infrastructure Regulatory Systems", The World Bank, 2006, Chapter 5.
[6] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.1.

RAB	Is the regulated asset base, the value of assets used to produce the good for which price is being regulated. We recommend the use of the trended original cost of the assets less accumulated depreciation,[7] rather than the replacement value approaches to the RAB.
ROR / WACC	Is the allowable rate of return, typically the Weighted Average Cost of Capital
OPEX	Is the operating expenditure (costs) of producing the projected number of units
T	Is the tax payable by the firm
D	Is the current depreciation of the assets for that period (annual depreciation)

The rate of return required by the firm can be determined by calculating the weighted average cost of capital ("WACC") of the firm.[8] The rate of return is often set at a level that provides a return equivalent to the risk associated with the relevant asset class, and needs to be set at a level where it's sufficient to raise capital for additional investment.[9] This method is considered to have the advantage of being relatively straightforward to calculate.[10]

There are, however, some challenges associated with rate of return regulation:

There are a number of approaches for valuing the RAB. These include (depreciated) historical cost, trended original cost, replacement cost, modern equivalent asset and optimal deprival value amongst others. The approach chosen must be appropriate for the type of assets being valued and the industry as each can result in vastly differing valuations. Choosing a single approach may be challenging as infrastructure assets typically have a long economic lifespan (so historical information may not be complete) and as technological change impacts on replacement costs.

Rate of return regulation of prices, in its simplest form, does not provide sufficient incentives for the regulated firm to control costs,[11] because the firm is confident that it will be able to recover its costs through a higher price. Under rate of return price regulation, a firm will not face the same penalties for inefficiency, such as decreased profit margins or bankruptcy, as in the case of a competitive market. A further disincentive to the firm to increase productivity or efficiency is the fact that any cost savings it realises will simply be transferred to customers in the form of lower prices rather that increased profit for the firm.

There is an incentive to overinvest in capital or 'gold-plate'[12] under rate of return regulation. A firm can increase its allowable revenue for a given rate of return by growing its RAB. If the regulated rate of return exceeds the firm's cost of capital, the firm makes a profit for each additional unit of capital it adds to the RAB.[13] This gives the firm an incentive to invest in infrastructure with capacities that exceed those to produce the optimal output. This incentive

[7] Netz, J.S. (1999), Price regulation: A (non-technical) overview. Department of Economics Purdue University, available: http://encyclo.findlaw.com/5200book.pdf., p.402.
[8] The WACC is generally calculated using the Capital Asset Pricing Model.
[9] Netz, J.S. (1999), Price regulation: A (non-technical) overview. Department of Economics Purdue University, available: http://encyclo.findlaw.com/5200book.pdf., p.402.
[10] Netz, J.S. (1999), Price regulation: A (non-technical) overview. Department of Economics Purdue University, available: http://encyclo.findlaw.com/5200book.pdf., p.402.
[11] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.1.
[12] Also known as the Averch-Johnson effect – See Averch, H. A., (2008), Averch-Johnson effect, the new Palgrave dictionary of economics, second edition, 2008.
[13] Netz, J.S. (1999), Price regulation: A (non-technical) overview. Department of Economics Purdue University, available: http://encyclo.findlaw.com/5200book.pdf., p.404 and Averch H. and Johnson, L.L. (1962), Behaviour of the firm under regulatory constraint', American Economic Review (52), p.1053-1069.

to over-invest must be mitigated by measures that allow the regulator to decide whether the investment is efficient and prudently acquired.

3.1.4 Price or Revenue cap regulation

Under cap regulation, the regulator typically sets maximum prices or revenues of the regulated firm a number of years in advance. In order to compensate for unpredictable increases in costs due to inflation, the utility is allowed to vary its prices by an amount based on an inflation measure. The price will also be adjusted downwards to account for the firm's cost savings or increased productivity over time. This is commonly called the X-factor.[14] The adjustments to the price can be explained as follows:

"In order to take account of unpredictable rates of inflation in an economy, a cap-regulation regime typically allows a firm to vary its prices in any year by an amount linked to the overall level of inflation, as measured by the percentage change in an appropriate price index, often on a historical basis. This inflation-adjusted price level is then usually adjusted by a percentage, the "X", that reflects, among other things, the real change to costs that the regulator assumes is reasonable."[15]

The basic formula for the maximum price or revenue is as follows:

$$\boldsymbol{R_t = R_{t-1}(1 + CPI - X)}$$

Where:

R_t	Is the maximum price or revenue
R_{t-1}	Is the price or revenue from the previous period
CPI	Is the general consumer price index (inflation index)
X	Is a factor representing the assumed growth in productivity

One of the main benefits of price or revenue cap regulation is that it gives strong incentives for firms to increase efficiency and lower costs. This is because for as long as the price decided by the regulator is in effect, any reductions in costs that the firms realise translate directly into higher profits.[16] In addition, this form of price regulation may minimize the deficiencies associated with the rate of return method of price regulation.[17] For instance, because the relationship between the actual costs of firms and the price or revenue is weakened, the incentive to over-invest or gold-plate is reduced. Lastly, since the cap is determined mostly independent of the costs of the suppliers, this approach has less burdensome information requirements.

There are however many recognised disadvantages of cap regulation. Firstly, there is an incentive for the firms to reduce the quality of products or services relative to the when rate of return regulation is implemented. This is because a firm can lower its costs by lowering its quality and thus make more profit for a given price. Secondly, cap regulation may dampen the incentive to invest as firms cannot be certain they will recover their efficiently incurred costs on the investments they have made when the cap is re-calculated for the coming period.[18]

[14] Jamison, M.A., (2007), Regulation: Price cap and revenue cap, Encyclopaedia of Energy Engineering and technology, Vol 3, p.1245-1251.
[15] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.2.
[16] Decker, C., (2009), Characteristics of alternative price control frameworks: an overview, A report for OFGEM, p.8.
[17] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.5.
[18] Decker, C., (2009), Characteristics of alternative price control frameworks: an overview, A report for OFGEM, p.8.

Lastly, CPI-X approaches effectively allow below inflation increases, which may not be relevant to the actual movements in cost structures. CPI-X approaches have proven to be effective in mature utility sectors where infrastructure amortization and service penetration levels are high, but this approach may not be effective or appropriate in emerging markets or developing economies where the roll-out of infrastructure to unserved areas and customers is a pressing need.

3.1.5 Yardstick or benchmark regulation

Yardstick regulation allows a firm to make profit based on its productivity and cost reductions relative to the other firms it competes against.[19] The regulator uses the cost information provided by other firms in order to determine the maximum price that a firm is allowed to charge.[20]

In the original model of yardstick regulation, the price of a firm is set equal to the average cost of all the other firms in the regulated industry. In some cases, the firm whose price is being determined may also be included in the average cost calculation. A simple formula would be as follows:21

$$AC^i \sum_{j=1, j\neq i}^{n} \frac{AC^j}{(n-1)}$$

Where:

AC^i	Average costs per unit of a firm *i*
n	Number of regulated firms.

When prices are regulated in this manner, the profitability of a firm is a function of not only its own cost performance but also its cost efficiency relative to its competitors. The main intuitive advantage is that every firm is encouraged to increase its efficiency relative to its competitors, similar to the result in competitive markets.[22] Another advantage of this form of price regulation is that by using the cost information of firms in the regulated industry, the regulator does not need to determine an X-factor.[23] Finally, there is no need for the regulator to make forecasts about productivity improvements.

There are however several disadvantages or challenges associated this method of price regulation. Firstly, there is a need to adjust for possible structural differences between firms as firms may not be perfectly comparable. This may be difficult as some differences are unobservable and may be very difficult or impossible to quantify. Secondly, where there are only a few firms competing in a regulated industry, there is an incentive to collude and report higher costs than actually incurred. This will result in a higher price, allowing the firms to reap higher than efficient profits.

[19] The seminal paper on yardstick regulation was written by *Shleifer. See* Shleifer, A., (1985), A theory of yardstick competition, Rand journal of economics 16 (3), p.319-327
[20] Meya, J., (2015), Dynamics of yardstick regulation: Historical cost data and the ratchet effect, Discussion paper number 244, Centre for European governance and economic development research, p.1.
[21] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.8.
[22] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.8.
[23] Meya, J., (2015), Dynamics of yardstick regulation: Historical cost data and the ratchet effect, Discussion paper number 244, Centre for European governance and economic development research, p.1.

Lastly, there is a possibility that the regulator may not adhere to the regulatory 'contract.' Since firms essentially try to out-compete each other, like in competitive markets, some firms may earn exceptional profits while others make losses. Those firms that make losses may eventually have to exit the regulated industry. However, this may be sub-optimal from the point of view of the regulator, who may be concerned about more than just prices (e.g. universal access to service). This may lead the regulator to adjust the rules ex-post to prevent unprofitable, failing firms from exiting given the possible social impact this could have.[24] Alternatively, companies may achieve exceptionable profits, resulting in a temptation for regulators to resort to impose windfall taxes.

3.2 Investment and Operational Cost

The questionnaires requested detailed data on capital expenditure, inventories and operational expenditure by category. Establishing actual capital expenditure and actual operational expenditure from non-audited data based on unclear asset valuation approaches was a challenging task. To supplement, industry best practice and consultant expertise was used for investment and operational cost to be established. The data provided yield the information as contained in the following Table 9.

Table 9: Data on Capex and Opex for OMCs

2018	Capex (fixed assets) TZS	Capex x TZS/l	Capex / economically useful life TZS/l (20 years)	Storage capacity Utilization %	Opex TZS	Opex TZS/l	Volumes litres
WF1	5,143,842,892	531	26.6		2,776,972,737	287	9,682,435
WF2	165,268,113,000	1,049	0.1	50-75	12,726,524,267	81	157,531,075
WF3	18,073,004,000	500	25.0	25-75	8,527,524,627	149	36,133,056
WF4	117,272,119,000	361	18.1		31,395,977,000	97	325,294,396
WF5	3,292,448,223	1,120	0.1	50-75	414,395,840	141	2,938,944
WF6	15,320,888,254	129	6.5	>75	8,612,057,595	72	118,992,556
WF7	92,961,000,000	472	23.6	50-75	3,725,786,784	19	196,792,000
WF8	216,642,000,000	1,304	0.1		13,240,000,000	80	166,167,250
WF9	34,021,726,000	72	3.6		23,208,189,000	49	472,445,306
WF10	15,529,798,000	137	6.9	70-76	4,722,037,461	42	113,416,126
WF11	1,949,767,000	48	2.4		2,562,450,000	63	40,652,531
WF12	4,231,648,000	93	4.7		4,260,080,000	93	45,732,654
Average	57,475,529,531	409	20.5		9,680,999,609	69	140,481,527
Average 100 mln litre facility	40,913,229,385	409	20,5		6,891,297,234	69	100,000,000

Source: INNOVEX calculations

From the questionnaire responses it was apparent that the capital expenditure varied widely both in actual and in relative (per litre) terms. OMCs reported total fixed asset values (corrected for non-retail volumes as required) between TZS 2 and TZS 217 billion, translated into Capex per litre that ranged from TZS 48 to TZS 1,304,

[24] Petrov, K, Price regulation methods, available: http://www.leonardo-energy.org/sites/leonardo-energy/files/root/pdf/2010/Price%20Regulation%20Paper.pdf, p.8-9.

averaging TZS 409 per litre. Taking an average economically useful life of 20 years, this translates into TZS 20.5 per litre on average.

Similarly, OMCs reported total operational expenditure, also corrected for non-retail volumes as required, between TZS 414 million and TZS31.4 billion of total Opex, translated into a range of Opex per litre of TZS19 – TZS 287 per litre with an average of TZS 69 per litre. Please note that this excludes non-company taxes.

An average facility of a notional capacity of 100 million litres throughput would require TZS 41 billion in Capex in total and TZS 6.9 billion in Opex per annum, based on the reported actuals.

It should be noted however that actual Capex and Opex numbers are quite different from the establishment of prudent or efficient Capex and Opex that should be incorporated into regulator allowable revenue. With respect to the adequacy of the infrastructure, all OMCs that participated in this study indicated that their capacity was adequate. Furthermore, it appears from the official statistics on fuel imports that Tanzania imports approximately 40% of its total imported product for transit to other countries, suggesting that the import and storage infrastructure to serve Tanzania was sufficiently adequate.

Table 10: Local and transit liquid fuel imports

Description	Local Imports	Transit Imports	Total
Year 2018	3,264,785,479	2,440,025,165	5,704,810,644
Year 2017	3,193,252,759	2,168,192,874	5,361,445,633
Year 2016	3,302,298,898	2,185,151,066	5,487,449,964

Source: EWURA-The mid- and downstream petroleum sub-sector performance review report for the year 2018

Link: https://www.ewura.go.tz/sector-performance-reports/

3.3 Effective ex-post Margin Calculations

The objective of this component of the study was to establish the current profit margins experienced by the various players in the liquid fuels industry based on the maximum prices prescribed by EWURA. These were effective ex-post profit margins, in that they were realised margins, not return percentages as intended or estimated ex-ante. The consultant distinguished between the gross profit margin and the net profit margin as described below:

1) 'Gross' profit margin - calculated as total revenue divided by the cost of sales (typically the fuel pass-through cost), minus one (1) to arrive at a percentage gross profit. This profit margin was also calculated in TZS and USD in order to obtain absolute values.

2) 'Net' profit margin - calculated as total revenue minus all expenses and depreciation and taxes, divided by the cost of sales, minus one (1) to arrive at a percentage net profit margin.

3) 'Net profit margin over value add' – calculated as the net profit a margin of total wholesale expenses (excluding cost of sales), minus one (1) to establish a percentage net profit margin as compared to the total expenses of the company.

The latter included depreciation and taxes as costs and calculated the profit margin as the excess divided by the total costs that were within the wholesalers' control and the sum of all expenses minus the cost of sales paid to upstream suppliers. The difference between the net profit margin and the net profit margin over value-add is that it is calculated as a mark-up over the value added by the wholesalers. The last-mentioned approach has been

utilised and advocated by various liquid fuel industry organisations internationally due to the greater relevance to the petroleum company's actual costs, without the distorting effect of oil price variations over which they typically have no control.

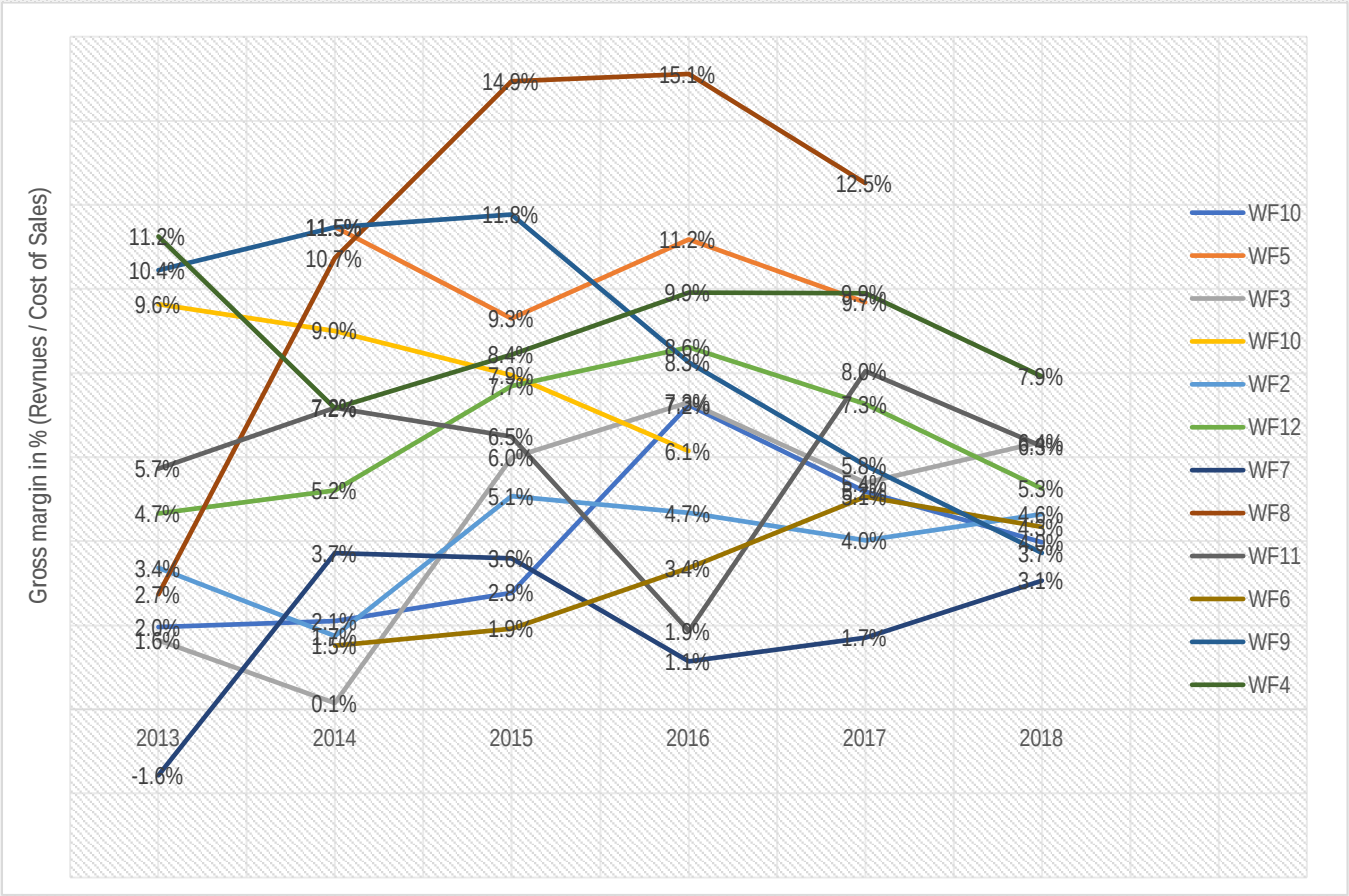
Since depreciation expenses should be calculated as a straight line over the economically useful life, and EWURA has not yet prescribed the typical economically useful lifespan of wholesaler assets categories, the depreciation has likely been calculated over a relatively short economic lifespan, resulting in overestimated depreciation expenses. This would also explain why wholesalers would continue operating in the face of negative net profit (losses) of as much as 77.5% (e.g., WF8 2016), when calculated utilising the data submitted, not the statutory accounts contained in the annual reports. The other indicator that the depreciation charge was likely too high for an infrastructure business was the fact that the gross profit margin remained highly positive for the years during which the net profit was significantly negative (e.g., WF8, 2017, gross profit margin 12.5%, net profit -346%).

Another factor that contributed to a lack of consistency was the tax amount reported by OMCs. It was found that some OMCs report tax payments of up to 220% of net revenues (revenues – expenses – depreciation) in some years and negative tax payments of -8.5% in other years (WF8, 2017 compared to 2015).

3.4 Wholesalers' Margin Analysis

OMCs that participated in this study covered 64.5% of total volumes sold per annum by December 31st 2018 which is a significant market share and representative of the market. Indeed, as the graphic below indicates, the gross profit varies by company and by year and only vaguely mirror overall economic conditions in Tanzania.

Figure 2: Gross Profit per Annum



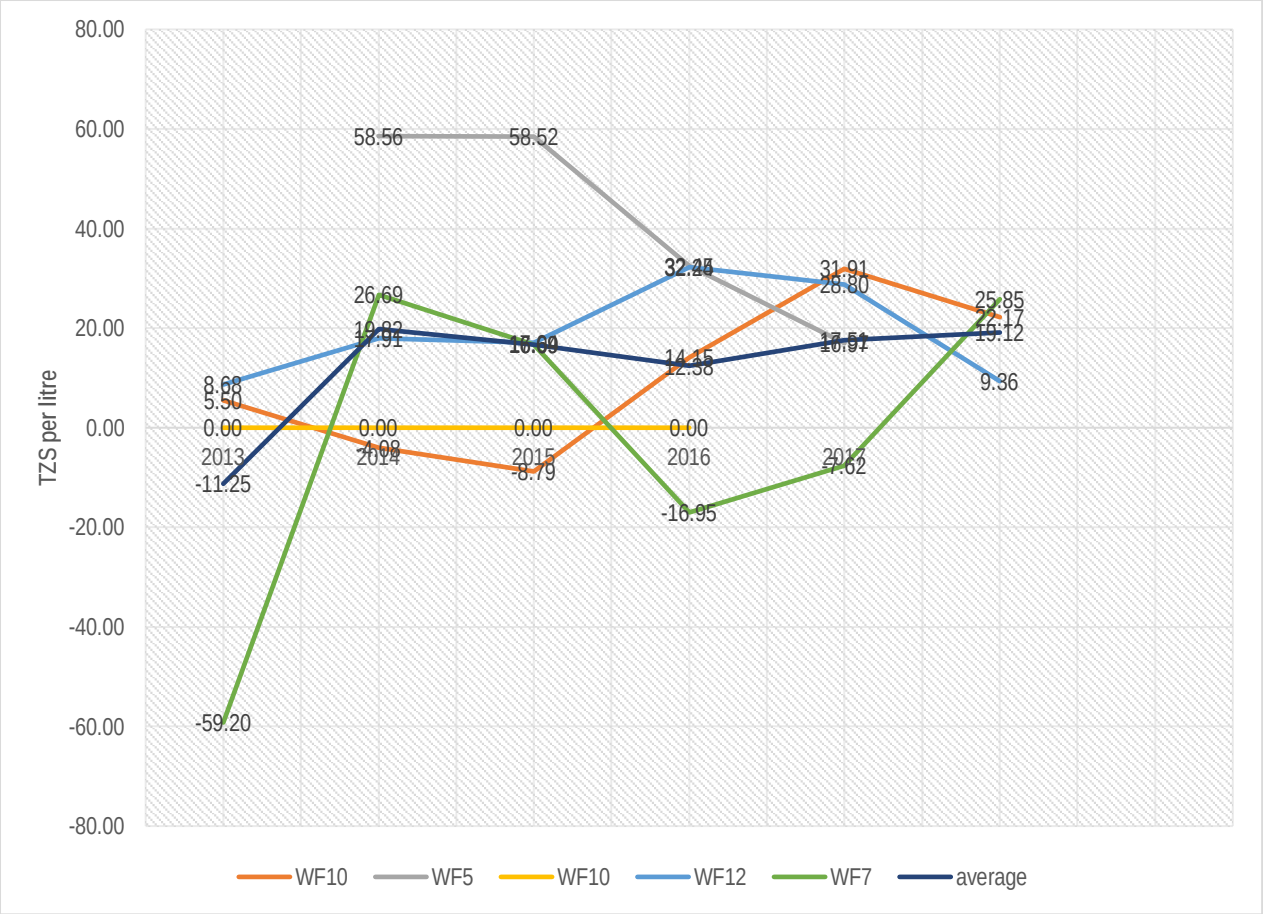
Source: INNOVEX calculations

Given the wide divergence of the gross profit, a similar lack of consistency in the net profit of OMCs came highly expected. This was borne out by the facts. Net profit were modest if gross profit were positive, but can be highly disadvantageous when gross profit is in negative territory. As the data on costs proved less reliable, the consultant was unable to draw any firm conclusions from the prevalence of negative net profit at OMC level of the value chain.

With regards to net profit on OMC value add, the analysis shows the net profit to be higher as the net returns were divided by a smaller denominator (revenues – cost of sales), as shown in the following below graphic. Not only do positive net profit translate into higher positive net profit on value add, but the same has proven true for negative.

Since the results were not in the range of other companies in terms of net profit, the consultant removed data from WF2 and WF3. Subsequently, the analysis depicted a more cohesive illustration of where current profit or earnings per litre of product were on average for OMCs.

Figure 3: OMC Average Net margins in TZS, per Annum



Source: INNOVEX calculations

The consultant therefore estimates that current net profit margins on value add in TZS was approximately 20 TZS/litre. When the consultant implemented a standard Rate of Return methodology to OMCs data, the same arrived at an approximate price build-up with a margin based on an appropriate rate of return and cost of capital.

3.5 Methodology Implementation

Based on OMCs data, the consultant calculated the actual returns where in the period under review and, importantly, what they should have been for each company utilizing the rate of return methodology.

For the following table, the consultant calculated the allowable revenue per litre using a WACC of 12% and each company's reported values for the Regulatory Asset Base (total fixed assets + inventories); operational expenses (total operational expenses – cost of sales) and taxes as reportedly paid. The Regulatory Asset Base (RAB) was adjusted for those OMCs who reported both retail and non-retail sales (WF10, WF3 and WF7), in proportion of those sales (turnover non-retail / (turnover retail + turnover non-retail) as assets were reported in total, not per activity in the value chain. For the depreciation value, the consultant calculated annual straight-line depreciation of the reported value of the fixed assets over estimated asset life of each assets.

The following assumptions were made:

- A Weighted Average Cost of Capital of 12% (utilising a so-called Vanilla WACC, that is the cost of equity (Ke) that represent post tax and the cost of debt - Kd that represent pre-tax) in nominal terms. The Consultants utilised a cost of equity of 11.83% and a cost of debt of 11.43%, applied by using a debt equity ratio of 30:70 (resulting in a WACC of 11.55%, rounded to 12%).
- Depreciation was calculated using a retail/wholesale split adjusted RAB using Trended Depreciation Method, not depreciation values as reported by the companies (a notional depreciation).
- Taxes were aggregated as reported, and adjusted for the respective retail/wholesale split in share of revenues (in 2018).
- Where 2018 values were not provided (WF5, WF1, WF8), values were approximated based on the most recent data provided (2017 for WF5 and WF8, 2016 for WF1).
- In those cases where all important volume data was not provided (WF4, WF6, WF8, WF9 and WF11) volumes were estimated based on the average sales prices (revenues / litres sold) of the other OMCs.
- Sales volumes for the different fuels (Motor Spirit, Automotive Gasoil, and Illuminating Kerosene) were used in aggregated form as per common practice. To develop costs and margins per fuel would require an allocation of all capital and operational costs to a fuel type, most likely to be based on assumptions and rules of thumb rather than an evidence-based allocation mechanism.

These calculations result in the findings regarding the cost build-up for each OMC contained in Table 11.

Table 11: Cost Build up for OMCs

2018	OPEX per litre	WACC*RAB per litre	Depreciation per litre	Taxes per litre	Total allowable revenue per litre
WF1	287	67	27	6	386
WF2	81	138	52	4	275
WF3	236	70	16	8	330
WF4	97	63	18	6	184
WF5	141	166	56	18	382
WF6	72	63	6	0	94
WF7	19	48	0	2	69
WF8	80	175	65	268	588
WF9	49	22	4	-1	73
WF10	42	17	6	12	77

2018	OPEX per litre	WACC*RAB per litre	Depreciation per litre	Taxes per litre	Total allowable revenue per litre
WF11	63	22	2	-13	74
WF12	93	33	5	0	130
Average	105	74	21	26	222

Source: INNOVEX calculations

On average, based on the data provided, an OMC should be allowed a total revenue of TZS 222 per litre. The consultant notes that this was significantly higher in terms of overall revenues than the current margin of TZS 119. It is also important to note that the allowable revenues per litre in the table above have been arrived at using individual company data based on their prospective accounting principles with unaudited data in some cases, hence it is likely they lack integrity. In Section 8: Findings and Recommendation, the consultant provides alternatives to this challenge and a margin build-up consisting of prudent and efficient costs that arrives at a recommended margin of TZS 124 per litre.

Utilising the Rate of Return formula, the consultant arrived at the following findings. Extreme divergence was observed in the total allowable revenue per litre, ranging from 69 to 588 TZS per litre. Reported taxes appear extraordinarily high for WF8 in 2018, as its Regulatory Asset Base, resulting in very high taxes and return on the RAB per litre. In subsequent analyses the consultant removed WF8 from the sample so as to obtain a more consistent dataset.

More importantly, it was found that except for WF10, not a single OMC achieved its allowable revenue per litre as shown in the table 12 below. On average the OMCs under-recovered their allowable revenues when utilising the RoR formula by as much as TZS 120 per litre.

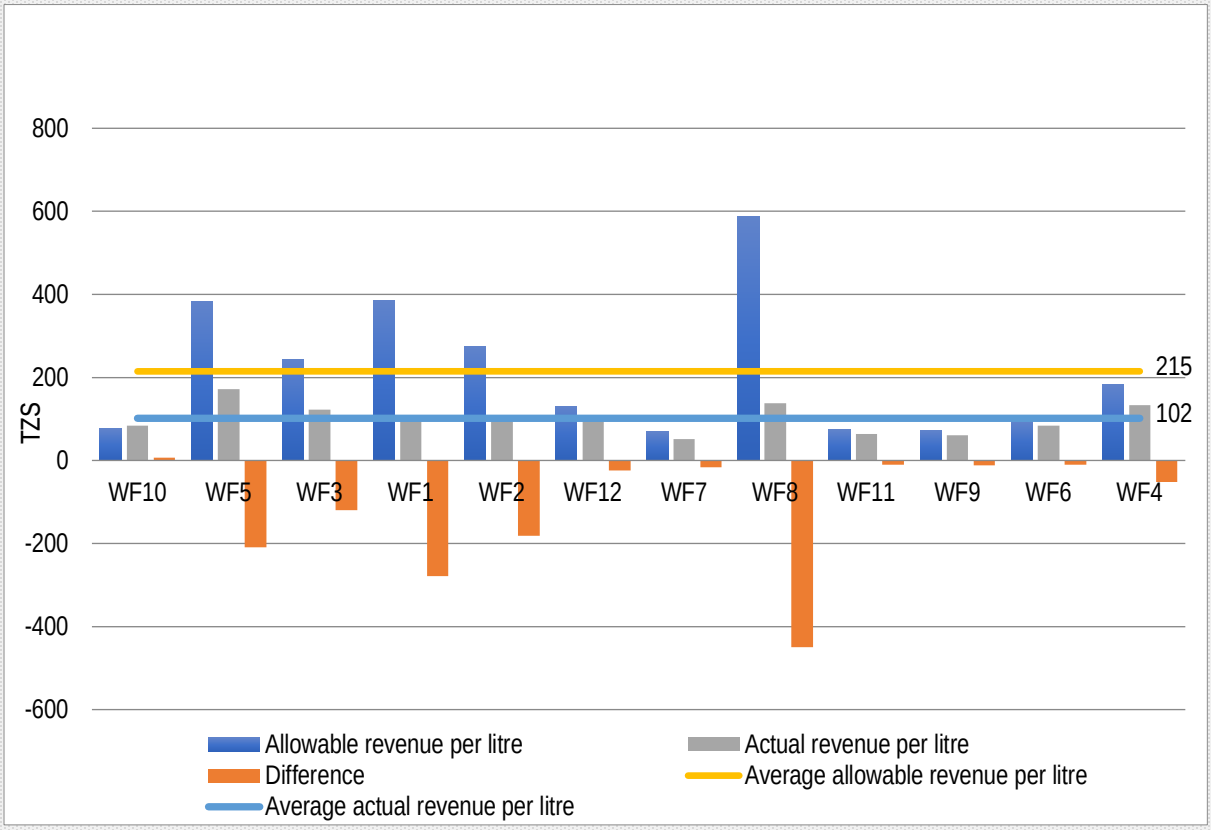
Table 12: Allowable and Actual Revenue per litre

2018	Allowable revenue per litre	Revenue per litre	Difference	Notes
WF1	386	107	-279	2016 value
WF2	275	94	-181	
WF3	330	123	-207	
WF4	184	132	-51	
WF5	382	172	-210	2017 value
WF6	94	84	-11	
WF7	69	52	-17	
WF8	588	138	-450	2017 value
WF9	73	61	-12	
WF10	77	84	7	
WF11	74	64	-10	
WF12	130	107	-23	
Average	222	102	-120	

Source: INNOVEX calculations

Reference was made to the current OMC margin set by EWURA of TZS 119 per litre. OMCs were also not earning that margin on average, as actual average returns were TZS 102. Only WF3, WF4, WF5 and WF8 earned the margin as currently prescribed. The graph below illustrates these findings.

Figure 4: OMC allowable vs Wholesale Revenues/Litre 2018

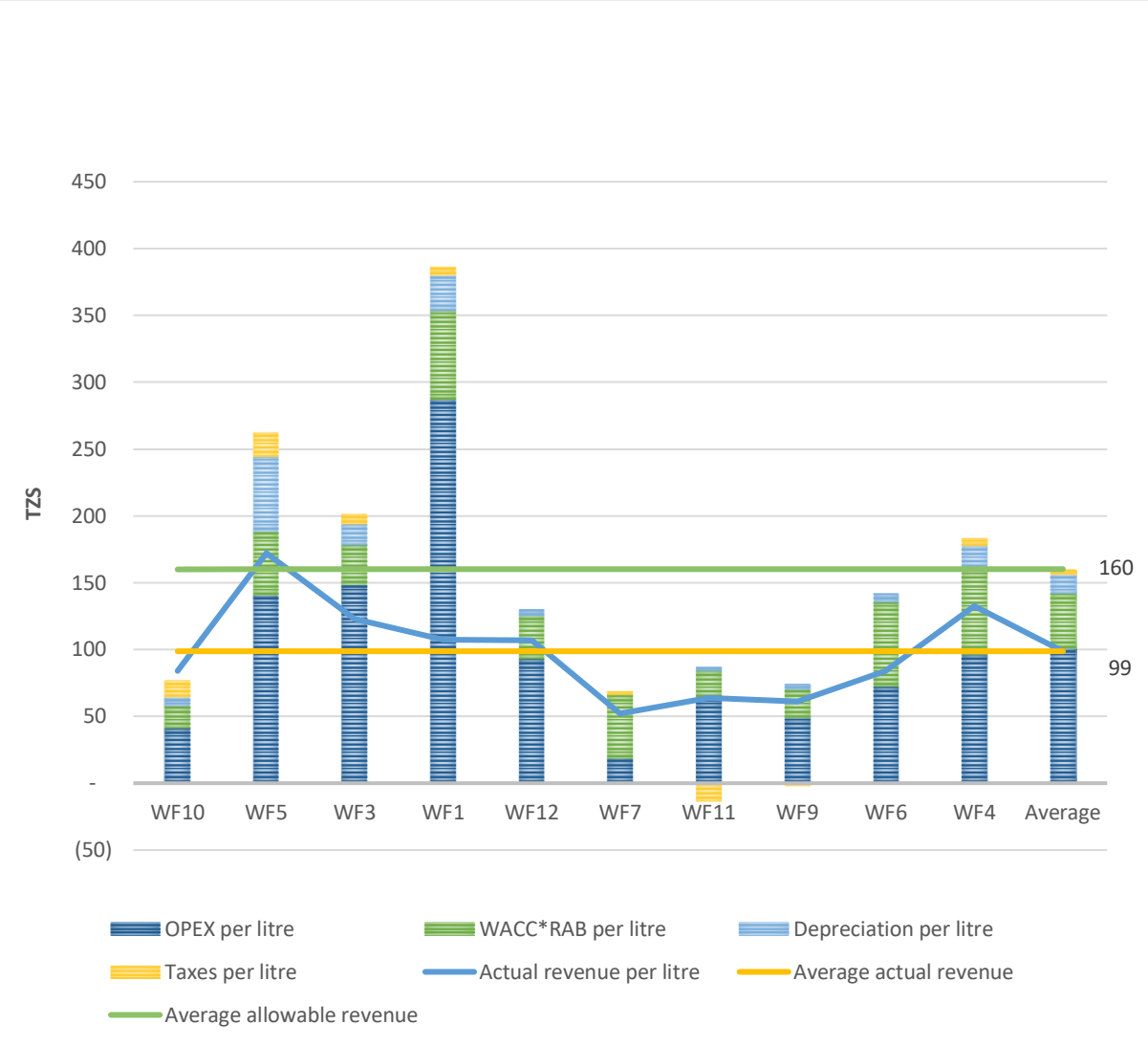


Source: INNOVEX calculations

WF8 was an outlier due to the extremely high taxes it recorded in 2018 and the high RAB per litre, whereas WF2 was an outlier due to its reported RAB, the second highest RAB per litre after WF8.

After WF8 was removed from the group of OMCs, both the allowable revenue and the average revenues were reduced, the average allowable revenue was reduced from TZS 222 to TZS 189 and the actual average revenue per litre was reduced from TZS 102 to TZS 98 per litre. This trend was reinforced when WF2 was also removed from the data set.

Figure 5: OMC RoR Price Build up vs. Actual Revenue/Litre



Source: INNOVEX calculations

The divergence between allowable revenue and actual revenue on average per litre was further reduced based on this more consistent set of data. As expected, the highest impact on allowable revenue had been the Operational Expenditure, as Opex was a pass-through expense, whereas the return on assets and depreciation charges were calculated as a percentage of the total Regulatory Asset Case. Hence the most challenging component to determine in the margin would be the operational expenditure component.

From this analysis it was clear that all OMCs except WF10 recorded an actual revenue per litre substantially below the revenue that would be allowed per litre based on the reported capital and operational expenditure. Average revenues were also consistently below the prescribed margin for wholesalers of 118 TZS in 2018. In the reported OMC data, only 4 out of the 12 companies achieved a revenue in excess of the margin in 2018, namely WF5 (TZS 172), WF3 (TZS 123), WF8 (TZS 138) and Total (TZS 132). All other OMCs did not recover the prescribed margin, with some, notably WF7, WF9, and WF11 only recovered around half of the prescribed margin (TZS 52, TZS 61 and TZS 64 respectively).

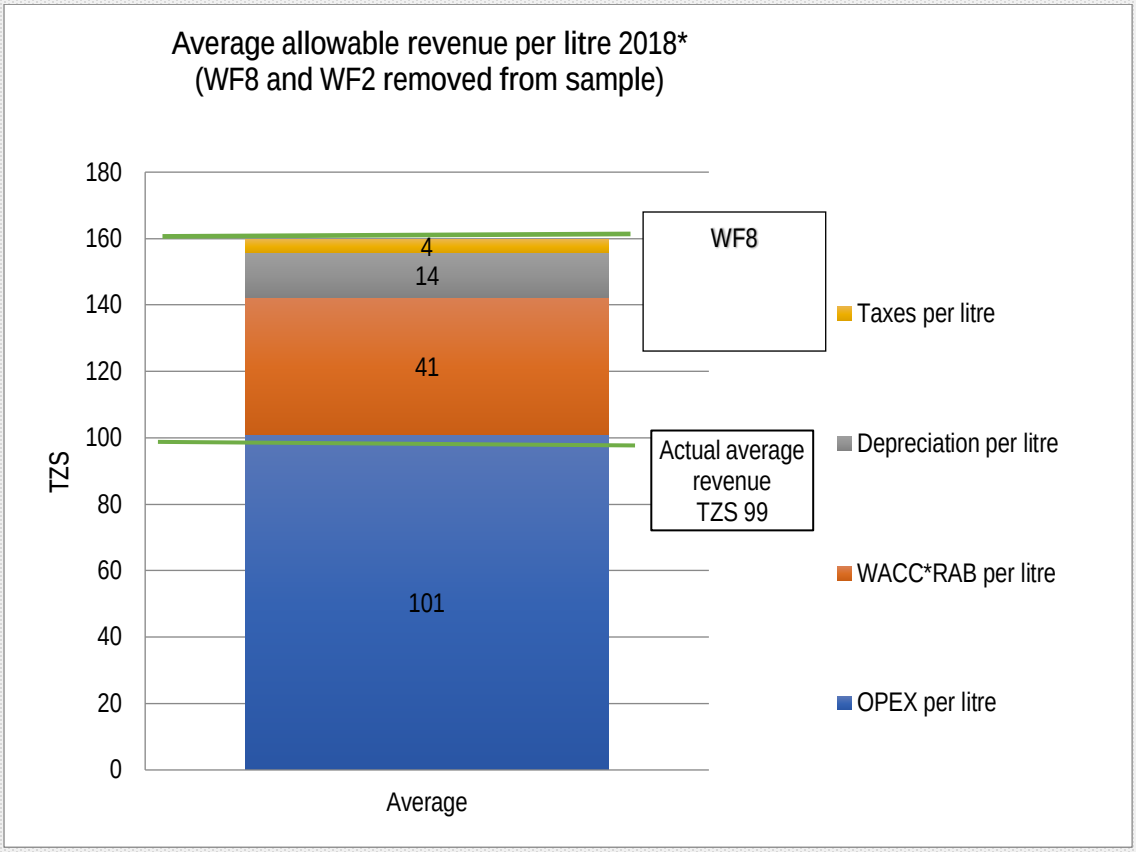
Such an unsustainable earnings profile suggests that either the reporting had been significantly incorrect or that the revenues have been insufficient to yield a reasonable return on capital, which in this exercise was approximated by a WACC of 12%. In a Rate of Return approach, it is possible to earn low returns on capital,

even for an extended period of time, as long as the operational expenditure continue to be adequately covered. However, such a situation, on top of having a significantly negative effect on investor sentiment, is also not sustainable in the long term.

All OMCs, except WF3 and WF1, were able to cover their operational expenditure before taxes and depreciation in full. Usually, it is a common unintended consequence of Rate of Return regulation that assets become inflated over time and operational expenditure tends to be fairly unconstrained. However, the data analysed do not provide sufficient evidence to arrive at this particular conclusion in the present case, as the Rate of Return approach has not been formally adopted or implemented on an individual company basis. Simply put, it was unlikely that every OMC has systematically overinvested in infrastructure or has adopted a wanton spending approach, and expected that the Regulator would grant a return on and of all investment and recovery of all expenditure, rather than disallow any expenditure as imprudent or any assets as unnecessary for the provision of an adequate service provision. It would much more likely have led to lower returns or losses.

The difference between the average actual revenue in the reduced sample (TZS 99 per litre) and the average Opex per litre (TZS 110 per litre) was however negative (-TZS 11 per litre). This suggested a systemic under-recovery of reported costs across the industry. Once again, the work of the consultant points to the risk of reporting inaccuracies due to the lack of common accounting principles prescribed by the Regulator and the lack of audited accounts as this outcome is highly implausible.

Figure 6: Average Allowable Revenue per Litre 2018

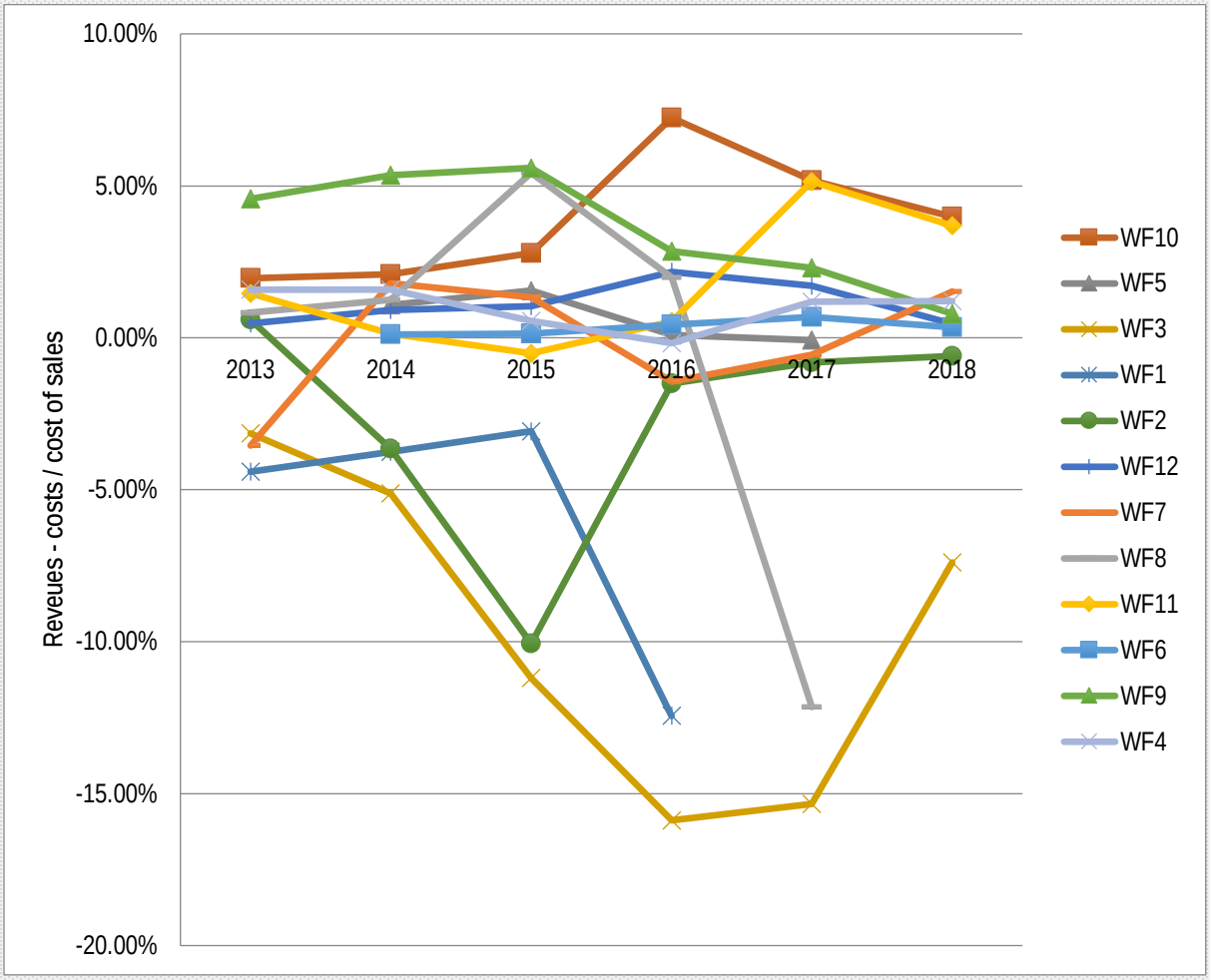


Source: INNOVEX calculations

From the above analysis, it can be deduced that the allowable revenue or margin per litre should be substantially higher than it was at the time of analysis, assuming that the data provided was accurate.

It's important to note however that despite these findings, there is some evidence to suggest that the data does not accurately reflect the financial reality of OMCs. Whereas, above finding show that OMCs are making hardly any returns on the wholesale of liquid fuels, a thorough analysis of the OMCs annual financial statements demonstrates that the industry is not running systematic losses as the below graphics demonstrate.

Figure 7: Net Profit per OMC



Source: INNOVEX calculations

It was found out that, OMCs have not been making systematic losses, despite their data suggesting that they have not been earning a sustainable fair return on investment when used in a Rate of Return formula. In the above, only WF1 and WF2, as well as WF11 for some years included, had experienced negative net profits per annum.

It is important to note that the data described above indicates how OMCs are able to provide discounts against the official margin. They do so at the expense of their profit margin, which is often reduced to near zero. Whilst the calculations in this section demonstrate that the margin should be TZS 124, the findings of the previous section demonstrate that they are often in the range of TZS 20, thereby reducing the profit they are entitled too. This is not a sustainable situation and the occurrence of discounts cannot be considered a decent guide to how the companies are doing financially, in fact it proves the contrary. Based on the Consultant's findings, the discounts provided are a form of distress discounts, aimed at retaining market share.

Earlier in this analysis it was pointed out that WF1, WF2, WF3 and WF4 experienced significant negative net margins when performing an analysis of the submitted data. In the companies' financial statements, the consultant

found a corresponding negative net profit of WF1 and WF2, suggesting that these companies were either not efficient, or suffering from an industry margin that is too low.

Efficient Regulatory Asset Base

Utilising interviews, industry expertise, benchmarking analysis and inputs from stakeholders, the Consultant was able to determine the appropriate assets for an efficient wholesaler. It was determined that with a minimum efficient throughput of 200 million litres, and with assets compliant with the standards set by the regulator, a typical efficient asset base for a wholesaler would consist of the following assets. These assets were considered on average 10 years old (in order to achieve a uniform margin) and trended and depreciated according to the methodology outlined.

Table 13: Wholesaler Estimated Fixed Assets

Fixed Asset Base - Wholesaler	Original cost (TZS)	Depreciated cost After 10 Years (TZS)	Economically Useful Life
Land and Buildings	3,500,000,000	5,529,317,658	40
Storage tanks (for 12.5 mln. litres per month)	7,800,000,000	10,601,669,319	30
Transmission pipelines	5,50;0,000,000	9,392,952,741	50
Pump stations	2,700,000,000	2,597,277,922	20
Funds used during construction	500,000,000	500,000,000	n/a
Power-operated equipment (trucks, motor vehicles, etc.)	1,913,333,333	1,186,458,000	6
Office furniture and fixtures	956,666,667	593,229,000	6
Computers	1,268,550,000	845,704,229	3
Total	24,138,550,000	31,246,608,869	

Source: INNOVEX calculations

The fixed assets are part of the Regulatory Asset Base over which the returns are to be calculated. The other component consists of the inventories which are calculated based on the minimum efficient throughput of 200 million litres.

Table 14: Wholesalers Regulatory Asset Base

Wholesale Regulatory Asset Base		
Depreciated and trended fixed assets after 10 years of utilisation (rounded)	TZS	31,246,608,869
Inventories (priced at TZS 2200 per litre)	TZS	12,833,333,333
Total RAB	TZS	44,079,942,202

Source: INNOVEX calculations

These calculations yield a Regulatory Asset Base of TZS 44.08 billion, which is TZS 220.40 per litre. It must be noted that the current reported RAB per litre from the industry is higher, at TZS 475 per litre, but this is influenced by smaller wholesalers (with lower than efficient volume throughput) with a higher cost base and the use of replacement cost (or market value) for assets by some companies, instead of the asset valuation that is appropriate for regulatory purposes, used in this calculation.

Table 15 indicates the allowable operational expenditure, both per litre and in total, for the typical, efficiently sized wholesaler. Based on the data from wholesalers, adjustments were made, particularly on the maintenance and repairs allowable expenditure. These were set below 5-7% of the RAB, which is below the industry norm. In order to incentivise efficient maintenance and repairs to infrastructure equipment, the allowable revenue was calculated at 5% of the fixed RAB (RAB excluding inventories). The increase in maintenance costs was deducted from the category 'other expenses.

Table 15: Wholesalers Operational Expenses

Wholesaler Operational expenses	Wholesaler Operational expenses (per litre) TZS	Wholesaler Operational expenses Total (200 mln litres) TZS
Distribution costs	4.13	826,768,992
Marketing costs	1.51	301,125,629
Rents and property taxes	3.45	690,000,000
Professional fees	1.13	226,000,000
Salaries and wages	16.50	3,300,000,000
Maintenance and repairs	7.81	1,562,330,443
Transport costs	6.07	1,213,050,888
Management fees	2.32	464,947,671
Other expenses	11.63	2,326,000,000
Total Opex TZS / litre	77.30	15,459,230,953

Source: INNOVEX calculations

Therefore, the consultants' recommendation based on the data provided would be to have the margin built-up as follows:

Table 16: Summary of Findings for OMCs

Measurement	Unit of Measure	Rationale
RAB per litre	TZS 220.40	Based on trended and depreciated original cost (TZS 31.251 billion) over a minimum efficient number of litres of 200 million.
WACC	12%	In nominal terms
WACC* RAB per litre	TZS 26.45	Calculated 12% of TZS 220.40
OPEX per litre:	TZS 77.30	Actual average as reported, with efficiency adjustments
Taxes per litre	TZS 7.93	30% of WACC* RAB = 30% of 26.45 = 7.93
Depreciation per litre	TZS 12.10	Annual depreciation expense on trended and depreciated original cost asset base
Total per litre	TZS 123.78	27 + 77 + 8 + 12 = 124

Source: INNOVEX calculations

3.6 OMC Margin Recommendations

To ensure that the price regulation implemented by EWURA conforms to the broad overarching objectives of price regulation as well as the desired objectives for the sector as stipulated in legislation, in particular, ensuring financial viability and sustainability, the consultant suggests that EWURA follow a rate of return approach to the setting of the cost and margin components of the pricing structure for Diesel, Petrol and Illuminating Kerosene. This will allow for licensees that invest in infrastructure to earn a return and provide certainty for potential investors as well. This recommendation is based on the following factors:

- The relative ease of implementation of RoR compared to the alternative methodologies;
- The historical and international precedent of using this method in the liquid fuels industry and the energy industry in general;
- The findings of the international benchmarking, which suggested that all regulated prices in the countries compared used a cost-build-up approach with some margin for the provision of the service by either wholesalers or retails.

The Rate of Return methodology can be applied by adding the WACC*RAB per litre values; operational costs per litre; and a pass through of taxes based on the regional tax burden, thereby resulting in a regional margin calculation. This method would be facilitated by audited financial statements utilising regulatory reporting rules and the independently established operational useful life for the relevant asset categories. EWURA may need to prepare a specified standard format to be completed by OMCs and Retailers and have it approved by auditors for accuracy before they can be used for cost build up.

3.7 Frequency of Review for OMCs

Regarding the frequency of reviews, there is no consistent conclusion to draw from the international benchmarking. Each of the eight countries reviewed tends to conduct a margin review when needed, often after a prolonged period of time. However, a sound regulatory practice suggests that an interval of maximum five (5) years is appropriate to evaluate progress of the industry and assess any need for policy or practice change. The best practice would suggest that if data is submitted annually, margins can be assessed annually.

The consultant therefore recommends to EWURA that the actual margins and average efficient costs calculations should ideally be reviewed annually for 5 years consecutively, which can thereafter be reduced in frequency based on observed increases in data accuracy and cost efficiency. This will assist the regulator in establishing a level of confidence of the data being collected as well as building internal capacity for the regulator to conduct margin analysis using internally collected data.

With regards to Methodology of Annual Reviews of Margin, the consultant suggests for the Regulator to use the same Rate of Return Methodology as described in Section 3.1.3. A detailed Financial Model has been shared that can be used in determining OMCs Margins either annually or at any point in time given availability of reliable data. The Financial Model is prepared to include a Depreciation worksheet that is populated with the recommendations of this study i.e., types and economic useful lives of Regulatory Asset Base.

3.8 Reasons for Limited Participation of Pre-Qualified Bidders in the BPS tenders

The consulting team conducted Key Informants Interviews and Focus Group Discussions utilizing unstructured questions with different stakeholders in the Downstream Petroleum industry in Tanzania. The aim was to determine reasons for the observed limited participation of pre-qualified bidders in BPS tenders. The interviewees included the Petroleum Bulk Procurement Agency (PBPA) and OMCs that were visited during the study. Some of the OMCs were pre-qualified to bid and have participated in the BPS tender process and other OMCs that were pre-qualified

but have not yet participated in the bidding process. The consultant also interviewed OMCs that were not pre-qualified by the PBPA to tender.

It has been noted that up until October 2016, PBPA conducted tenders under Bulk Procurement System (BPS) which explains fewer number of tenders in prior years. The procurement system changed beginning November 2016 where PBPA started a Cargo-by-Cargo procurement systems hence allowing for each cargo ship to be a separate tender. This was in efforts to allow local OMCs to participate in the bidding process.

During interviews with PBPA and OMCs, it was established that between January 2013 and June 2019 there had been a total of 275 BPS tenders out of which only 20 were won by the local OMCs and the remaining 255 were won by International Companies. This proves that there is a significant limited participation of Local OMCs in the BPS tenders as statistics below indicate in Table 17:

Table 17: Summary of BPS Tenders

Year	No. of Tenders	Local Bidders	Int'l Bidders	Local Tenders Won	Int'l Tenders Won	Procurement Method	Local companies that won the tenders
2012	6	0	2	0	6	Bulk Procurement	n/a
2013	10	1	2	3	7	Bulk Procurement	GAPCO Tanzania Ltd
2014	12	0	4	0	12	Bulk Procurement	n/a
2015	12	0	4	0	12	Bulk Procurement	n/a
2016	22	0	8	0	22	Bulk Procurement	n/a
2017	88	6	9	17	71	Cargo by Cargo	GBP Tanzania Ltd GAPCO Tanzania LTD PUMA Energy (T) Ltd Sahara Tanzania Ltd Lake Oil Limited CAMEL Oil (T) Limited
2018	82	1	10	0	82	Cargo by Cargo	GBP Tanzania Limited
Jan. to June 2019	43	1	6	0	43	Cargo by Cargo	GBP Tanzania Limited
Total	275			20	255		

Source: PBPA Tender Records

It was noted that in the period of January to June 2017, tenders were open only for local companies for which six (6) of the local pre-qualified OMCs participated and 4 out of 6 won a total of 17 tenders. These OMCs however, had participated in association with other multinational companies in order to boost their capacity. Once the tenders were open to all bidders, there observed a sharp decrease in participation of local pre-qualified OMCs. As a result, there has been no tenders won by local OMCs in 2018 and the first half of 2019 for which data was made available.

By December 2019, there were 25 pre-qualified bidders, out of which 7 participated regularly. The tendering process was identified to be lengthy and composed of the following five elements; Tender Registration, Planning, Prequalification, Tender Award and Logistics. In explaining reasons for OMCs limited participation in the BPS tenders, below findings were collected:

1) Most of the Multinational OMCs that are pre-qualified to bid in the tendering process, do not tender regularly. When these OMCs (pre-qualified but not bidding) were asked for reasons of such practice, a common response was pre-qualification is a "Business Strategy" and couldn't discuss further.

   It is the consultant's opinion that this suggests that pre-qualification is utilized as a diversification strategy for Multinational OMCs to insure the companies against domestic economic downturns. The consultant is also of the opinion that local OMCs apply for pre-qualification but only intend to participate in a tender in association with their parent companies or when tenders are open for local OMCs alone as the case of the first half of 2017.

   The Consultants' observations are reinforced by the experience of other countries who experience similar OMC practices. There is no real remedy against this practice by multinational OMCs, other than to render the tendering itself more lucrative.

   Economic game theory suggests that any competitive bidding process in which more than a certain number of companies compete, will, by definition, yield lower returns (due to effective competition), thereby reducing the incentive to enter the competitive bidding process. In many ways then, the competitive bidding process becomes a victim of its own success. A more appropriate measure of its effectiveness is a comparison of the prices achieved through competitive bidding and international oil prices to check if the spread is on the rise over time.

2) From local OMCs who are not pre-qualified, financial requirements for pre-qualification has been considered a limiting factor. For a company to be able to bid in the tenders to supply petroleum products in Tanzania, one has to be financially capable to incur such an undertaking as outlined below:

Table 18: PBPA Bid and Bond Security

S/N	Cargo (Metric tons M^3)	Bid Security (USD)	Bond Security (USD)	Discharging Hours	Vessel Preparation Hours
1	35,000 – 40,000	150,000/-	1,000,000/-	36	6
2	60,000 – 100,000	200,000/-	2,000,000/-	72	6

Source: PBPA Meetings and Shared Documents

Most local OMCs in particular, struggle to demonstrate that they have the financial capacity to undertake such transactions.

3) Furthermore, the combined administrative requirements for suppliers are very exhaustive and include the following:

   - Annual turnover of at least USD 100 million for International Suppliers and TZS 30 billion for Local Suppliers;
   - Audited Accounts for three consecutive years;
   - Legal registration documents of particular country;
   - Similar experience in the industry; and a
   - Registration fee of USD 1,000/-

Procurement of Oil can be done by both Local and International companies (OMCs) as long as they fulfil the following requirements;

- EWURA License
- TRA License
- Legal Requirements
- Comfort Letter
- Hospitality Agreement (for non-depot holders)
- Registration Fee (TZS 5 million)

It is clear that the above requirements are difficult to fulfil in their entirety and prohibit the entry by companies with limited previous experience and smaller capital base.

4) Local OMCs who are pre-qualified and have participated in the tender process, argued a pattern of limited negotiation power between local OMCs against international suppliers, which often results in relatively higher prices for local OMCs as opposed to Multinational Oil Companies. Typically, international suppliers have done business with international Oil companies regularly over a long period of time, and the lower risk is priced into their more competitive quotations provided to international suppliers. This creates a hurdle for local suppliers to compete.

5) The Consultant's research further identified that most OMCs do not possess the infrastructure required for participation in the bidding process. In particular, the use of multiple storage facilities required for receiving petroleum products, which increases the time required for the ship to offload the product. This results in higher waiting charges (demurrage costs), which inflate the purchase price resulting to a much higher cost for the OMC. Similarly, the use of a Single Buoy Mooring (SBM) in the receiving port, that serves multiple storage facilities, also increases the throughput time and costs for local OMCs.

6) Local OMCs both those that are pre-qualified and those that are not, have been subjected to tax related challenges, including;

   - Delays in tax imposition and payments and other bureaucratic hurdles hampering the efforts of local importers to participate in the tender process. Local OMCs in particular have cited these hurdles as plausible challenges and have opted out of participating in the tender process.
   - Corporate tax regime in the country also poses a challenge in comparison to some other countries where multinational OMCs get relatively lower corporate tax rate. International OMCs from such countries can afford to bid in lower premiums in the local market leaving local OMCs more vulnerable to the competition.
   - Service Levy which is charged as a percentage of the turnover at 0.3% also creates a hurdle for local OMCs to participate in BPS tenders as they would be subjected to even more tax and challenge their financial capacity

Given these reasons for limited participation by pre-qualified bidders, the consultant suggests the following recommendations:

- Encouraging partnership between multinational companies and local pre-qualified OMCs in bidding for BPS tenders. In order to promote local participation and boost local economy, regulator may consider allowing multinational OMCs to bid only when they are in partnership with a local OMC. This will improve participation of local OMCs in pre-qualification process and ultimately, building local capacity to tender.

- Simplification of the multiple steps in the tendering process, to enable the participation in the tender process. For instance, registration, planning and pre-qualification as separate steps are likely considered burdensome by participants.

- A relaxation of the financial requirements in terms of the bond security and annual turnover amounts is likely to encourage participation from local participants.

- A streamlining of the bureaucratic hurdles (e.g., delays in tax imposition, requirement for multiple licenses from different entities) would also encourage participation in the tender processes.

4 Retail Investment Cost, Operational Cost and Margin

4.1 Assessment of Data Collection

The consultant worked closely with the management EWURA, and the management of the retailers' association, TAPSOA, to establish a contact list of all the sampled retailers, to make initial contact and maintain communication with the retailers across the country regarding the importance and urgency of the exercise, as well as to arrange zonal-based meetings for retail station owners and operators. The consultant conducted workshops in the Lake Zone that included operators of Mwanza, Kagera, Geita, Shinyanga and Mara regions. Another retail field visit was also conducted in Dodoma region, where Owners and Operators of Retail stations in the said regions under the leadership of TAPSOA were gathered together.

In efforts to diversify data collection process, the consultant also gathered data on construction and operations of a retail station in two set ups i.e., Urban and Rural areas. Sources used included both current and former owners and operators of retail stations, constructors of canopies and other structures, local suppliers and international manufacturers of fuel pumps as well as previously published local researchers of the petroleum industry in Tanzania.

As a result of these various efforts typical rural and urban stations sizes and infrastructure were identified, operational expenditure was quantified, and average economically useful lives for the various asset categories were established.

4.2 Retailers' Margin Analysis

Analysis was performed on the data that was collected and it was found out that the data was not consistent with industry practice as well as far as financial reporting is concerned. Focus was on 2017 and 2018 data that for each year at least three companies had submitted data for, and the following was uncovered:

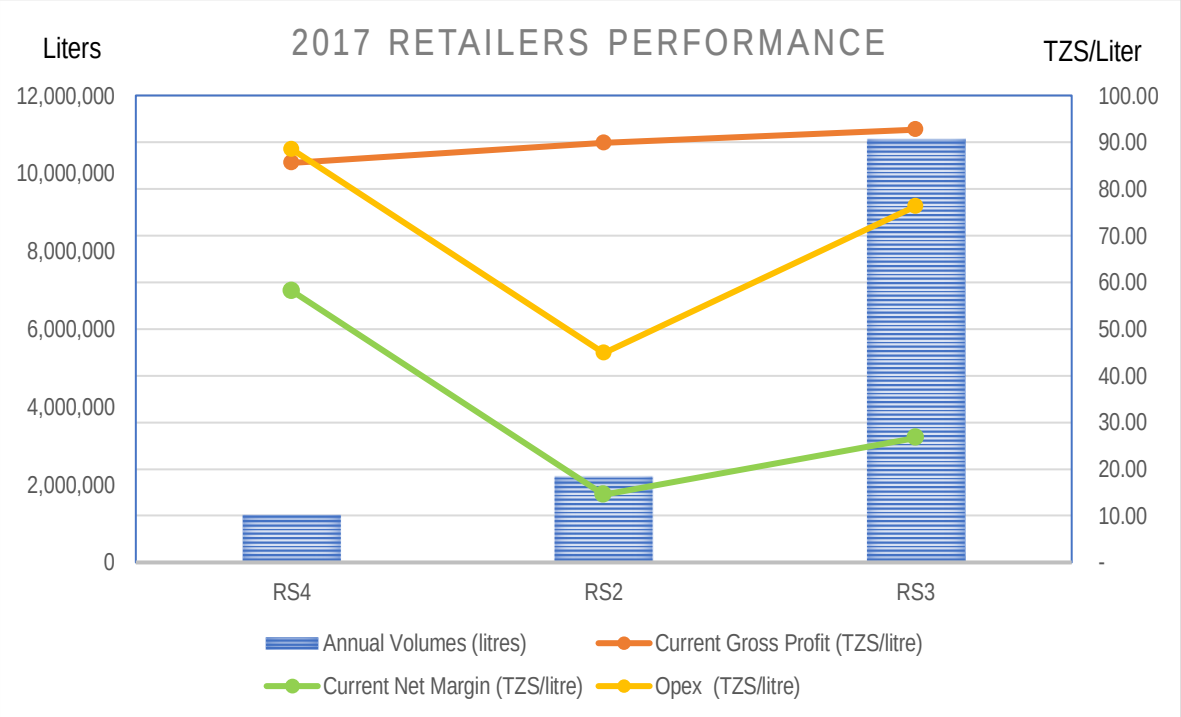
Table 19: Retailers Information For the year 2017 (Data was provided for three companies):

Variable	RS4	RS2	RS3
Annual Volumes (litres)	1,228,735	2,205,047	10,860,000
Current Gross Profit (TZS/litre)	85.56	89.82	92.68
Current Net Margin (TZS/litre)	58.16	14.51	26.66
Opex (TZS/litre)	88.49	44.84	76.34

Source: INNOVEX calculations

This information was then plotted on graph in order to analyse any corresponding relationship between volumes of fuel and the financial results of each company operations in terms of Gross Profit (Revenue less Cost of Sales) and effective Net Margin (Gross Profit minus all allowable Opex). Below is the graphic representation:

Figure 9: Retailers' Performance



Source: INNOVEX calculations

It was found out that while volumes for the three companies varied, all three companies had the similar pattern in terms of Opex and resultant Net Profit Margin.

Granted that all three companies showed a Gross Profit per litre between TZS 85.56 to TZS 92.68, a relatively significant difference in Net Profit Margin of between TZS 14.51 to TZS 58.16 per litre was shown.

Table 20: Retailers Information For the year 2018

Variables	RS1	RS2	RS4
Annual Volumes (litres)	650,000	2,155,000	2,556,792
Current Gross Profit (TZS/litre)	68.38	84.72	80.48
Current Net Margin (TZS/litre)	(29.54)	(11.74)	59.01
Opex (TZS/litre)	132.54	114.74	43.99

Source: INNOVEX calculations

In the year 2018, all three companies that provided data showed significant variances in volumes of transactions, Gross Profit and Net Margin. The data also showed an even bigger variance in opex ranging from TZS 43.99 to TZS 132.54 per litre.

With regard to International Benchmarking analysis that was done as part of this margin study, out of the eight (8) countries the consultant gathered margin information from five (5) countries. In all the five countries it is evident that wholesaler margins are consistently lower than the retail margins, likely caused by the larger volume throughput of wholesalers. This is not the case in Tanzania where the wholesaler margin has historically been substantially higher than the retailer margin, as much as 93% in 2011 (TZS 111 compared to a retailer margin of TZS 57.6), which has been steadily reduced to a margin difference of nearly 11.8% (TZS 11 for wholesalers versus

TZS 105 for retailers) at the time of this study (2019). To demonstrate the extent to which Tanzania is an outlier in this regard, the consultant developed the following table:

Table 21: Margin Comparison to Benchmarked Countries

Description	Tanzania	Zimbabwe	Kenya	South Africa	Namibia	Malawi	Average
Retailer Margin in USD/c	0.045	0.15	0.081	0.12	0.106	0.097	0.1108
Wholesaler Margin in USD/c	0.051	0.1	0.042	0.02	0.063	0.069	0.0588
Difference (in USD/c)	-0.006	0.05	0.039	0.1	0.043	0.028	0.052
Difference (in TZS) retailer margin – wholesaler margin	-13.8	115	89.7	230	98.9	64.4	119.6
Retailer margin % higher than wholesaler margin	-13%	33%	48%	83%	41%	29%	47%

Source: INNOVEX calculations

The above breakdown clearly shows that, save for a significantly different industry configuration and associated cost structure, the retailers in Tanzania are not adequately compensated in relative terms.

The country-by-country comparison demonstrates that Tanzania's retailer margin in particular appears lower than elsewhere. In the comparator countries, the margin was more than double that of Tanzania's retailer margin. By contrast, the Tanzanian wholesaler margin was more aligned to the international average of margins in the comparator countries. This further strengthens the consultants' finding that the retailer margin in Tanzania remains disproportionately low.

After the consultant ruled most of the data collected form retailers above insufficient-to establish investment cost of a Retail Station, an additional approach was adopted, ~~b~~based on the data collected that was considered reliable, combined with the Consultants' experience in the sector and the International Benchmarking. The following assumptions were made and used:

- Weighted Average Cost of Capital: 12%;
- Depreciation: straight line depreciation per asset category-specific economically useful lives;
- Taxes: Information collected on various taxes was considered usable and was utilised, and a separate 30% company tax was calculated; and
- Purchase cost of product per litre: TZS 2,200.
- For calculation purposes, an average age of stations (across the industry) of 10 years was assumed.

The capital cost items were identified and the cost quantified, as follows:

Retail stations consist of building structures, pumps, storage tanks a canopy and a station floor. The canopy consists of a concrete beam, metal structure, an interchange structure, underground pipes and a station

floor. The typical urban station floor (in accordance with the size of the station) is 800 square metres and in a rural setting, this is approximately 200 square metres on average.

Efficient product throughput of 250,000 litres per month for an urban storage and 60,000 litres per month for a rural station. In urban retail stations storage of products is done in standard tanks of 15,000 to 40,000 litres with some stations that have as low as 10,000 litre tanks and some as high as 100,000 litre tanks. In the rural, storage of product is done in standard sized tanks of 8,000 to 12,000 litres with some stations having multiple storage tanks of as low as 6,000 litres and some as high as 20,000 litres. Typically, two (2) tanks per station of the appropriate sizes are sufficient for two products with an average of weekly re-stocking of the products.

Pumps are required in different capacities and specifications. For a typical urban station 4 pumps are present, each with 2 products and 4 nozzles per pump. A rural station on the other hand requires typically a single pump, capable of 2 products with 2 nozzles per pump.

For the sake of this study, the consultant has used below standard economic useful life of assets and recommends for the regulator (EWURA) to use the same going forward. The capital assets and their associated economically useful life are listed below.

Table 22: Retailers Economically Useful Life of Assets

Retail Station Fixed Assets	Economically useful life (years)	Remaining economically useful life - average for margin calculation
Canopy (concrete beam, metal structure, interchange structure, underground pipes) + 800 sqm (urban) station floor	30	20
Storage tanks (with a total volume of 160,000 in urban)	40	10
Pumps	15	5
Building structures	40	30

Source: INNOVEX calculations

The capital cost items for a typical urban station and their current cost and trended original and depreciated cost are shown below:

Table 23: Urban Retail Station Fixed Assets

Urban retail station fixed assets	Original cost (TZS)	Trended and depreciated original cost at present (after 10 years of operation on average) (TZS)
Canopy cost (concrete beam, metal structure, interchange structure, underground pipes) + 800 /200 sqm (urban/rural) station floor	80,000,000	107,405,290
Storage tanks (160,000 in urban)	160,000,000	214,810,580
Pumps (4)	79,720,000	107,029,372
Building structures	70,000,000	93,979,629
Total	389,720,000	523,224,871

Source: INNOVEX calculations

The capital cost items for a typical rural station and their current cost and trended original and depreciated cost are shown below:

Table 24: Rural Retail Station Fixed Assets

Rural retail station fixed assets	Original cost (TZS)	Trended and depreciated original cost at present (after 10 years of operation on average) (TZS)
Canopy cost (concrete beam, metal structure, interchange structure, underground pipes) + 200 sqm (rural) station floor	20,000,000	26,851,323
Storage tanks (40,000 in rural)	40,000,000	61,040,999
Pumps (1)	18,160,000	12,526,785
Building structures	15,000,000	22,890,375
Total	93,160,000	123,309,481

Source: INNOVEX calculations

The above breakdown yielded the following trended original depreciated Regulatory Asset Base and return on asset (WACC*RAB) figures.

Table 25: Retailers' Regulatory Asset Base (RAB)

Regulatory Asset Base (RAB)	Unit	Urban	Rural
Trended original depreciated RAB (including inventories at current cost)	TZS	523,224,871	123,309,481
WACC*RAB	TZS	62,786,985	20,077,138

Source: INNOVEX calculations

Our analysis of operational expenditure yielded the following average operational expenditure for a retail station:

Table 26: Retailers' Operational Expenditure

Operational Expenditure	Unit	Urban	Rural
Salaries	TZS	55,680,000	13,920,000
Maintenance costs (5% of Capex)	TZS	19,486,000	4,658,000
Evaporation losses (0.4%) (cost per litre: TZS 2,200)	TZS	26,400,000	6,336,000
Bank charges (8.5% of historical asset costs for urban stations and 10% for rural stations)	TZS	48,086,100	13,761,000
Office overhead costs (consumables, professional fees, telecommunications, security etc.)	TZS	72,000,000	18,000,000

Utility costs	TZS	40,080,000	10,020,000
Total Opex		261,732,200	66,650,000

Source: INNOVEX calculations

The operational expenditures are based on data collected, modified for efficiencies where necessary. The following table provides information on the salary component:

Table 27: Salary Component for Urban Retail Station

Salaries for an Urban Retail Station	Number of employees	Monthly Salary	Subtotal Per Annum (TZS)	Total employee cost p.a. (TZS)
Station Manager	1	751,000	9,012,000	
Accountant	1	515,000	6,180,000	
Pump Attendant	8	290,000	27,840,000	
Cleaner	2	240,000	5,760,000	
Security Guards	2	287,000	6,888,000	
Total Salaries				55,680,000

Source: INNOVEX calculations

Table 28: Salary Component for Rural Retail Station

Salaries for a Rural Retail Station	Number of employees	Monthly Salary	Subtotal Per Annum (TZS)	Total employee cost p.a. (TZS)
Station Manager	1	710,000	8,520,000	
Pump Attendant	2	150,000	3,600,000	
Security Guards	1	150,000	1,800,000	
Total Salaries				13,920,000

Source: INNOVEX calculations

The Government taxes are the taxes imposed on the company through various methods, and exclude the company tax of 30% of profits, which is included separately in the calculation of Margins.

During analysis of the operating costs of a retail station, the consultant identified Franchise Costs as other running costs for some retailers but not all. These include management fees and brand charge that dealers pay to OMCs for using the OMCs' trading name for retail business. This is determined to be an additional cost that is not associated with typical operational expenditures of a business. This cost was then deemed not to form part of operating costs.

These costs, usually range from TZS 4.5 mln to 6.5 mln for a rural retail station but may go as high as TZS 21 mln to 27 mln for an urban retail station. Any dealer that incurs this cost is directly impacted with any and all benefits associated with the brand name. This means franchise cost are not a uniform prudent cost. Any other retail station that does not use an OMC brand to operate does not incur this cost and is not associated with any impacts of such OMC. For that reason, franchise costs have been removed from total opex calculation and ultimately Margin calculation later on in this chapter.

Combining all the components of a margin yields the following margins for an urban and rural station.

Table 29: Retailers' Margin

Cost component	Unit	Urban	Rural
WACC*RAB	TZS	62,786,985	20,077,138
Total Opex (including annual depreciation and Government taxes)	TZS	261,732,200	66,650,000
Company taxes	TZS	18,836,095	6,023,141
Annual Depreciation	TZS	38,533,864	9,121,891
Allowable revenue (excluding cost of sales)	TZS	381,889,143	101,872,171
Allowable revenue per litre = Margin	TZS	127	141

Source: INNOVEX calculations

As was expected, a marked difference in the costs per litre faced by rural versus urban stations was noted. The above margin of TZS 127/- for urban retail stations and of TZS 141/- for rural stations reinforces the Consultant's recommendation that the retailer margin should be higher than the wholesaler margin, as is the case internationally. In this case, we find the urban margin slightly higher than the wholesaler margin. It is further recommended that the Retailers' Margin be imposed as a maximum margin, thereby encouraging competition between retailers where possible.

4.3 Rural Vs Urban Retail Station

It is fair and in line with international best practice that a clear distinction should be made between Rural and Urban Retail stations in order to calculate appropriate margins accordingly. A rural, or more accurately "remote," retail station differs from an urban retail station in its cost structure depending on both the capital cost of the station and the operational cost of refilling the station and transporting petroleum products to the station. A typical rural / remote station may either be smaller than average and more frequently refilled if it is within a certain radius of a supply point, e.g., a port. Alternatively, it could be a larger than average if it is in a low population density (rural) area and further from a supply point (and therefore remote, in Tanzania's case further westward inland), in which case the transport costs outweigh the capex cost.

With reference to the benchmarking study conducted, in Zambia the regulator (ERB) has set specific rural station standards adopted by the Zambia Bureau of Standards (ZABS) that respond to minimising costs involved in establishing a retail filling station without compromising environmental and safety requirements.

The consultant recommends to EWURA that once a station is identified as a rural/remote retail station, the regulator can provide various incentives to such stations in order to promote investment in rural areas. We find the primary incentive would be an adequate remuneration for rural stations, as reflected in the Consultant's recommendation that the rural margin should be at least TZS 14 higher than the urban margin.

Since it is evident that it may be challenging to maintain different margins for remote/rural and urban retail stations in a country, it is also a common practice to promote investment in rural area through other methods. Below are some of which the consultant recommends;

- Disaggregated transport costs for actual distance rather than applying a national average to all stations in order to motivate refilling for stations regarded as rural/remote is the most practical approach. South Africa for instance has different fuel prices in different zones due to transport cost differentials. The differential is not complex to calculate (if sufficient data is available) and can be implemented in the same way as all margins and maximum prices are set. The only difference would be that there may be 3 or up to 9 zones (this number is informed by the geographic aspects of Tanzania, which is supplied via 3 ports, each utilising a supply route eastwards) for which prices and margins are determined. Should this approach be adopted, it would be possible to simply divide the country into 3 zones initially. For instance, zone 1 would be the eastern part of the country nearest to the 3 ports, zone 2 could be set midway between the port and the western border and zone 3 is the most western part of the country. The transport costs would be added to the price build-up in each zone, resulting in a differentiated final price in the 3 zones (more detail is provided on this system in the next section regarding transporters);

- Ensuring that technical requirements for the rural filling station standards are set at the minimum required for health and safety purposes, in order to encourage investors to rural areas. In particular this relates to administrative requirements, such as operational and maintenance manuals; submission of information requirements, local government zoning and spatial planning approvals and taxes, etc. It explicitly does not refer to minimum health and safety requirements the lifting of which would endanger human and environmental health and safety.

- Where appropriate, tax incentives could be provided by the appropriate authorities to retail stations positioned or being constructed in the rural areas. In particular, the differential margin between rural and urban filling stations could be wiped out through a subsidy.

The Consultant has found a marked difference between the costs faced by rural versus urban stations. The difference between rural and urban stations is caused by a lower throughput per station and typically smaller sized installations that yield a higher per unit cost. The average throughput for an urban station is estimated at 3 million litres per annum whereas the average throughput per annum of rural stations is 720,000 litres. By contrast, many retail station costs are indivisible (standard pump costs, storage tank sizes, employee numbers), resulting in relatively higher costs and higher per unit costs.

Great care has been taken to accurately reflect the difference between an urban and a rural station in both the Capex and the operational cost elements, resulting in a clear difference between the margins. According to the calculations, the rural station margin should be TZS 14/- higher than the urban station margin that is TZS 127/- for an urban station and TZS 141/- for a rural station. To make urban and rural stations fuel prices the same, the TZS 14 differential margin could be knocked out through a government (tax) subsidy for those investing in rural areas.

4.4 Retailers Recommendations

It is expected in this industry, based on practices of other comparator countries, that the Retailers' Margin would logically be higher than that of Wholesalers'. The research and calculations performed by the Consultant confirm this expectation that both rural stations as well urban retailers should earn relatively higher margins than wholesalers. The consultant therefore recommends a Retailers' Margin of TZS 127/- and TZS 141/- for urban and rural retail stations respectively. Further, it is recommended that mechanisms for reliable and regular data collection be put in place and enforced by the Regulator to facilitate the process of margin calculation in future.

In light of the earlier recommendation that the wholesaler margin be set at a maximum of TZS 124/-, it is appropriate that EWURA determines the maximum retailer margin at TZS 127/- and TZS 141/-, subject to annual non-food inflation.

4.5 Frequency of Review for Retailers

Regarding the frequency of reviews, there is no consistent international practice. In our benchmarking research, each of the eight countries reviewed tends to conduct a margin review when needed, often after a prolonged period of time. However, a sound regulatory practice suggests that an interval of maximum five (5) years is fairly appropriate to evaluate progress of the industry and assess any need for policy or practice change. The best practice would suggest that if data is submitted regularly, margins can be assessed annually.

Given the findings of this study, consultant recommends to EWURA that it is key to enforce on a standardised data collection system to capture all necessary variables for developing margins formula for retailers. Retailers should submit the required data periodically (e.g., quarterly or annually) to allow for the regulator to review retailer's operations at least annually for the following three to five years consecutively until such time the regulator gains confidence in the data being submitted and opt for a longer time interval between reviews.

Methodology of Annual Reviews of Margin is recommended to be the same i.e., Rate of Return Methodology as described in Section 3.1.3. A detailed Financial Model has been shared that can be used in determining Retailer's Margins either annually given availability of reliable data. The Financial Model is prepared to include a Depreciation worksheet that is populated with the recommendations of this study i.e., types and economic useful lives of Regulatory Asset Base.

5 Transport Costs

5.1 Assessment of Data Collection

As part of the scope of work of the Margin Study, the consultant was tasked with determining the transportation costs for distribution of petroleum White Liquid Products and LPG from the port of discharge to the Tanzania Mainland Districts and Township. Specifically, entailed establishment of the transport charge to every district and township and as a result recommend a methodology and frequency for periodic reviews of the transport charge.

From the start of the study, the consultant circulated questionnaires with requests for financial data to transporters of petroleum products (Oil and Gas) after three (3) months of gathering a contact list from Tanzania Revenue Authority (TRA), Tanzania Truck Owners Association (TATOA) and Transporters Association of Tanzania (TAT).

The consultant also conducted physical field visits diversifying from big transporters (companies with more than 300 trucks) and small transporters (companies with fewer than 10 trucks). A number of transport quotations to different districts of the country were also collected from these transporters in order to supplement data collected and support for meaningful analysis.

5.2 Cost Build-up for Transport Cost

Given limitations in developing a model transport company in the downstream petroleum industry due to nature of the business and diversity in the level of investment between transportation companies, a cost build-up for transportation business was rendered of lesser reliance. Instead of the cost build up, a more reliable approach of analysing current market transport charges that's a result of forces of demand and supply, was used.

5.3 Transport Charge Analysis

Granted that reliable Capex and opex data with regards to transportation of petroleum products (WLP and LPG) in Tanzania could not be established with certainty. In this absence, the consultant reviewed current market transport charges at the time of this study. Quotations were collected from various transport companies including TP1, TP2, TP3 and TP7 etc. Other quotations were collected from OMCs who transport WLP to retailers including WF2, WF4 and WF7. Other quotations were developed through retailers' invoices from OMCs as they are charged for products and separately for transportation including retailers of WF4.

These transport charges were collected from the three supply ports (Dar es Salaam, Tanga and Mtwara) to the various districts in the Tanzania.

For the sake of transportation of petroleum products within Dar es Salaam, it was found out that major variables to transport charges depend on the type and volume of product being transported (WLP or LPG), distance to be covered as well as nature of operations of the retailer (COCO, CODO or DODO).

Since most COCOs and CODOs transport their products through an agreed arrangement with their named companies, transport cost becomes an invoiced amount from the OMC to the retailer. DODOs have a wide range to negotiate with various transporter companies with regards to transporting charges and this information has been collected through requesting for quotations from the named transporters above.

In Dar es Salaam, a range of transport charge between TZS 12/- to TZS 17/- per litre with most of retail stations incurring higher transport charges was established. The consultant recommends an average of TZS 15/- per litre to be applicable as a viable transport charge within Dar es Salaam.

In the case of other districts in the country, major variables to transport charges depend on the type and volume of product being transported (WLP or LPG), distance to be covered as well as road conditions to specific districts. An analysis of the quotations collected revealed a range of TZS 0.1652/- to TZS 0.2653/- per litre per kilometre as a transport factor in Tanzania. An average of TZS 0.2011/- per litre per kilometre was determined to be representative of the current market transport charges as shown below, Table 30:

Table 30: Transport Factor

Region	District	Approved Port	Distance from Approved Port	Current Market Transport Charges	Calculated Factor
Coast Region	Chalinze	Dar es Salaam	100.3	25	0.2493
Morogoro	Kilosa	Dar es Salaam	293.1	30	0.1024
Mwanza	Ukerewe	Tanga	754.0	200	0.2653
Kigoma	Uvinza	Dar es Salaam	1134.2	220	0.1940
Kilimanjaro	Hai	Tanga	574.9	95	0.1652
Dodoma	Chamwino	Dar es Salaam	417.3	90	0.2157
Arusha	Arumeru	Tanga	435.0	94	0.2161
Average Transport Charge Factor Per Litre Per Kilometre					0.2011

Source: INNOVEX calculations

The consultant proposes to use the transport factor of TZS 0.2011/- per litre per kilometre while being cautious that there are some districts that act as outliers to this rate, these would include areas with water bodies that require transportation trucks to cross a bridge, use ferries, or opt for an alternative route that may be shorter or longer than expected.

On this note, the consultant recommends a maximum rate of TZS 0.2653/- per litre per kilometre to be allowed for specific districts that are only accessible after crossing a water body and require a bridge toll.

The difference in transport cost subject to using a tarmac road, would be harmonized by applying the average rate of TZS 0.2011 as there will be cost saving to some and slightly higher cost to others. After careful analysis and information gathering from transport companies, the consultant has established proposed transport costs as follows in Table 31.

Table 31: Transport Charge per Region from each Port

Regions	EWURA Delivery Rate from DSM (TZS/Ltr)	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Consultant's Proposed Transport Charge from Tanga (TZS/ltr)	Consultant's Proposed Transport Charge from Mtwara (TZS/ltr)
Dar es Salaam	10.00	15.00	67.11	114.06
Arusha	83.98	120.88	88.54	239.25
Coast (Kibaha)	4.55	5.37	65.10	119.19
Dodoma	58.63	89.15	103.51	202.95
Geita	165.00	224.23	206.43	338.05

Regions	EWURA Delivery Rate from DSM (TZS/Ltr)	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Consultant's Proposed Transport Charge from Tanga (TZS/ltr)	Consultant's Proposed Transport Charge from Mtwara (TZS/ltr)
Iringa	63.96	98.30	128.44	221.09
Kagera (Bukoba)	214.95	291.11	273.32	391.42
Katavi (Mpanda)	207.45	226.82	241.20	335.19
Kigoma	230.85	249.08	263.46	362.91
Kilimanjaro (Moshi)	73.58	108.75	72.11	222.90
Lindi	58.76	92.14	159.23	22.42
Manyara (Babati)	122.10	100.73	123.54	240.03
Mara (Musoma)	178.10	221.09	191.57	342.27
Mbeya	106.86	163.55	193.70	222.20
Morogoro	24.96	37.22	67.37	151.05
Mtwara	72.28	112.80	179.88	-
Mwanza	149.76	226.86	209.06	340.68
Njombe	92.30	142.66	172.81	174.76
Rukwa (Sumbawanga)	172.50	233.38	259.34	287.81
Ruvuma (Songea)	123.11	213.07	218.60	132.46
Shinyanga	128.57	196.80	179.00	310.62
Simiyu (Bariadi)	170.00	228.79	202.25	337.89
Singida	90.48	138.08	155.55	251.90
Songwe (Vwawa)	116.09	168.80	208.18	236.67
Tabora	153.90	165.91	180.29	279.73
Tanga	46.02	66.58	-	180.65

Source: INNOVEX calculations

For the sake of a formula and uniformity, the consultant recommends to the regulator to use the proposed transport factor to the rest of the country. A table including proposed transport charges is attached in Section 9.4.2: ANNEX XI – Transport Charges per Districts.

It should be noted that the local rate for Dar es Salaam is relatively higher than that for other regions of the country due to the minimum efficient scale effect. As is the case for many road transportation operators, local deliveries in a relatively densely populated city are relatively more expensive as time, resources and petrol are used whilst idling in traffic. Hence the most reasonable local transport rate in Dar es Salaam is TZS 15/- per litre, which is slightly higher than in other regions, where a cost per litre per km from the approved port of TZS 0.2011 is established to be relevant.

It should further be emphasized that in order to incentivize efficient transport choices, we recommend that EWURA only allows the most cost-effective transport route per district. For instance, transportation to Bahi will cost TZS 101.36/- per litre via Dar es Salaam, but as much as TZS 216/- per litre from Mtwara port. Clearly, the appropriate cost saving incentive will be provided by placing the maximum transport cost to Bahi at TZS 101.36/- per litre. Hence, it is the consultant's recommendation that the following table be used.

Table 32: Transport Charge per Region from the Approved Port

Regions	Distance from Approved Port	Consultant's Proposed Transport Charge from Approved Port (TZS/ltr)
Dar es Salaam Port		
Dar es Salaam	-	15.00
Coast (Kibaha)	26.7	5.37
Morogoro	185.1	37.22
Dodoma	443.3	89.15
Iringa	488.8	98.30
Manyara (Babati)	500.9	100.73
Singida	686.6	138.08
Njombe	709.4	142.66
Mbeya	813.3	163.55
Tabora	825.0	165.91
Shinyanga	978.6	196.80
Songwe (Vwawa)	839.4	168.80
Katavi (Mpanda)	1,127.9	226.82
Rukwa (Sumbawanga)	1,160.5	233.38
Kigoma	1,238.6	249.08
Tanga Port		
Tanga	-	-
Kilimanjaro (Moshi)	358.6	72.11
Arusha	440.3	88.54
Mara (Musoma)	952.6	191.57
Simiyu (Bariadi)	1,005.7	202.25
Geita	1,026.5	206.43
Mwanza	1,039.6	209.06
Kagera (Bukoba)	1,359.1	273.32
Mtwara Port		
Mtwara	-	-
Lindi	111.5	22.42
Ruvuma (Songea)	658.7	132.46

Source: INNOVEX calculations

Dar es Salaam Port:

It was found out that storage facilities for Dar es Salaam could cater for the volume need of all the regions allocated with plenty of surplus. Total storage available for Dar es Salaam port is 979,691 cubic meters while volume demand for the 15 regions allocated is 174,275 cubic meters per month. Surplus storage space would therefore be 805,416 cubic meters. This means in case of shortage on the other two ports, Dar es Salaam could still be capable to supply and cover identified shortage.

Tanga Port:

While analysing capacity of the three ports i.e., Dar es Salaam, Tanga and Mtwara, it was found out that storage capacity of Tanga port could not sufficiently cover the volume demand of all the nine regions that would have a benefiting sourcing from Tanga port namely; Kilimanjaro, Arusha, Mara, Simiyu, Geita, Mwanza, Kagera, Shinyanga and Tanga itself.

A comparison was then made and revealed that if all nine regions sourced all products from Tanga (Petroleum, Diesel and Kerosene), there would be a shortage in storage for Kerosene of about 1,909 cubic meters. Storage space for other WLP proved sufficient to accommodate all regions.

Table 33: Storage Capacity for Tanga Port

S/N	Region	Diesel	Petroleum	Kerosene
	Proposed Regions (Volume Demand per month)			
1	Tanga	4,639,867	5,895,665	300,375
2	Kilimanjaro (Moshi)	4,905,558	4,753,175	298,292
3	Arusha	7,414,700	10,378,392	348,792
4	Mara (Musoma)	1,401,375	832,708	-
5	Simiyu (Bariadi)	287,875	356,208	-
6	Geita	1,919,196	1,725,042	16,542
7	Mwanza	11,003,183	13,639,625	461,000
8	Kagera (Bukoba)	3,702,542	2,922,125	99,625
9	Shinyanga	2,688,875	2,688,875	2,688,875
	Total Volume Demand	37,963,171	43,191,815	4,213,500
	Tanga Capacity (by 2018)	47,672,000	72,586,000	2,304,000
	Surplus/(Shortage)	9,708,829	29,394,185	(1,909,500)

Source: EWURA The mid- and downstream petroleum sub-sector performance review report for the year 2018

To combat this challenge, the consultant recommends the region with a higher Kerosene consumption per month i.e., Shinyanga to source WLP from Dar es Salaam Port and avail storage space for other regions sourcing from Tanga port.

Mtwara Port:

Total storage space available for Mtwara Port is estimated to be 25,358 cubic meter while total volume demand per month for the three regions allocated to Mtwara port is estimated to be 10,589 cubic meters. In addition to that Mtwara port has excess of about 15,816 cubic meters storage for Petroleum and over 1,143 cubic meters for Kerosene but a deficiency in Diesel storage of about 2,189 cubic meters. Mtwara port is currently not support Mtwara's own regional volume demand for diesel let alone Lindi and Ruvuma.

Table 34: Storage Capacity for Mtwara Port

S/N	Region	Diesel	Petroleum	Kerosene
	Proposed Regions (Volume Demand per month)			
1	Mtwara	3,324,588	3,638,642	20,625
2	Lindi	1,364,733	818,725	18,833
3	Ruvuma	2,024,708	2,684,767	17,500
	Total Volume Demand	3,389,442	7,142,134	56,958
	Mtwara Capacity (by 2018)	1,200,000	22,958,000	1,200,000
	Surplus/(Shortage)	(2,189,442)	15,815,867	1,143,042

Source: EWURA The mid- and downstream petroleum sub-sector performance review report for the year 2018

It is therefore, the consultant's recommendation for EWURA to allow traders of Mtwara, Lindi and Ruvuma to source diesel from both Mtwara Port and Dar es Salaam port as storage facility at Mtwara port cannot bear the burned of the volume for diesel product for all three regions allocated to it.

5.4 Transporters Recommendations

With respect to transport charge, the consultant recommends below measures to be put in place in order to ensure proper collection of data from transporter as an initial stage.

- A proper mechanism is to be established in order to collect actual transportation costs monitored by EWURA in at least the next three (3) years. The mechanism requires EWURA to enforce its regulatory powers over OMCs to obtain all contracts between OMCs and transporters to be submitted and verified by the regulator. This way the regulator can establish a database of all contracts and transport charges so that, over time, a fair average transport charge per unit of distance such as kilometre can be established.

- The consultant also recommends EWURA to work closely with the Tanzania Revenue Authority (TRA). Since the TRA licenses all transporters in the country, at a request of EWURA, the transporters can be pressed by the TRA into populating above cost build-up as a license or license renewal condition for all transporters of oil and gas products.

- Transporters are likely to respond to this approach, thereby allowing EWURA access to a more reliable cost structure and be able to subject such to multiple variables including distance, traffic rate and geographical location to be able to efficiently determine transport charges from each of the three receiving ports to district level all over the country.

From the analysis performed above, EWURA could opt to apply for the distance factor of TZS 0.2011 per litre per kilometre to the rest of the country. Resulting transport charges are attached in ANNEX X and XI of this report. EWURA could also choose to enhance mechanisms for data collection from transporters. Until such mechanism is put in place and the regulator has actual data on transport costs, EWURA could also opt to retain the current transportation charges for all the regions without any change.

In addition to above measures, the consultant recommends that EWURA in the long run, introduces an incentive based on distance that would assist in determining transport changes between nearer and distant retailers accordingly. This incentive would ensure that distant or remote stations, i.e., those furthest from the three receiving ports, are allowed a higher transport cost compared to those that are nearer to the receiving ports. Given

Tanzania's geographical set up, EWURA could start with three zones such that Tanga Port would set transport cost for Northern Zone and Lake Zone while Mtwara Port would set transport costs for Southern Zone extending to Southern Highland Zone. This would leave Dar es Salaam Port to set transport cost for Costal Zone, Central Zone to Western side of the country. The categorization will simply ensure differentiation of transport cost based on distance from the port of supply. It would give EWURA between three zones to nine (9) zones taken from the three ports westward with the furthest zone being allowed a higher transportation cost.

6 LPG Pricing

6.1 LPG Wholesalers

At the inception and during data collection stages of this study there were only 11 LPG wholesalers in the country however; by October 2020, there were 43 licenced LPG wholesalers. The terms of reference also required establishment of margins for LPG wholesalers whereby the team managed to collect data from four LPG companies named: LP1, LP2, LP3; and LP4.

6.2 Observations:

6.2.1 LP1

The company sells gas and fuel products, and data for each product was disaggregated accordingly. However, given the way information was provided, it was not clear on which basis the cost allocation between the various products was performed. No data was provided on sales volumes. LPG revenues had been growing by 4.7% per annum on average between 2014 and 2018 whilst its fuel revenues had been increasing by over 37% per annum on average. As fuel income was only 16% of total revenue the consultant had taken total revenues and total costs for 2014 to 2018 to calculate LPG wholesaler margins in lieu of disaggregated cost data and allocation.

The gross wholesaler LPG profit experienced by LP1 has been consistently positive, at approximately 5.5%. Net profit has been more moderate, although positive at 0.3% on average. The net profit on value add had been consistently positive at 5.1%.

6.2.2 LP2

LP2 is a wholesaler, whose data was submitted as retail data. As this was presumably in error, the data was considered as wholesale data. As no volume data was provided, only gross profits, net profits, and net profits on value add were calculated.

LP2 gross profit had been positive and growing, averaging at 20.2% per annum during the period 2014-2018, with the gross margin increasing sharply from 2016 onwards. The net profit had also been positive except for 2015 and 2016 when it was -2.1% and -6.5% respectively. Average net profits were 2.6%. The net profit on value add was higher, averaging at 9.4%, but was also negative in 2015 and 2016 (-22.3% and -31.4% respectively).

6.2.3 LP3

LP3 is an LPG Wholesaler whose volume sales had been increasing at 11.5% per annum on average between 2014 and 2018. Its sales revenues similarly grew at 11% per annum on average. LP3's gross profit had been positive and increasing, from 24.4% in 2014 to 42% in 2018.

The average wholesale profit was 40.2% and its average net profit was 32.1%, also steadily increasing over the period under review. The net profit on value add was surprisingly negative in 2016 and 2017, averaging at 13.1% over the period under review.

As the graphs below illustrate, the LPG gross wholesale profits experienced by these three companies vary but were all positive. The net wholesale profits typically mirror the gross profits as expected, with the exception of LP2's net wholesale profit in 2015-2016, when its expenses were significantly higher on average than in other years.

6.2.4 LP4

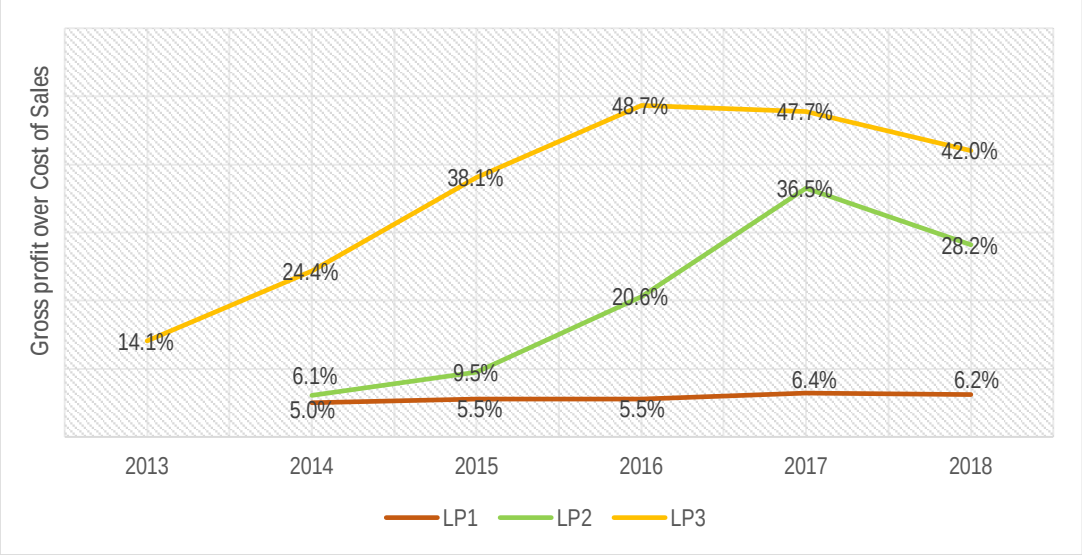
LP4 is an LPG wholesaler, whose data shows that it sells significantly larger volumes of LPG at the retail level. LP4' retail sales revenues have been growing at 8.8% on average per annum between 2013 and 2018. LP4's retail volumes have been growing at 21.7% on average per annum, which with a revenues growth rate of 8.8% suggests declining returns on retail sales at this level of market penetration. However, as no data was provided on depreciation or taxes, the net margins were rendered not helpful.

For its wholesale business, only volume data was provided, which shows its annual wholesale sales decreasing at 4.4% from a relatively high base in 2013. For this reason, LP4 was removed from the subsequent wholesale data analysis.

6.3 LPG Margin Analysis

Illustrated below is the analysis performed on LPG wholesalers:

Figure 10: Effective LPG Wholesale Profit



Source: INNOVEX calculations

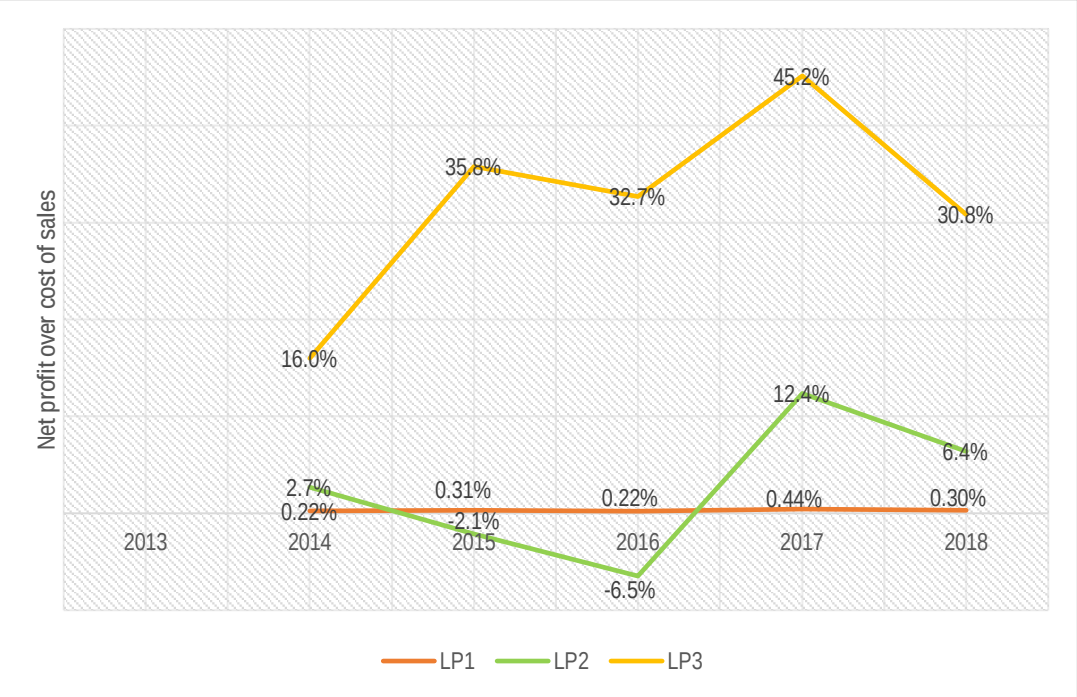
As the graphic above indicates, the gross profit varies significantly between companies.

Average gross profit	Percentage
LP1	5.7%
LP2	20.2%
LP3	35.8%
Average Total	21.5%

Taking averages of data that was likely compiled based on different cost allocation methods, asset valuation, asset life span assessment etc. is however likely to yield such results. On average LP1 realized a 5.7% gross profit, while LP3 experienced a 35.8% gross profit and the average of all 3 companies over the period 2013-2018 for which data was available was 21.5%.

The Graphic below indicates the wholesale net profit realized by LPG companies for which data was available:

Figure 11: effective LPG Wholesale Net margin/Profit



Source: INNOVEX calculations

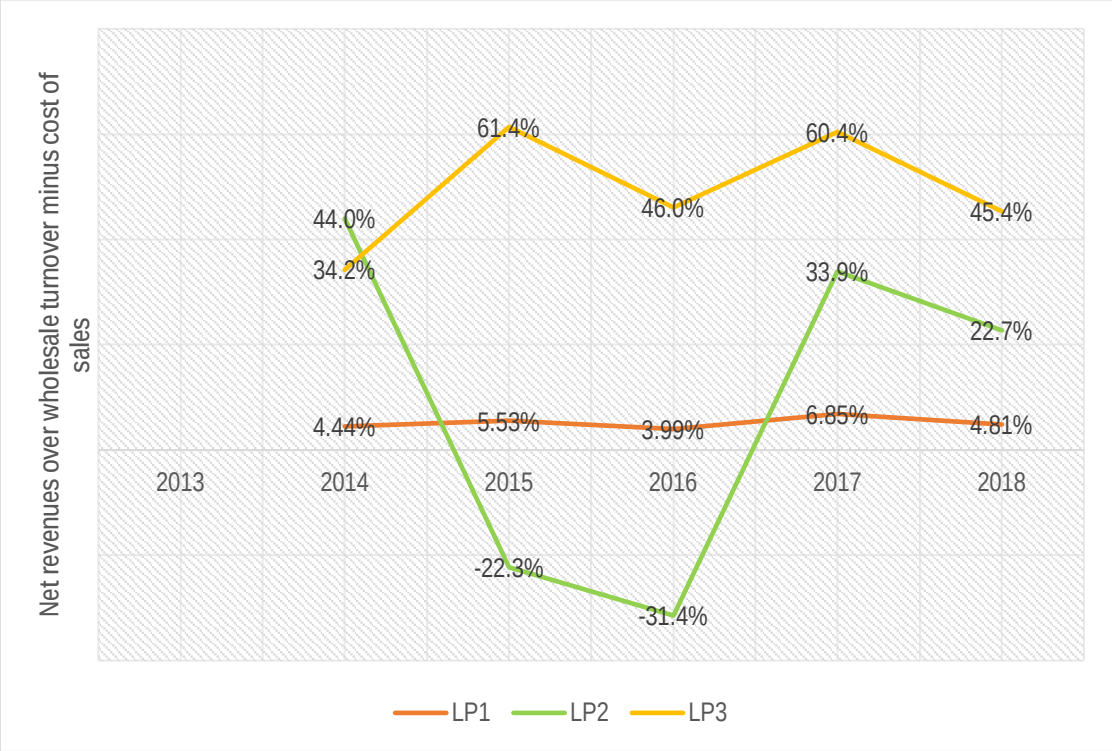
The same disparity in profit was apparent, with LP3's realized net profit a multiple of LP2 and LP1' profits. On average, the net profits were 11.7% over the 2013-2018 period for which data was provided after obvious outliers and data inaccuracies were removed from the dataset.

Average net profit	Percentage
LP1	0.3%
LP2	2.6%
LP3	32.1%
Total	11.7%

Source: INNOVEX calculations

Lastly, the wholesale net profit on value add, which was arguably a more reliable indicator of the profits earned by LPG wholesalers show an amplified effect of the above findings. LP2's relatively small negative net profit translates into a dramatically higher negative net profit on value add and LP3's positive net profit in 2015-2016 was converted into a significantly higher net profit on value add in the same years.

Figure 12: LPG Wholesale Effective Net Profit on Value Add



Source: INNOVEX calculations

Average net profit on value add	Percentage
LP1	5.1%
LP2	9.4%
LP3	49.5%
Total	21.3%

Source: INNOVEX calculations

From the limited data set above, the consultant deduced some useful information. Firstly, it appears that the LPG wholesalers were able to realize positive profits on average, suggesting that adopting a price regulation at wholesale level based on averages would not cause havoc in the industry and cause LPG wholesalers to exit the industry altogether.

Secondly, these findings indicate that price regulation requires correct, up to date and consistent data, which must be at the Regulator's disposal at any time. With regard to LPG regulation, it is therefore advisable to start with an LPG wholesale price build-up schedule while holding off on further downstream, e.g. retail level, price regulation. It is recommended that EWURA prescribes regulatory accounting rules for the LPG industry.

The Consultant would like to caution that an over-zealous implementation of LPG retail price regulation may have the unintended outcome of discouraged participation in the sale of retail LPG in Tanzania, with possible highly adverse outcomes for LPG consumers. This has been the case for instance in South Africa, where LPG retail regulation has been met with considerable resistance as LPG retailers often only provide LPG as an added product to an existing activity, e.g., liquid fuel retailing, in which case an erosion of the profit margin can result in retailers deciding to no longer stock the product.

Given above information, combined with a set of industry assumptions (based on international experience), a detailed margin build-up based on a rate of return methodology was nevertheless derived. As with the other margins, the consultant established the asset categories and their standard economically useful lives and also recommends the regulator to use the same as follows:

Table 35: LPG Wholesaler Fixed Assets and Economically Useful Life

Fixed Assets	Economically useful life	Remaining economically useful life - average for margin calculation
Plant (building, pipes, land, safety and security installations, gantries) + 800 sqm reinforced floor	30	20
Storage tanks (sphere 3,000 metric tonnes)	40	30
Cylinders (33,300 of 6 kg, 6 600 of 15 kg and 1,700 of 38 kg)	15	5
Filling (bottling) facility	20	10

The following assumptions were used:

- Weighted Average Cost of Capital assumption: 12%;
- Depreciation: Straight line depreciation per asset category-specific economically useful lives;
- Taxes: Information on different taxes has been collected, and a separate 30% company tax is calculated;
- Input (upstream purchase) cost of LPG per kg: TZS 1,300; and
- TZS/USD exchange rate: TZS 2,300 .

The fixed asset components for an LPG wholesaler were identified as: (i) plant (comprising buildings, pipes, land, safety and security installations and gantries, including a reinforced floor); (ii) storage tanks (or 'sphere' or 'storage bullet'); (iii) Cylinders (a total of 41 667 cylinders of various sizes); and (iv) a filling facility (for bottling LGP into cylinders). The historical cost values for these assets were quantified as per the table below:

Table 36: LPG Wholesaler Total Historical RAB

Fixed assets		Historical cost
Plant (building, pipes, land, safety and security installations, gantries) + 800 sqm reinforced floor	TZS	480,000,000
Storage tanks (sphere 3,000 metric tonnes)	TZS	18,400,000,000
Cylinders (33 333 of 6 kg, 6 667 of 15 kg and 1 667 of 38 kg)	TZS	17,547,083,333
Filling (bottling) facility	TZS	280,000,000
Total fixed assets - historical cost	TZS	36,707,083,333
Inventories (50%)	TZS	6,757,163,636
Total historical RAB	TZS	43,464,246,970

Source: INNOVEX calculations

The following Regulatory Asset Base (RAB) and trended depreciated original cost estimates (after an average lifespan of 10 years) were calculated:

Table 37: LPG Wholesaler Regulatory Asset Base

Regulatory Asset Base	Unit	Value
Historical cost RAB including inventories	TZS	43,464,246,970
Trended original depreciated RAB (including inventories at current cost)	TZS	47,794,736,361
WACC * RAB (12% * trended RAB including inventories)	TZS	5,735,368,363

Source: INNOVEX calculations

The operational expenditure of a typical LPG wholesaler was approximated as follows:

Table 38: LPG Wholesaler Operational Expenditure

Operational expenditure	Value TZS
Salaries	445,500,000
Maintenance costs (3.5% of Capex storage sphere)	1,284,747,917
Cylinder service costs	18,993,700
Cylinder validation tests	7,030,333
Product losses (1%)	135,143,273
Bank charges	114,000,000
Office overhead costs (consumables, professional fees, telecommunications, security etc.)	175,400,000
Transport and Logistics	386,000,000
Utility costs	92,160,000
Total Opex	2,658,975,223

Source: INNOVEX calculations

The operational expenditures are based on data collected, modified for efficiencies where necessary. The following table provides information on the salary component:

Table 39: LPG Wholesaler Salary Breakdown

Salaries LPG wholesaler and filling plant TZS	Number of employees	Annual Salary	Subtotal	Total employee cost p.a.
Senior manager	1	63,000,000	63,000,000	
Manager	2	48,000,000	96,000,000	
Technical staff	7	33,500,000	234,500,000	
Administrative Staff	4	10,600,000	42,400,000	
Support Staff (Cleaner)	3	3,200,000	9,600,000	
Total				445,500,000

Source: INNOVEX calculations

As the storage sphere has a relatively low maintenance and refurbishment requirement (compared for instance to liquid fuel wholesalers that operate a range of assets), a typical equipment manufacturer maintenance requirement of 3.5% has been used.

For a typical wholesaler, assumptions were made based on the data from wholesalers regarding the kilograms sold per annum, typical cylinder sizes, and sales per cylinder size, resulting in typical numbers of cylinders and the number of times a cylinder is refilled per annum. It is assumed that a cylinder is on average refilled 12 times per annum and undergoes an annual validation test.

Table 40: LPG Cylinders

Cylinder costs detail	Small cylinder	Medium cylinder	Large cylinder	Totals
Volume	6 Kg	15 Kg	38 Kg	
Number of cylinders	33,333	6,667	1,667	41,667
Purchase price per cylinder	31,970	52,900	121,670	
Total historical cost	TZS 1,065,666,667	TZS 352,666,667	TZS 202,783,333	TZS 1,621,116,667
Service charge per cylinder	14.5	20.7	29.00	
Total service charges	483,333	138,000	48,333	TZS 669,667
Validation test per cylinder	16.1	23.0	32.2	
Total cost validation test	536,667	153,333	53,667	TZS 743,667

Source: INNOVEX calculations

Product losses are common in the handling of liquid fuels, especially when product is purchased in bulk and distributed via smaller vessels, such as cylinders. A product loss of 1% of annual turnover is assumed in the LPG wholesale and filling industry.

With respect to office overheads, the total is based on the following assumptions (based on data from the LPG wholesalers, adjusted for efficiencies where required):

Table 41: LPG Wholesalers Office Overhead Breakdown

Office overheads	Cost per annum - TZS
Professional fees	10,500,000
Telecommunication costs	14,000,000
Stationary	5,500,000
Security Guards (3)	7,200,000
Consumables (refreshments, cleaning materials)	9,200,000
Rent and property taxes	42,200,000
Distribution costs	85,000,000
Other admin costs	1,800,000
	175,400,000

Source: INNOVEX calculations

With respect to electricity and water charges (combined into the 'utilities' charges) the following assumptions were made based on monthly costs obtained, adjusted where deemed necessary:

Table 42: LPG Wholesalers Utilities Breakdown

Utilities	Cost per month - TZS	Cost per annum - TZS
Electricity	6,580,000	78,960,000
Water	1,100,000	13,200,000
Total	7,680,000	92,160,000

Source: INNOVEX calculations

Combining the items above in a rate of return approach, wholesaler margin builds up yields the following:

Table 43: LPG Wholesalers Margin Computation

Wholesaler Margin build-up	Unit	Value
WACC*RAB	TZS	5,735,368,363
Total Opex	TZS	2,658,975,223
Annual Depreciation	TZS	1,720,610,509
Taxes	TZS	4,248,824,322
Allowable revenue (excluding cost of sales – sum of the above)	TZS	14,363,778,417
Kilograms sold per annum		10,395,636
Allowable revenue per Kilogram = Wholesale Margin	TZS	1,382

Source: INNOVEX calculations

Regarding the LPG retailer margin, it is important to note that LPG value chain includes levels namely Super Dealers (Distributors) and Dealers (Retailers). The role of the Super Dealer lies in breaking the bulk between LPG wholesalers and retailers. Packaging and branding are done at the wholesale level. Most LPG wholesalers also transport their product to the super dealers using own trucks which emphasizes on the role of a super dealer as a bulk breaker.

It was found out that for the year 2018 total LPG volume imported was 142,940,000 kilograms. Assuming a total of 150 super dealers in the country, an efficient volume per super dealer is established to be 952,933 kilograms. During the analysis, the consultant identified two types of Super Dealers i.e., those with permanent building that is used as a storage unit for the cylinders and those that rent out storage facilities to store LPG cylinders. Each Scenario is explained as per below:

Scenario 1: Super Dealers with Permanent Building Structures for Storage

The consultant established the asset categories and their standard economically useful lives and also recommends the regulator to use the same as follows:

Table 44: LPG Super Dealer Economically Useful Life of Assets

Fixed Assets	Economically useful life
Storage Unit Structure (to store up to 5,000 cylinders)	30
Weighing Equipment (LPG Scales)	10
Fire extinguishers (6 of 20 kg)	5

The historical cost values for these assets were quantified as per the table below.

Table 45: LPG Super Dealer Total Historical RAB

Fixed assets	Historical cost
Storage Unit Structure (to store up to 5,000 cylinders)	50,000,000
Weighing Equipment (LPG Scales)	1,200,000
Fire extinguishers (6 of 20 kg)	480,000
Total fixed assets - historical cost	51,680,000
Inventories (20%)	42,591,550
Total historical RAB	94,271,550

Source: INNOVEX calculations

Given that the main role of the super dealer is distribution, prudent operating costs for the business segment were approximated as per below.

Table 46: LPG Super Dealers Operational Expenditure

Operational expenditure	Value
Salaries (3 staff)	12,600,000
Maintenance costs (3.5% of storage)	1,750,000
Security costs (1 security guard)	2,400,000
Electricity	2,400,000
Water	1,500,000
Telecommunications	5,400,000
Bank charges	1,080,000
Office overhead costs (consumables, cleaning materials, etc.)	900,000
Total Opex	28,030,000

Source: INNOVEX calculations

Combining the capex and opex analysis above in a rate of return approach, super dealer margin build up yields the following:

Table 47: LPG Super Dealers Margin Computation

Super Dealer Margin build-up	Unit	Value
WACC*RAB	TZS	13,246,270
Total Opex	TZS	28,030,000
Annual Depreciation	TZS	5,039,788
Taxes	TZS	3,973,881
Allowable revenue (excluding cost of sales/ sum of the above)	TZS	50,289,939
Kilograms sold per annum		952,933
Allowable revenue per Kilogram = Super dealer Margin	TZS	53

Source: INNOVEX calculations

Scenario 2: Super Dealers without Permanent Building Structures for Storage

In this scenario, the consultant found out that such super dealers incur rent charges instead. Their historical cost of assets is approximated as per below:

Table 48: LPG Super Dealers Total Historical RAB

Fixed assets	Historical cost TZS
Weighing Equipment (LPG Scales)	1,200,000
Fire extinguishers (6 of 20 kg)	480,000
Total fixed assets - historical cost	1,680,000
Inventories (20%)	42,591,550
Total historical RAB	44,271,550

Source: INNOVEX calculations

Prudent Operational Costs for this business segment is approximated as per below table:

Table 49: LPG Super Dealers Operational Expenditures

Operational expenditure	Value TZS
Salaries (3 staff)	12,600,000
Rent	4,800,000
Security costs (1 security guard)	2,400,000
Electricity	2,400,000
Water	1,500,000
Telecommunications	5,400,000
Bank charges	1,080,000
Office overhead costs (consumables, cleaning materials, etc.)	900,000
Total Opex	31,080,000

Source: INNOVEX calculations

Combining the capex and opex analysis above in a rate of return approach, super dealer margin build-up yields the following:

Table 50: LPG Super Dealers Margin Computation

Super Dealer Margin build-up	Unit	Value
WACC*RAB	TZS	5,176,473
Total Opex	TZS	31,080,000
Taxes	TZS	1,552,942
Allowable revenue (excluding cost of sales /sum of the above)	TZS	37,809,415
Kilograms sold per annum		952,933
Allowable revenue per Kilogram = Super dealer Margin	TZS	40

Source: INNOVEX calculations

According to the above analysis, it is of the consultant's view that in order to promote investment in the LPG sector, Super Dealers should have one margin. A minimum structure requirement for Super Dealers is then recommended i.e., every Super Dealer should **at least** have:

Table 51: LPG Super Dealers Minimum Requirements

S/N	Minimum Requirement	Unit Measure
1	A permanent storage building for LPG cylinders	20 feet by 20 feet (400 square feet)
2	Weighing Equipment (LPG Scales)	1
3	Fire extinguishers	6 of 20 Kilogram each

Therefore, a single **Super Dealer Margin of TZS 53/-** per Kilogram is then recommended.

Further to this analysis, the consultant made an assumption that each of the super dealers serves at least 50 dealers (retailers). In that way, there are at least 7,500 LPG dealers within the country. These include all retailers who sell LPG in the petrol stations, super markets, convenient stores, neighbourhood kiosks and any other business that sells LPG cylinders as part of the merchandise.

Given that LPG retail volume for the year 2018 was 114,352,000 kilograms (Ref: Sector Performance Report – EWURA 2018) each retailer is estimated to be selling at least 15,247 kilograms per year in different cylinder sizes. There are also two identified scenarios with retailers where one group owns a permanent building for storage and the other where a retailer rents a shop or an outlet to sell LPG cylinders. The two scenarios are explained below:

Scenario 1: Dealers with Permanent Building Structures for Storage

The consultant established the asset categories and their standard economically useful lives and also recommends the regulator to use the same as follows:

Table 52: LPG Dealers Economically Useful Life

Fixed Assets	Economically useful life (years)
Storage Unit Structure (to store up to 5 000 cylinders)	20
Weighing Equipment (LPG Scales)	10
Fire extinguishers (6 of 20 kg)	5

The historical cost values for these assets were quantified as per the table below:

Table 53: LPG Dealers Fixed Assets

Fixed assets	Historical cost TZS
Storage Unit Structure (to store up to 5 000 cylinders)	450,000
Weighing Equipment (LPG Scales)	125,000
Fire extinguishers (1 of 9 kg)	50,000
Total fixed assets - historical cost	625,000
Inventories (20%)	681,465
Total historical RAB	1,306,465

Source: INNOVEX calculations

Prudent operating costs for LPG dealers were approximated as per below:

Table 54: LPG Dealers Operational Expenditures

Operational expenditure	Value TZS
Salaries (1staff)	2,400,000
Maintenance costs (3.5% of storage)	15,750
Security costs (1 security guard)	1,200,000
Electricity	600,000
Water	240,000
Telecommunications	540,000
Bank charges	108,000
Office overhead costs (consumables, cleaning materials, etc.)	100,000
Total Opex	5,203,750

Source: INNOVEX calculations

Combining the capex and opex analysis above in a rate of return approach, dealer margin build up yields the following.

Table 55: LPG Dealers Margin Computation

Dealer Margin build-up	Unit	Value
WACC*RAB	TZS	60,848
Total Opex	TZS	5,203,750
Annual Depreciation	TZS	18,254
Taxes	TZS	79,344
Allowable revenue (excluding cost of sales – sum of the above)	TZS	5,362,196
Kilograms sold per annum		15,247
Allowable revenue per Kilogram – Dealer Margin	TZS	352

Source: INNOVEX calculations

Scenario 2: Dealers without Permanent Building Structures for Storage

Historical cost of assets for a retailer without permanent building are approximated as per below:

Table 56: LPG Dealers Total Historical RAB

Fixed assets	Historical cost TZS
Weighing Equipment (LPG Scales)	125,000
Fire extinguishers (6 of 20 kg)	50,000
Total fixed assets - historical cost	175,000
Inventories (20%)	681,465
Total historical RAB	856,465

Source: INNOVEX calculations

Prudent Operational Costs for this business segment is approximated as per below table:

Table 57: LPG Dealers Operational Expenditures

Operational expenditure	Value TZS
Salaries (1 staff)	2,400,000
Rent	250,000
Security costs (1 security guard)	1,200,000
Electricity	600,000
Water	240,000
Telecommunications	540,000
Bank charges	108,000
Office overhead costs (consumables, cleaning materials, etc.)	100,000
Total Opex	5,438,000

Source: INNOVEX calculations

Combining the capex and opex analysis above in a rate of return approach, dealer margin builds up yields the following:

Table 58: LPG Dealers Margin Computation

Super Dealer Margin build-up	Unit	Value
WACC*RAB	TZS	6,822
Total Opex	TZS	5,438,000
Taxes		2,046
Allowable revenue (excluding cost of sales – sum of the above)	TZS	5,446,868
Kilograms sold per annum		15,247
Allowable revenue per Kilogram = Dealer Margin	TZS	357

Source: INNOVEX calculations

The consultant however recognizes the difference between an Urban and a Rural LPG dealer in operations in terms of volumes sold in the two set ups. Should the regulator opt to micro regulate the industry, a margin difference of 5% of Urban Margin which is TZS 18/- could be introduced where Rural LPG dealers would have a higher margin than Urban as an incentive for rural dealers.

Table 59: LPG Dealers Urban and Rural Margins

Margins	Dealers with Permanent Buildings	Dealers with no Permanent Buildings
Urban Dealer Margin	352	357
Rural Dealer Margin Addition	18	18
Rural Dealer Margin	370	375

Source: INNOVEX calculations

However, given that the LPG sector has not been regulated to date, the Consultant proposes a uniform **Dealers' margin of TZS 370/- per kilogram** for all retailers of LPG. This will motivate investment in both Urban as well as Rural retailers. It will also ensure that an increasing number of retailers investing in having permanent storage buildings from which they operate.

The consultant also proposes minimum requirements for LPG Dealers. Each Dealer should **at least** have:

Table 60: LPG Dealers Minimum Requirements

S/N	Minimum Requirement	Unit Measure
1	A permanent storage structure for LPG cylinders	10 feet by 10 feet (100 square feet)
2	Weighing Equipment (LPG Scales)	1
3	Fire extinguishers	1 of 10 Kilogram each

Combining the above derived wholesale LPG margin with the super dealers' and dealers' margin, and an average transport cost of TZS 100[25] yields the following price build-up:

Table 61: LPG Price Build Up

LPG Price Build-Up	Value TZS/Kg
Purchase Cost LPG	1,300
Wholesaler Margin	1,382
Total Wholesale Price	2,682
Transport	100
Super Dealer Margin	53
Dealer Margin	370
Total Retail Price	3,205

Source: INNOVEX calculations

After recognizing various types of LPG Super Dealers and Dealers, the above table shows suggested retail price per kilogram with single super dealers' and dealers' margin. Given above analysis, the consultant suggests that the distinction between super dealers with permanent buildings and those without, plus urban versus rural LPG dealers not to be made at the beginning of the regulation should EWURA decide to regulate the sector.

In accordance with international best practice, EWURA is advised to utilise the above wholesale and retail prices as maximum prices, so that competition between various wholesalers and retailers is stimulated.

When the Consultant compares above analysis to international prices, it clearly shows that these margins are reasonable and in line with international best practice. The total retail price as per the above analysis is approximately USD 1.40 per kg, which compares for instance to South Africa's regulated maximum retail prices for a kg of LPG, which was USD 1.48 in 2019 and is currently USD 1.5 per kg.

Table 62: LPG Price Build Up Comparison

Margins	Benchmarked Retail Price (USD)	Benchmarked Retail Price (TZS)	South Africa Retail Price (USD)	South Africa Retail Price (TZS)	Recommended Retail Price (TZS)
Dealer Margin	1.497	3,443	1.48	3,404	3,205

Source: INNOVEX calculations

Based on the above, it is the Consultant's recommendation that LPG wholesale margins be determined at TZS 1,382/- (see the wholesaler margin build-up above and retail margins). The consultant also recommends LPG Super Dealers' margin may be determined at TZS 53/- and LPG Dealers at TZS 370/-.

This results in the recommendation that the overall price be regulated as a maximum price as the sum of the input cost (to be determined annually or quarterly, currently at TZS 1,300) plus the wholesaler of 1,382/- Super Dealers Margin of TZS 53/-, Dealers Margin of TZS 370/- plus the transport cost. Maximum price should be TZS 2,682 at wholesale.

[25] Data collected from LPG companies

6.4 LPG Recommendations

In order to introduce price regulation on LPG wholesalers which will be implemented by EWURA, the Consultant suggests that EWURA follow a Rate of Return approach as explained above in Section 3.1.3 to the setting of the cost and margin components of the pricing structure for LPG products.

This will allow for licensees that invest in infrastructure and the service to earn a return and provide certainty for potential investors as well given that LPG market in Tanzania is fairly young in comparison to White Liquid Products. This recommendation is based on the same advantages of RoR approach including the following factors:

- The relative ease of implementation of RoR compared to the alternative methodologies
- The historical and international precedent of using this method in the petroleum industry and the energy industry in general

The Consultant recommends to the regulator that it could be possible to introduce a margin of TZS 1,382 per kilogram and increase it as per the non-food inflation index; however, the Consultant still recommends for EWURA to first start gathering data, develop enforcement of its mandate and the suggested regulatory reporting requirements rules and procedures, prior to implementation of LPG price regulation downstream. In the alternative, EWURA could publish its intention to set the margin at this level and provide LPG sector participants with an opportunity to comment thereon.

6.5 Frequency of Review of LPG

Should EWURA decide to regulate the wholesale LPG segment of the industry, it will be the first price regulation of LPG products in Tanzania. Given the infancy of the segment, the Consultant suggests to the regulator that once the regulation is proposed and ultimately adopted should be at the level of wholesalers only. The regulator could keep collecting information on all the LPG segments and familiarize the LPG segment with the specific regulatory requirements and hold off on further roll-out to the retail section for at least three years. When the regulator is comfortable with the adequacy and the reliability of the data collected from companies in this segment, it can then opt to regulate retail prices.

For LPG sector an LPG Analysis Model has also been shared with the Regulator to serve as the Methodology for Annual Reviews of Margin given availability of reliable data. Here, the consultant also suggests for the Regulator to use the same Rate of Return Methodology as described in Section 3.1.3. LPG Analysis Model is also prepared to include a Depreciation worksheet that is populated with the recommendations of this study i.e., types and economic useful lives of Regulatory Asset Base.

6.6 LPG Adequacy of Infrastructure

Due to insufficiency of data on LPG infrastructure, storage capacity of the whole LPG market could not be established. Out of four LPG companies that submitted data, only two wholesalers (LP3 and LP4) confirmed their total storage capacity.

An analysis was further done on the number and coverage of Filling Depots and Receiving Stations. It was found out that, some LPG wholesalers have depots in more than one region for efficiency purposes that helped in cutting down cost of transporting cylinders to particular regions.

It was also established that transporting LPG in bulk once a month is relatively cheaper than transporting cylinders numerous times a month. In that note, some wholesalers opted to construct filling depots in the regions across the country while others have opted to operate filling depots in each zone serving a number of regions. Some

wholesalers are still operating one receiving and filling depot in Dar es Salaam while other wholesalers are currently in process to expand and introduce more filling depots in the regions as shown below:

Table 63: LPG Receiving Stations versus Filling Depots

S/N	LPG Wholesaler	Number of Receiving Stations	Locations	Number of Filling Depots	Locations
1	TAIFA Gas Tanzania Limited	1	Dar es Salaam	21	All Regions **except** Katavi, Lindi, Mtwara and Pwani
2	ORYX Gas Tanzania Limited	1	Dar es Salaam	8	Dar es Salaam, Dodoma, Mbeya, Iringa, Kahama, Moshi and Mwanza (Operating Zonally)
3	Manjis Gas Supply Company Ltd	1	Dar es Salaam	3	Arusha, Dar es Salaam and Mwanza
4	Oilcom Tanzania Limited	1	Dar es Salaam	1	Dar es Salaam

Since transport cost becomes less of a burden to wholesalers with multiple filling depots, the cost saving is being redirected to maintenance cost of such stations as they require frequent repair and maintenance to allow them to run efficiently.

Some of the factors that have been considered in the analysis are:

- Significant initial cost of constructing filling depots
- Frequent maintenance cost
- Cost of transporting bulk LPG truck to zones then after transporting cylinders to nearby regions
- Cost of numerous trips with filled cylinders then back with empty cylinders

Given such factors, the Consultant has not been able to discover any cost saving between having multiple filling depots in the regions versus transporting filled cylinders to those regions and empty cylinders back to base. After proper information and monitoring systems are collected put in place by the regulator, Industry Players can submit reliable data on the costs of the two approaches. In the long run, it is logical to expect savings when there are filling depots at least in each region and minimize transport cost of cylinders.

Although the regulations allow for cross filling among LPG wholesalers under hospitality arrangements and some companies are now in process of such, no company has yet started to conduct cross filling with another wholesaler.

LPG wholesalers have argued that there being a number of filling depots from various wholesalers in the regions does not justify the current demand. This was to imply that the current LPG demand is still low to allow all the filling depots to operate at full capacity. This observation reenforces the infancy of the LPG sector in the country and the need to continue nurturing it.

On the supply side, availability of LPG to all districts of the country has been made possible through either LPG wholesalers establishing filling depots in such regions or zones or incur transportation cost to such regions. However, the demand part of the sector is still on slow pace. LPG wholesalers' strategies to expand by investing in the sector is an initiative that is analysed to be a preparatory measure for when the demand in the market grows.

In context, from the Downstream Petroleum Sector Performance report a volume of 166,436 MT was imported in 2019. If all the LPG is sold locally and each household consumes at least 15 kilograms of LPG in a month, then only 916,667 households are using LPG in Tanzania. This is only about 7.6% of total Tanzania households (12,048,946 Ref. NBS Data).

7 Benchmarking Study of the Petroleum Sector

Benchmarking is an essential tool for organizations which acts as a reality check for strategic and performance objectives to improve its operations. With benchmarking, organizations can make various comparisons based on existing desirable standards or best performance. This can be conducted within that particular company, by a competitor or by an entirely different industry. It's a useful tool for identifying "best practice" in a particular sector or industry and as a result putting efforts to adopt the necessary changes.

Likewise, in a regulatory context, benchmarking has been used by regulators to compare different aspects of their industry to other countries or other industries. In the petroleum industry, regulators have been comparing indicators such as investment (CAPEX) costs, prudent operation costs, prices, tariffs per kilometre and the like for determining the industry margins and frequency of review of the margins.

The main objective of taking benchmarking into account in this Margin Study is divided into two aims. First and foremost, it's helpful in the assessment of relative costs of supply of petroleum products in Tanzania compared to the cost of supply in other countries. Particularly, creating awareness about the relative efficiency of petroleum product supply in Tanzania Mainland and its regions.

Secondly, as part of the assessment, the approach taken by EWURA in setting the price of petroleum products can be benchmarked. A comparison of the approaches taken in other countries in setting the prices for petroleum products provides a useful insight into the cost drivers and elements that are commonly taken into account, as well as the benefits and disadvantages associated with the different approaches. In particular, it would be useful to the compare the pricing structure, including the build-up of the price according to various activities; how costs and margins/returns are estimated; and the treatment of the different activities in the petroleum products value chain.

One of the most important factors that determine whether a benchmarking exercise is usable, concerns the appropriateness of the comparators included. Pricing structures are designed based on country-specific characteristics and policies; therefore, a perfect comparator to Tanzania, or any other country for that matter, does not exist. As such, a number of different characteristics that define the Tanzanian petroleum industry have been used to identify appropriate comparator countries to be included in the exercise.

7.1 Selecting comparator countries

An important part of this benchmarking exercise is determining which countries are appropriate to use as comparators to Tanzania. In order to evaluate the cost data from the Tanzanian petroleum industry against data from comparable petroleum industries, INNOVEX assessed the degree of comparability between the countries based on a number of key defining features of the petroleum sector in Tanzania. One limiting factor in the choice of comparators is that not many countries regulate the prices of petroleum products. Some countries were included despite their petroleum sectors not being particularly similar in characteristics, because they experience outcomes that could be desirable for the Tanzanian petroleum sector.

7.1.1 Characteristics of the Tanzania Petroleum Industry

The petroleum industry in Tanzania can be broadly described by the following characteristics:

Geographical aspects: Tanzania is bordered by the Indian Ocean on its eastern side, which makes a significant coastline for harbour ports. Currently the country has three major harbour ports that receive petroleum products, located in Tanga, Dar es Salaam and Mtwara. Tanzania imports refined products and originate primarily from the Middle and Far East. This includes both white liquid petroleum (WLP) and liquefied petroleum gas (LPG) sold within Tanzania.

Dar es Salaam Port is the main entry point for receiving and distribution of petroleum products to all regions in the country except for the Northern Regions of Tanga, Arusha, Kilimanjaro and Manyara, which were served by Tanga port and Southern Highland Regions of Mtwara, Lindi and Ruvuma which are now served by Mtwara Port. Mtwara Port was revived and began receiving petroleum products in July 2018. Dar es salaam Port also receives petroleum products some of which is supplied to neighbouring countries like Zambia through the TAZAMA pipeline.

Petroleum Infrastructure: The major petroleum infrastructure in Tanzania for the mid and downstream sub-sectors are: berthing facilities, storage terminals and distribution facilities. The Berthing facilities include Dar es Salaam port (Kurasini Oil Jetty - KOJ and Single Bouy Mooring - SBM), Tanga Port, and Mtwara Port. The Single Buoy Mooring (SBM) mainly is used to offload diesel and crude oil, Kurasini Oil Jetty 1 (KOJ1) is mainly used to offload petrol and JetA-1; and Kurasini Oil Jetty 2 (KOJ2) is mainly used to of load LPG and Vegetable Oil.

Table 64: Maximum Capacities of Vessels that can be handled at each Port

S/N	Name of the Port	Maximum Capacity of the Vessels that be handled (DWT)
1	Dar es Salaam	
	SBM	150,000
	KOJ1	45,000
	KOJ2	5,000
2	Tanga	40,000
3	Mtwara	38,000

Source: EWURA The mid- and downstream petroleum sub-sector performance review report for the year 2018
Link: https://www.ewura.go.tz/sector-performance-reports/

In mainland Tanzania there are currently twenty-two (22) operational receiving oil terminals that are located around Dar es Salaam, Tanga and Mtwara ports with total storage capacity of 1,127,611 cubic metres (m3).

Despite the various modes of transport that exist, road remains the dominating mode of transporting petroleum products in Tanzania. Road fuel tankers are used to distribute petroleum products from the receiving terminals at Dar es Salaam, Tanga and Mtwara to local consumers in mainland Tanzania and also transiting to neighbouring countries of Rwanda, Burundi, Malawi, Zambia, Democratic Republic of Congo and Uganda.

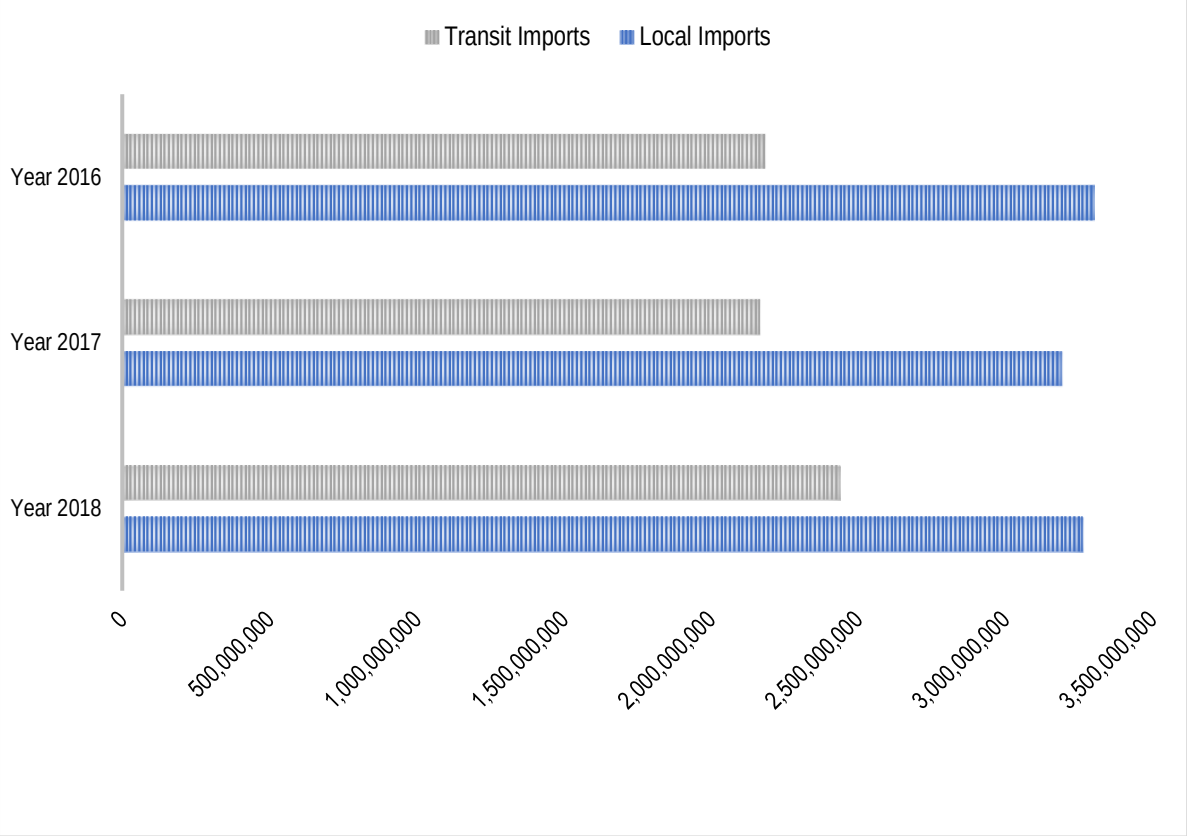
Extent of imports: Tanzania does not have any functioning refineries and thus imports all of its refined petroleum products. The only refinery in Tanzania, Tanzanian and Italian Petroleum Refining Company Limited (TIPER), closed in 1999. The main petroleum products imported into the country are petrol, diesel, kerosene, Jet A1, HFO. In the year 2018, a total of 5 billion litres were imported which is a 6% increase compared to 5 billion litres imported in 2017.

Table 65: Local and transit liquid fuel imports (litres)

Description	Local Imports	Transit Imports	Total
Year 2018	3,264,785,479	2,440,025,165	5,704,810,644
Year 2017	3,193,252,759	2,168,192,874	5,361,445,633
Year 2016	3,302,298,898	2,185,151,066	5,487,449,964

Source: EWURA-The mid- and downstream petroleum sub-sector performance review report for the year 2018
Link: https://www.ewura.go.tz/sector-performance-reports/

Figure 13: Local and transit liquid fuel Imports 2016-2018, litres



Source: INNOVEX calculations

Market structure: The supply chain in the petroleum industry is comprised of five activities namely: production, trading, procurement, wholesaling and retailing of petroleum products. The extent of liberalization of the petroleum industry in Tanzania is reflected in the number of participants at each level of the supply chain. The table below shows the number of licensees for each regulated activity.

Table 66: Tanzania Petroleum Sector Licensees for White Liquid Petroleum (WLP)

Licence category	Number of licensees
Bulk Supplier of Oil*	18
Wholesale (OMC)	114
Retails (Petrol Stations)	1,681

**Source: List of Pre-Qualified Bulk Supplier for Oil (Pre-qualified Bidders) by Petroleum Bulk Procurement Agency as at December 2018. Documents shared by EWURA as at June 2019*

Licence	Number of licensees
Wholesaler	11
Super Dealer	10
Retailers (Currently this segment is not licensed)	Over 2000

Source: Documents shared by EWURA as at June 2019

Price Regulation: Petroleum prices are regulated by EWURA under the petroleum Act of 2015. Statutory instruments have been enacted that provide a framework for the pricing of petroleum products by imposing a maximum retail price as well as a cap on both the wholesale and retail margin for the pricing of diesel, unleaded and blended fuel.

Tanzania has differentiated fuel prices across the country. The margins for retailers and wholesalers are fixed on a Shillings per litre basis although these margins differ for retailers and wholesalers.

These statutory instruments set the maximum price of different petroleum products by providing the cost of the provision of petroleum products in Tanzania and setting the fixed margins realisable at TZS118/- per Litre for the wholesale market and TZS103/- per Litre for the retail markets of the aforementioned petroleum products. The maximum prices are differentiated across Tanzania due to differences in other components of the price build-up such as local taxes etc.

Wholesalers and Retailers are permitted to set their pump prices at any level that is equal to or below the maximum price, the maximum prices are adjusted on a monthly basis. As part of their licence conditions, operators submit their fuel returns to EWURA.

Size of the petroleum industry: In 2018, approximately 3.3 billion litres of petroleum products were sold in Tanzania.

The applicable tax regime: The following duties, taxes and levies are charged on unleaded petroleum and diesel: import duty, road levy, carbon tax, debt redemption, and a strategic reserve levy. The table below shows the duties, taxes and levies applicable to petroleum and diesel.

Table 67: Tanzanian Petroleum Sector Taxes and Levies in the Pricing Structure

Government Taxes	Amount (TZS/Ltr)		
	Petroleum	Diesel	Kerosene
Fuel Levy	313.00	313.00	-
Excise Duty	379.00	255.00	465.00
Petroleum Fee	100.00	100.00	150.00
Total	792.00	668.00	615.00

Source: Documents shared with Consultant by EWURA as at June 2019 (Government Taxes on Petroleum Products)

Table 68: Charges Payable to Executive Agencies by Wholesalers and Retailers

Charges Payable/Levy	Amount (TZS/Ltr)		
	Petroleum	Diesel	Kerosene
Charges payable to Executive Agencies by Wholesalers	1.03	1.03	1.03

Charges Payable/Levy	Amount (TZS/Ltr)		
	Petroleum	Diesel	Kerosene
Charges payable to Executive Agencies by Retailers	5.44	5.44	5.44
Service Levy payable to LGAs (0.3% of turnover net of excise duty and VAT in wharfage and petroleum marking cost)	-		-

Source: Documents shared to Consultant by EWURA as at June 2019 (Government Taxes on Petroleum Products)

Table 69: Tanzania Petroleum Sector Local Costs payable to other authorities in the Pricing Structure of May 2019

Local costs payable to other authorities	Amount (TZS/Ltr)		
	Petroleum MSP	Diesel AGO	Kerosene IK
Wharfage $10/MT + 18% VAT	20.35	22.07	21.07
Railway Development Levy (1.5% CIF)	16.62	17.66	17.48
Customs Processing Fee (TZS 4.80/Lt)	4.80	4.80	4.80
Weights & Measures Fee (TZS 1.00/Lt)	1.00	1.00	1.00
TBS Charge	1.24	1.24	1.24
Regulatory Levy	6.10	6.80	3.50
Petroleum Marking Cost ($6.077/CM VAT inclusive)	13.79	13.79	13.79
Demurrage Cost (2.3268 USD/MT)	4.01	4.35	4.15
Ocean Losses (DAP Terms)	-	-	-
Surveyors Cost (Actual Weighted Average TENDERED Rate)	0.07	0.04	0.07
Financing Cost (1.00% CIF)	11.08	11.77	11.65
Evaporation Losses (0.5% MSP, 0.30% GO % IK) CIF	5.54	3.53	3.50
Total	84.62	87.06	82.25

Source: Documents shared with Consultant by EWURA as at June 2019 (Computation of Petroleum Prices for the Month of May)

7.1.2 Selected comparator countries

The following section lists the countries identified as appropriate comparators along with a brief description of the features of each country's petroleum sector.

- *Uganda*: Uganda is a landlocked country, like Tanzania it has no active refineries and imports all of its refined petroleum product needs. Most of Uganda's petroleum imports are routed through Kenya (Mombasa Port) and a small percentage through Tanzania (Dar es Salaam Port). A total of 1.227 billion litres of petroleum products were imported in 2012. In 2013, Uganda had 143 licensed oil marketing companies.[26] In contrast with Tanzania, the government of Uganda sets cap prices which are uniform throughout the country, for gasoline, diesel, and kerosene every month.

- *Kenya*: Kenya is a coastal country with one refinery in Mombasa, with a nameplate capacity of 90,000 barrels per day. Distribution infrastructure consists of road, rail and pipeline systems. Kenya has over 2,762 retail stations. The market structure of the downstream petroleum industry comprises of Importers of Petroleum Products (94 licensees); Storage depots (27 licensees); LPG Storage and Filling Plants (65

[26] Uganda, 2015, Ministry of Energy and Mineral Development, Strategic Investment Plan 2014/15 – 2018/19, page 71.

licensees); Pipeline transportation (1 licensed pipeline transporter); Refineries (1 licensed refinery); Wholesalers and Exporters (832 licensees); Transporters (by road for LPG) (94 licensees); Retailers (42 licensees); Petroleum Tankers (798 licensees); Petroleum Drivers (432 licensees) and Storage of Crude Oil (one licensed facility).[27] The Kenya Energy and Petroleum Authority regulated wholesale and retail pricing of petroleum products (Diesel, Super Petrol and Kerosene) as stipulated in the Energy (Petroleum Pricing) Regulations, 2010, utilizing a cost plus formula, updated monthly.

- *Zambia*: Zambia is a landlocked country. However, Zambia has a refinery (Indeni) and thus imports crude oil. Imports of refined petroleum products make up a small portion of the total supply to the country. The Zambian crude oil is imported through the port at Dar es Salaam, (Tanzania) from where it's transported to the Ndola fuel terminal (Zambia) through TAZAMA (Tanzania Zambia Mafuta) pipeline. TAZAMA Pipelines Limited was incorporated in 1968 and is owned by the government of the Republic of Zambia with 66.7% share capital and the government of the United Republic of Tanzania with 33.3% share capital. The company was formed for the purpose of cost-effective transport of crude oil or its petroleum products from the port of Dar-es-Salaam into landlocked Zambia. Similar to Tanzania's regulatory framework, the margins for retailers and wholesalers are fixed on a per litre basis, although these margins differ for retailers and wholesalers. In contrast with Tanzania, Zambia applies uniform pump pricing all over the country.

- *Malawi*: Like Tanzania, Malawi has no refineries and imports all of its refined petroleum product needs. Conversely, the country is landlocked and the majority of imports to Malawi arrive through the port at Beira. Furthermore, the imports are transported by road from Beira to Malawi. Malawi also regulates margins to retailers and wholesalers on a per litre basis. In contrast with Tanzania, the government of Malawi sets maximum retail prices which are uniform throughout the country, for gasoline, diesel, and kerosene every month.

- *Zimbabwe:* Much like Tanzania, Zimbabwe does not have any functioning refineries and thus imports all of its refined petroleum products. However, Zimbabwe is a landlocked country and therefore majority of petroleum products are imported through the terminal at the port in Beira in Mozambique via pipeline to Zimbabwe. Some petroleum products are also transported from South Africa via road. In the same way as Tanzania's regulatory framework, the margins for retailers and wholesalers are fixed on a per litre basis, although these margins differ for retailers and wholesalers. Unlike Tanzania, Zimbabwe applies uniform pump pricing all over the country.

- *South Africa*: The South African petroleum sector differs significantly from the Tanzanian petroleum product sector for its advancements in oil refineries. Like Tanzania, South Africa is a coastal country but the country boasts 6 operational refineries, of which two are inland, and therefore imports crude oil. In the same way as Tanzania, prices differ by region with different prices in coastal and inland regions. The difference in prices is based on the transportation cost of the most economical mode of transport.

- *Botswana*: Botswana is landlocked. It has no refineries and is dependent on imports from neighbouring South Africa that arrive via the Durban port. These imports are transported from South Africa to Botswana via rail or road tankers. Like Tanzania, prices are not uniform across the country as there is regional price differentiation.

[27] https: (Energy and Petroleum Regulatory Authority Kenya, 2020) //www.epra.go.ke/services/petroleum/

- *Namibia*: Like Tanzania, Namibia has no refineries. The country is supplied via imports from South Africa and Cote d'Ivoire. Imports from Cote d'Ivoire arrive via the port in Walvis Bay. Conversely to Tanzania, in Namibia, uniform pricing is applied, with the price at Walvis Bay applied across the whole country. Unlike in most countries where prices are adjusted once a month if needed, prices in Namibia are changed only once every quarter.

It is noted that the characteristics of each of these comparator countries do not have to be identical to those of Tanzania to serve as an effective cost benchmark for the petroleum product industry. Instead, they should be considered holistically and in context for the respective countries. The tables contain as much information as was made accessible.

The table below presents a summary of the relevant characteristics and circumstances that prevail in each country and indicates how comparable these countries are to Tanzania.

Table 70: Summary of characteristics across comparable countries

Aspect	Tanzania	Zimbabwe	Uganda	Kenya	South Africa	Namibia	Malawi	Zambia	Botswana
Imports of refined petroleum products	✓	✓	✓		✓	✓	✓		✓
No refineries	✓	✓	✓			✓	✓		✓
Coastal (Non-Landlocked)	✓			✓	✓	✓			
Central procurement of petroleum products	✓						✓		
Price regulation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pricing Differentiation	✓				✓				✓

7.1.3 Benchmarking Study Overview

Each of these comparable countries are highly dependent on imports to either acquire refined petroleum products or meet their crude oil requirements. Tanzania, just like Zimbabwe, Uganda, Namibia, Malawi, and Botswana does not have any working refineries hence the refined petroleum needs are met entirely through imports.

Similar to Tanzania, coastal countries like Namibia, Kenya and South Africa import their petroleum products at their own harbour ports. However, land-locked countries with limited indigenous fossil fuel reserves such as Zimbabwe source their fuels through the ports of nearby coastal countries where petroleum products can be offloaded. Petroleum products are transported via pipeline from the port of Beira in Mozambique to Mutare in Zimbabwe. Nevertheless, Malawi, whose primary port of imports is also Beira in Mozambique, with secondary routes being from Dar es Salaam and Nacala in Mozambique, is mainly supplied by road. Similarly, petroleum

products are transported from Dar es Salaam to the Ndola fuel terminal in Zambia (which is also a landlocked country) via TAZAMA pipeline, which are then transported via road or rail to service stations around the country.

The liberalisation of the Tanzanian, South African and Kenyan petroleum industry is reflected in the number of licensees at each level of the supply chain. Conversely, the petroleum industry in Malawi, in which petroleum products are centrally procured, has only a single participant in the upstream segment of the market.

The downstream distribution segment of the petroleum industry in Tanzania consists of 114 wholesale licensees. In contrast only 5 major stakeholders and 4 OMCs are active in the downstream activities in Namibia. In Malawi there are 29 Licensed Wholesalers of Fuel and 34 other OMCs. Tanzania has a relatively large number of competitors in the distribution segment with 114 licensed OMCs as at June 2019. Like Tanzania, Zambia also has a relatively significant number of OMCs, reaching 42 OMCs by 2019. The country with the largest number of wholesale licensees is South Africa, where the petroleum industry consists of 7 major oil companies with wholesale licensees as well as approximately 600 independent wholesale licensees, although only a share of these are known to be actively trading.

The retail distribution segment in Tanzania has 1681 licensed retailers. Zambia has 386 retail service stations (June 2019); Malawi has about 251 licensed retail stations (May 2017) while South Africa, having the largest downstream liquid fuels sector of this set of countries, has approximately 4600 service stations across the country (August 2019).

Prices in each of these countries are regulated, either by the government directly or by a regulatory authority. Much like Tanzania, South Africa's and Botswana's prices for petroleum products are differentiated by region or by magisterial district depending on the mode of transportation. By contrast, in Zimbabwe, Namibia, Malawi and Zambia the same maximum price is charged for petroleum products across their respective countries.

However, the manner in which these prices are regulated differs across countries. In South Africa, the Regulated Accounting System (RAS) provides inputs into a Rate of Return methodology used to calculate the costs and returns for each part of the value chain which is similar to how EWURA calculates the price differentiation in the 3 major zones of Tanga, Dar es Salaam and Mtwara in Tanzania.

The price adjustments in these comparator countries are similar to Tanzania which takes place on monthly basis. In particular, prices are changed monthly in South Africa, Kenya and Botswana, and are changed at about two-month intervals in Zambia. Prices in Malawi are meant to change monthly if the delivered cost to Malawi changes by more than 5% in Malawi Kwacha. However, Malawi has a price stabilisation fund and has no pre-set automatic adjustment frequency. Price adjustments in Namibia are more infrequent and adjustments take place on a quarterly basis.

In addition to these characteristics used to assess the degree of comparability between Tanzania and petroleum industries in other countries, the consultant also analysed the pricing structure and approach used in the different countries.

7.2 Benchmarking Margin Methodologies

Based on the review of the pricing structures in the comparator countries, some observations can be made before engaging in a quantitative analysis. In particular, it is striking that in Tanzania there is no reconciliation between actual and projected fuel prices which means procurers may either make excess profits or substantial losses due to factors beyond their control. A reconciliation mechanism such as the slate mechanism in South Africa and Namibia or the equalisation fund in Botswana could be a potential solution for this issue. Given that the BFP

remains in place for a month based on projected figures, licensees are at risk to changes in the crude oil price and the TZS/dollar exchange rate. In South Africa, the BFP for petrol, diesel and illuminating paraffin are calculated every day. The average over the month is then compared to the projected BFP. If the actual daily BFP exceeds the projected BFP, there is under-recovery and the licensee is compensated from the slate account. Licensees are to pay into the account when there is an over-recovery i.e., the projected BFP exceeds the actual daily BFP.[28]

Table 71: Margin Methodologies

Description	Tanzania	Zimbabwe	Uganda	Kenya	South Africa	Namibia	Malawi
Wholesaler Margin	0.051	0.10	-	0.042	0.020	0.063	0.069
Retailer Margin	0.045	0.15	0.049	0.081	0.12	0.106	0.097
Method of Margin Calculation	Revenue Requirement	Percentage of Freight on Board (FOB)	-	Not Mentioned	Marketing of Petroleum Asset Retail	Basic Fuel Price (BFP)	Percentage of Freight on Board (FOB)
Source Date of the Data	January 2020	February 2019	January 2015	August 2019	November 2019	October 2019	May 2019

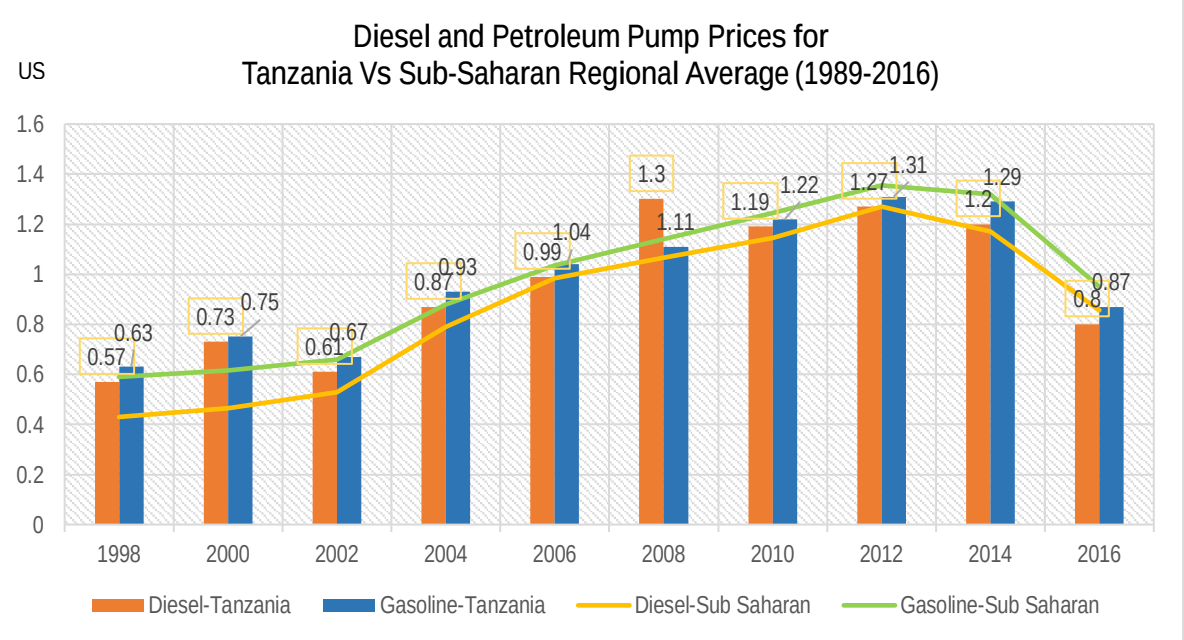
Note: All figures in US Dollars

Source: All sources used per each county are as mentioned in section 7.2.1 to 7.2.9

The country-by-country comparison demonstrates that Tanzania's retailer margin in particular appears lower than that of all comparator countries. In several of the other countries where information could be obtained, the retailer margin was more than double that of Tanzania's retailer margin. By contrast, the wholesaler margin was more aligned to the international average of margins in the countries for which data was observed. This further strengthens the consultants' finding that the retailer margin in Tanzania remains disproportionately low. The graph below shows that Tanzania's diesel and petrol prices have been very close to the average in sub-Saharan Africa.

Figure 14: Pump Prices Overview for Tanzania Vs Sub-Saharan Regional Average (1989-2016)

[28] See Competition Commission South Africa, Competition news, Edition 53 September 2015, table 3, available: http://www.compcom.co.za/wp-content/uploads/2015/03/Competition-Commision-September-Newsletter.pdf.



Source: World Bank Data

Sub-Sahara countries in this graphic are namely; Angola, Burundi, Benin, Burkina Faso, Botswana, Central African Republic, Côte d'Ivoire, Cameroon, Congo, Democratic Republic, Congo, Republican, Comoros, Cabo Verde, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Gambia, The Guinea-Bissau, Equatorial Guinea, Kenya, Liberia, Lesotho, Madagascar, Mali, Mozambique, Mauritania, Mauritius, Malawi, Namibia, Niger, Nigeria, Rwanda, Sudan, Senegal, Sierra Leone, Somalia, South Sudan, São Tomé and Principe, Eswatini, Seychelles, Chad, Togo, Uganda, South Africa, Zambia and Zimbabwe.

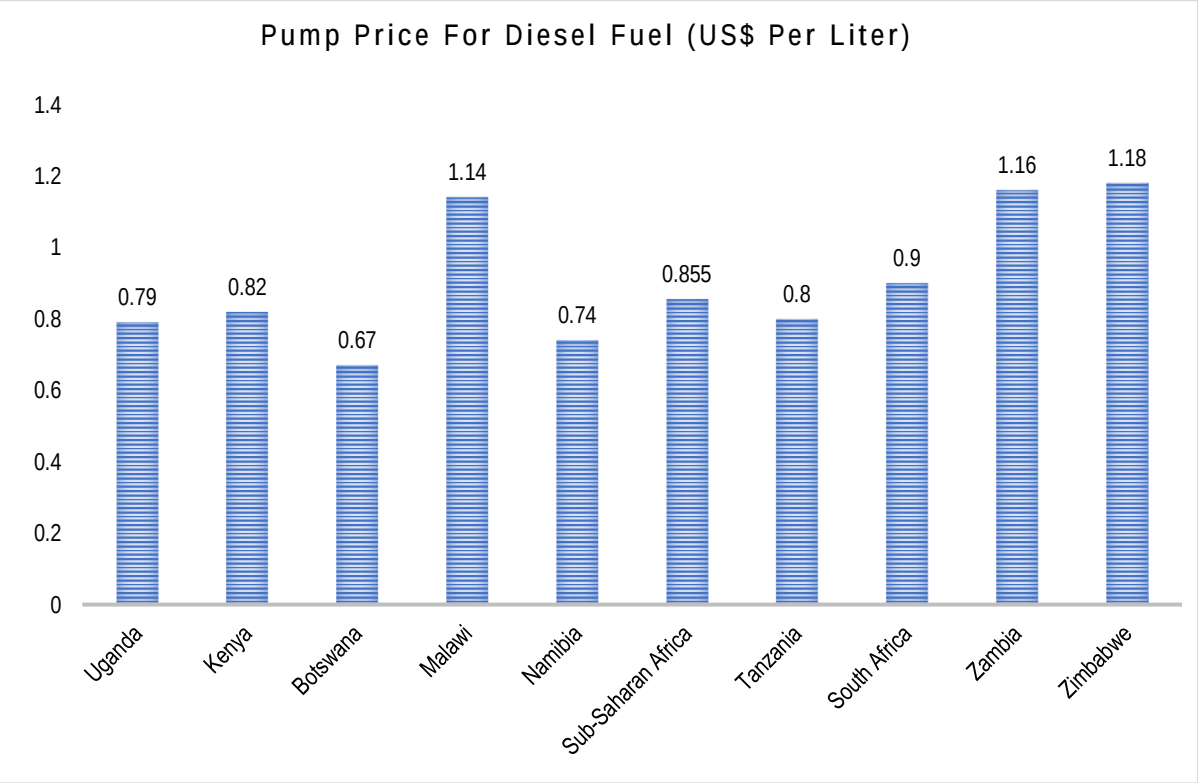
Table 72: Pump price for Diesel fuel (US$ per litre) 1998 to 2016

Country Name	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016
Tanzania	0.57	0.73	0.61	0.87	0.99	1.3	1.19	1.27	1.2	0.8
Uganda	0.68	0.75	0.7	0.88	1.01	1.22	1.11	1.35	1.11	0.79
Kenya	0.54	0.6	0.56	0.76	0.98	1.14	1.27	1.26	1.07	0.82
Botswana	0.29	0.39	0.38	0.61	0.74	1.02	0.97	1.25	1.07	0.67
Malawi	0.45	0.68	0.62	0.88	1.12	1.67	1.54	1.9	1.8	1.14
Namibia	0.36	0.44	0.43	0.65	0.87	0.88	1.09	1.31	1.12	0.74
South Africa	0.39	0.5	0.4	0.8	0.84	0.95	1.14	1.42	1.17	0.9
Zambia	0.49		0.6	0.98	1.22	1.61	1.52	1.48	1.59	1.16
Zimbabwe	0.22	0.72	0.05	0.65		1.05	1.15	1.4	1.48	1.18

Source: World Bank
Link: https://data.worldbank.org/indicator/EP.PMP.DESL.CD?end=2016&start=2003

It is clear that in 2016 Tanzania's diesel prices were competitive when compared to other Sub-Saharan African countries, as visualized below.

Figure 15: Pump price for Diesel fuel (US$ per litre) for the year 2016

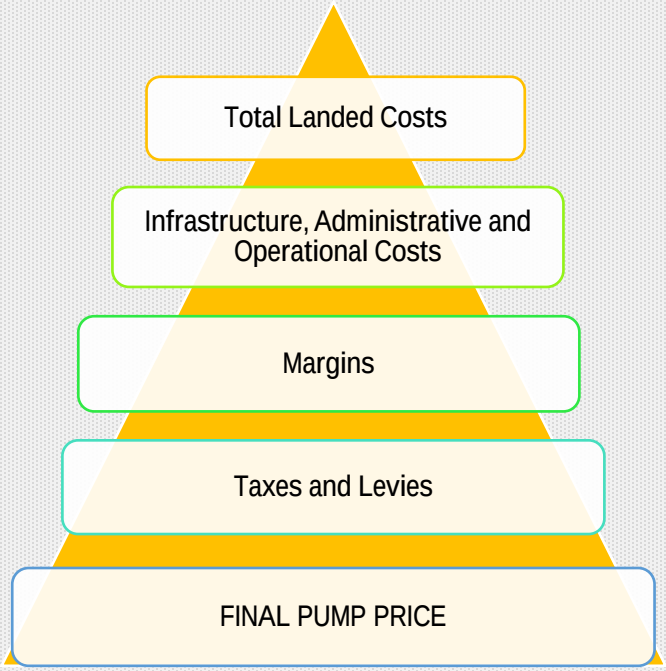


Source: INNOVEX calculations

7.3 Pricing structure and approach across the different comparator countries

The pricing structure in each country generally comprises elements that can be classified into four (4) broad categories which make up the final pump price. These elements are, (i) total landed costs, (ii) infrastructure costs, operational and administrative costs, (iii) margins/returns and (iv) taxes and levies. A comparison of both the pricing structure and level is undertaken. However, in order to ensure an appropriate comparison with other countries, taxes are not taken into consideration as the tax levels vary drastically across countries and therefore distort the price comparison.

Figure 16: Elements of the pricing structure



7.2.1 Tanzania

The prices in Tanzania are regulated by EWURA in accordance with the following schedule, allowing for a pass through of international prices at the upstream level:-

Table 73: Summary of pricing structure and approach in Tanzania

Price elements	Description
Final pump price = Cost CIF DAR + Total local costs + Margins + Government taxes	
Cost CIF DAR	a. Weighted average Platt's FOB[29] b. Weighted average premium as per quotation by winning bidder in the BPS (freight + insurance + premium) c. Cost CIF DAR = (a+b)
Infrastructure, administrative and operational costs	d. Wharfage ($10/MT + 18% VAT) e. Customs processing fee f. Weights and measures fee g. TBS[30] charge h. TIPER[31] fee (+18% VAT) i. Actual demurrage cost j. Actual ocean losses k. Surveyor cost l. Financing cost (1% of CIF) m. Regulatory levy n. Evaporation losses (0.5% MSP, 0.30% GO % IK) CIF

[29] The FOB formula used the weighted average of the actual prices for the cargoes received in the previous month for the different products and references as specified in the bulk procurement system (BPS) procedures.
[30] Tanzanian Bureau of Standards
[31] The Tanzanian International Petroleum Reserves Limited

	o. Petroleum marking costs p. Transport costs (local) q. Total local costs = (d+e+f+g+h+i+j+k+l+m+n+o+p)
Margins[32]	r. Wholesale margin (OMC's overheads and margins) s. Retail margin
Taxes and levies	t. Fuel levy u. Excise duty v. Petroleum fee Government taxes = (t+u+v)

Source: EWURA website, available at: http://www.ewura.go.tz ; and http://144.76.33.232/wp-content/uploads/2015/08/Cap-Prices-WEF-01-July-2015-English.pdf

7.2.2 Uganda

Uganda is a landlocked country, like Tanzania it has no active refineries and imports all of its refined petroleum product needs. However, the country is on a plan to develop a Greenfield oil refinery, with a capacity of 60,000 BPD. As of 2012 about 95% of Uganda's petroleum imports were routed through Kenya (Mombasa Port) and only 5% come through Tanzania (Dar es Salaam Port). A total of 1.227 billion litres of petroleum products were imported in 2012. Of these, 41.1%, 6.1% and 52.8% were Petrol, Kerosene and Diesel imports. The majority of petroleum products destined for Uganda through Kenya are delivered from Mombasa seaport to western Kenya terminals of Eldoret and Kisumu by pipeline and thereafter by road and rail to Uganda.

By June 2013, Uganda had licensed 142 oil marketing companies, a rise of above 17% from 121 companies by same time in 2012.[33] The country uses its National Supplier Database (NSD), which is an online web-based platform for regulating the procurement of goods and services in the oil and gas sector. The Uganda National Oil Company (UNOC) is mandated to develop, manage and operate storage terminals as it holds national strategic fuel reserves to ensure security of supply. This mandate is executed through its wholly owned subsidiary the National Pipeline Company Limited. UNOC currently manages and operates the 30 million litre capacity Jinja Storage Terminal (JST) in eastern Uganda.[34] (Uganda National Oil Company (UNOC), 2020). In contrast with Tanzania and South Africa, the government of Uganda sets cap prices which are uniform throughout the country, for gasoline, diesel, and kerosene every month.

7.2.3 Kenya

Kenya is a coastal country which in the eastern part of Africa. As of 2007, Kenya had one refinery, the Mombasa refinery, with a nameplate capacity of 90,000 barrels per day. Since its commission the refinery has not operated at full capacity. There are storage facilities throughout the country, and these are adequate for both crude and finished products. Distribution infrastructure consists of road, rail and pipeline systems. Kenya Pipeline Company (KPC) manages and owns the existing Mombasa-Nairobi pipeline. There is a second pipeline that extends from Eldoret to Kisumu in the west of the country.

[32] The reasonable cost of service approach is used as a basis for margin calculations. The determination of full cost recovery includes identifying the components of the total revenue requirements such as operations and maintenance and investment costs; using an appropriate accounting approach (cash based or accrual approach); determining the 'reasonable' cost of service; and calculating the return on investments.

[33] http://www.npa.go.ug/development-plans/sector-development-plans/
http://npa.go.ug/wp-content/uploads/2018/01/Energy-Sector-Development-plan-Final.pdf

[34] UNOC, 2020, [Ministry of Energy and Mineral Development, Strategic Investment Plan 2014/15 – 2018/19, page 71].

As of 2020 the country supply chain is supported by significant infrastructure as follows:

- Petroleum Receipt and back-loading jetties: This includes Kipevu Oil Jetty (KOT), Shimanzi Oil Terminal (SOT), Mbaraki, Africa Gas & Oil Limited (AGOL) and Kisumu Oil Jetty.
- Petroleum storage tanks: Kenya's total storage capacity is over 1,500,000,000 litres spread out across the country. Over 700,000,000 litres of this are operated by the Kenya Pipeline Company as primary and intermediate storage.
- Petroleum pipelines: The pipeline system consists of trunk lines and distribution lines from Mombasa running through Nairobi to the Western Kenya towns of Nakuru, Eldoret and Kisumu totalling to about 1,804km.
- Retail networks: Kenya has over 2,762 retail stations. The stations are classified as Tier 1, 2, 3 and 4 depending on land area, services offered and storage capacity.[35]

As of 2020, the market structure of Kenya Petroleum Downstream Industry comprises of Importers of Petroleum Products (94 licensees); Storage depots (27 licensees); LPG Storage and Filling Plants (65 licensees); Pipeline transportation (1 licensed pipeline transporter); Refineries (1 licensed refinery); Wholesalers and Exporters (832 licensees); Transporters (by road for LPG) (94 licensees); Retailers (42 licensees); Petroleum Tankers (798 licensees); Petroleum Drivers (432 licensees) and Storage of Crude Oil (one licensed facility). [36]

The Kenya Energy and Petroleum Authority undertakes retail pricing of petroleum products (Diesel, Super Petrol and Kerosene) as stipulated in the Energy (Petroleum Pricing) Regulations, 2010. The Pricing Regulations introduced a formula that EPRA uses in determining the maximum retail pump prices of Super Petrol, Regular Petrol, Diesel and Kerosene (the Regulated Products).[37]

Calculation of Wholesale Prices

$$Pw = Cu (1+ Lp + Ld) + K (1+ Ld) + mw$$

Where:

Pw	The maximum wholesale price for super petrol, kerosene or Automotive diesel
Cu	The weighted average cost in shillings per litre ex the Kenya Petroleum Refineries Limited (KPRL) and ex Kipevu Oil Storage Facility (KOSF)
K	The transportation cost from Mombasa to the nearest wholesale depot, which is made up of x percent of pipeline tariff (Kpt) and (100 – x) percent of road bridging cost (Krd) as set out in the First Schedule
Lp	The allowed losses in the pipeline as set out in the Second Schedule
Ld	The allowed losses in the depot as set out in the Second Schedule
mw	The allowed oil marketing company's gross wholesale margin as set out in the Third Schedule

Calculation of Retail Prices

For super petrol, kerosene and automotive diesel, the Pricing formula used is:

$$Pr = Pw + mr + z$$

Where,

- Pr = the maximum retail pump price of super petrol, regular petrol, kerosene or Automotive diesel applicable, in shillings per litre;
- mr = the allowed maximum retail gross margin as set out in the Third Schedule;
- z = the delivery rate from the nearest wholesale depot to a retail dispensing site in Shillings per litre as set out in the First Schedule.

[35] Energy and Petroleum Regulatory Authority, 2020, www.epra.go.ke/services/petroleum/.
[36] Energy and Petroleum Regulatory Authority, 2020, www.epra.go.ke/services/petroleum/.
[37] https://www.epra.go.ke/services/economic-regulation/tarrif-setting/tarrif-setting-petroleum/.

While determining the wholesale and retail prices for petroleum products, Economic Regulations incorporates the costs as indicated in the first and second schedule of the Energy (Petroleum pricing) Regulations, 2010.

The retail pump prices for Super Petrol, Automotive Diesel and Kerosene are published monthly on 15th of every month.[38]

7.2.4 Zimbabwe

The fuel price structure in Zimbabwe for unleaded and blended fuel as well as diesel are set out in the Statutory Instrument 80 of 2014. These prices are the maximum wholesale or retail pump prices at which licensed procurers, wholesalers and retailers sell their petroleum products. The SI 80 was amended through the Statutory Instrument 100 of 2015. This changed the FOB price to the lower of the average Platts Mediterranean or Arab Gulf price. In addition, both the wholesale and retail margins were changed to 6 cents per litre.

The FOB price, as per the definition in Statutory Instrument 20 of 2015, is based on the Platts Mediterranean or Arab Gulf markets plus a premium ex-Beria, and is the average price obtained in the third and fourth weeks preceding the implementation week.

Table 74. Summary of pricing structure and approach in Zimbabwe

Price elements	*Description*
Final Pump Price = Oil company proceeds + dealer margin (6 US cents)	
Total landed costs	a. FOB price b. Freight (pipelines) c. Total landed cost (a+b)
Taxes and levies	d. Duty e. Zinara road levy f. Carbon tax g. Debt redemption h. Strategic reserve levy i. Total taxes & levies (d+e+f+g+h)
Infrastructure, administrative and operational costs	Administrative costs: j. Storage and handling k. Clearing agency fee l. Financing cost m. Total administrative cost (j+k+l) Blending costs: n. Ethanol costs o. Blend ratio Distribution costs: p. Inland bridging costs q. Storage and handling[39] r. Secondary transport costs s. Total distribution costs (p+q+r) t. Total cost = ((c+i+m)*(1-o)+(n*o))+s

[38] https://www.epra.go.ke/services/economic-regulation/tarrif-setting/tarrif-setting-petroleum/.
[39] Removed through SI 100

Price elements	*Description*
Margins	u. Oil company margin v. Oil company gross proceeds (t+u) w. Dealer margin
Final pump price	x. Final pump price = v+w

Source: ZERA website, available at: http://www.zera.co.zw/index.php/98-latest-news/131-fps

Notes: (i) Some of the elements in this price structure may not apply to all of the petroleum products under consideration, for example, blending costs do not apply to the pricing of unleaded petrol and diesel.

7.2.5 South Africa

The retail prices of petroleum products are regulated in South Africa and include adjustments for various grades of petrol available and the locations at which these products are sold. These price elements can be broadly characterised into the international and domestic price component. The international element is the Basic Fuel Price ("BFP") which is maintained on an import parity price structure basis, whereas the domestic element contains the cost components that are incurred locally such as transport costs, delivery costs/service differentials, government imposts, margins and taxes and levies.

The Regulatory Accounting System ("RAS") methodology is used to calculate the return on each part of the value chain where costs are incurred. The margin for each activity is based on cost benchmarks and a nominal return on assets, which is calculated using the capital asset pricing model ("CAPM") based on a replacement value of the assets.[40] There are two key principles that the RAS is based on:

Firstly, the revenue requirement is based on activity-based costing where the costs are linked to products through distinct business activities. As such, four regulated activities were ring-fenced, namely secondary storage, secondary distribution, wholesale and retail activities.

Secondly, separate margins are estimated for each of the ring-fenced activities on the basis of a benchmark asset base for each activity.

[40] Review of economic regulation of liquid fuels and related products, Pamela Mondliwa and Simon Roberts, University of Johannesburg, Center for Competition, Regulation and Economic Development, 24 June 2014.

Table 75: Summary of pricing structure and approach in South Africa

Price elements	Description
Final pump price = BFP + domestic costs + margins + taxes and levies	
Basic Fuel Price (BFP)	a. Average CIF (FOB Spot prices & Spot premiums, plus freight, including demurrage allowances and insurance) b. Ocean loss allowance c. Cargo dues d. Landed costs for imports at South African ports = (a+b+c) e. Costal storage cost f. Stock financing cost g. Basic fuel price = (d+e+f)
Transport costs (Zone differential)	h. This element recovers the cost of transporting petroleum products from the nearest coastal harbor to the inland depot serving the area or zone. Transport to the different prices zones are determined using the most economical mode of transport i.e. pipelines (C zones), rail (A zones) or road (B zones)
Margins	Delivery costs i. This element recovers the operating costs and remunerates the investment in secondary storage and distribution activities that are related to retail petrol. Wholesale margins: j. This component recovers the operating costs and remunerates investments in wholesale activities relating to the marketing of petroleum products. Retail margins: k. This component recovers the operating costs and remunerates the investment in a retail service station where account is taken of all proportionate driveway related costs, such as rental, interest, labour, overheads and entrepreneurial compensation.
Taxes and levies	l. Equalisation fund levy m. Fuel tax levy n. Customs and excise duty o. Road accident fund levy p. Slate levy

Price elements	Description
	q. Demand side management levy[41] r. IP tracer dye levy[42] s. Petroleum pipelines levy t. Taxes and levies = (l+m+n+o+p+q+r+s)

Sources: (i) SAPIA website, available at: http://www.sapia.co.za/industry-overview/fuel-price.html ; (ii) DOE website, available at: http://www.energy.gov.za/files/esources/pdfs/energy/liquidfuels/ANNEXURE-A-BFP-final-version-2012.pdf and http://www.energy.gov.za/files/esources/petroleum/petroleum_pricestructure.html, https://www.total.co.za/discover-total/totalgaz-southern-africa/sustainable-development/energy-rural-areas

The BFP changes on the first Wednesday of every month based on the average daily international price movements and exchange rate fluctuations based on the '3-working day' optimisation mechanism.

The transport costs are the only element of the pricing structure that differ by region and is the reason behind the differentiated fuel prices in South Africa. Effectively, there are two different prices for petroleum products – one at the coast and another for the inland region.

7.2.6 Namibia

Namibia is a member of the South African Customs Union ("SACU") Interstate Oil Committee. Member countries predominantly receive their supply of petroleum products from South Africa which imports crude oil in order to produce different petroleum products. These countries act as "price takers" in respect of all petroleum products, which implies that petroleum prices are determined in relation to other price regions such as Europe and the Far East. In addition, the pricing structure of SACU countries also includes a slate levy.[43]

The final pump/retail price by SACU countries include the average FOB price, government taxes and levies, industries operating and service costs as well as the wholesale and retail margins.[44]

Table 76: Summary of pricing structure and approach in Namibia

Price elements	Description
Basic Fuel Price	This largely reflects international trading conditions over which the Namibian Government does not have any control. Specifically, this reflects international crude oil prices and the transport and insurance related costs to bring the fuel onshore for distribution. Another important element that goes into the BFP is the exchange rate of the Namibian dollar to the US dollar. Both the exchange rate and crude oil prices contribute to the frequent adjustment of local pump prices.
Margins	This includes dealer and industry margins. The formula used to calculate the wholesale margin is based on the results of a cost and financial investigation of the oil industry.
Slate account	This account determines the amount of compensation payable from time to time by the State through the National Energy Fund to the oil companies or by the companies

[41] On 95 unleaded petrol
[42] Introduced into the price structure of diesel to curtail the unlawful mixing of diesel and illuminating paraffin
[43] Afritech Resources website, available at: http://www.afritechresources.com/
[44] Afritech Resources website, available at: http://www.afritechresources.com/

	to the state in respect of any under or over recovery, meaning losses or profits gained by the two companies.

Source: Dr John Steytler, Understanding the fuel price mechanism in Namibia, Money Matters, Issue 28

7.2.7 Malawi

Malawi has long had a pricing structure in place which is appropriate given that the market is too small to support the numbers required for competition.[45]

Table 77: Summary of pricing structure and approach in Malawi

Price elements	Description
Final pump price = IBLC + Malawi duties, levies, funds, etc. + Margins	
In Bond Landed Cost (IBLC)	a. FOB b. Rail freight c. Road freight d. Insurance and handling e. Losses f. IBLC = (a+b+c+d+e)
Malawi duties, levies, funds, etc.	g. Energy regulatory levy h. Road levy i. Malawi Bureau of Standards Cess j. Rural electrification levy k. Storage levy l. IBLC loss recovery m. Price stabilization fund n. Duty o. Excise duty p. Duties, levies, funds etc = (g+h+i+j+k+l+m+n+o)
Margins	q. Import margin r. Distribution margin s. Wholesale margin t. Retail margin

Source: ZERA, NECF presentation
Notes: Pricing structure effective from 5th February 2015

7.2.8 Zambia

The Energy Regulatory Board ("ERB") is responsible for the pricing of petroleum products in the Zambian market. Prices of petroleum products produced by the refinery are determined through the use of the cost-plus pricing model (CPM). The CPM takes into account all costs incurred in importing the feedstock, transporting it to Zambia,

[45] World Bank, 2010, Petroleum Product Markets in Sub-Saharan Africa: Comparative Efficiency Analysis of 12 Countries

and refining it at Indeni. The CPM is used to determine the wholesale price of petroleum products which is the price that OMCs pay to purchase the product from the Ndola Fuel Terminal ("NFT").[46]

Other costs which are included in the pump price build-up are insurance costs, transportation costs, handling costs as well as working and transit losses. The agreed margins are currently 42c/l for OMCs and 28c/l for dealers.[47]

Table 78: Summary of pricing structure and approach in Zambia

Price elements	Description
Final pump price = Ex refinery gate price + Total costs + Margins + VAT	
Wholesale price to OMC	a. Cost of petroleum feedstock b. Cost of fright from place of sale to Dar-es-Salaam c. Insurance d. CIF = (a+b+c) e. Ocean losses f. Wharfage (Harbour charges) g. Finance charges, collateral manager & insurance costs h. TAZAMA[48] storage fee and pumping fee i. Import duty j. Product losses incurred at both TAZAMA and Indeni (refinery) k. Agency and processing fees l. Refinery fee m. Storage and handling losses at the NFT n. Wholesale price to OMC's = (d+e+f+g+h+i+j+k+l+m)
Ex refinery gate price	o. Terminal fee p. Road levy q. Excise duty r. Ex refinery gate price = (n+o+p+q)
Infrastructure, administrative and operational costs	s. OMC cost of finance t. ERB fees u. Strategic reserves fund v. Total costs = (s+t+u)
Margins	w. Transport margin x. OMC margin y. Dealer margin
Taxes and levies	z. VAT

Sources: (i) ERB. 2012. Report on the status of the petroleum industry; (ii) ERB website, available at: http://www.erb.org.zm/

[46] Energy Regulatory Board (ERB). 2012. Report on the status of the petroleum industry
[47] ZERA, National economic consultative forum presentation, 9 March 2015.
[48] TAZAMA – Tanzania-Zambia-Mafuta pipelines

7.2.9 Botswana

Botswana is a member of the SACU and its pricing structure is analogous to that of South Africa, except that it is calculated in Botswana Pula, retail margins are lower, and rail freight costs and not the pipeline tariff are applied to the Durban BFP to obtain the ex-tax cost delivered into depots in Gaborone. Taxes differ between Botswana and South Africa, although duties remain the same, price changes take place approximately mid-month with the date being chosen by the government, the OMC (wholesale) margins are adjusted for surpluses/deficits through the equalisation fund levy – as in South Africa - and the regional price variations are based on incremental road transport costs for every 50 km beyond Gaborone, instead of by Ministerial Districts as in South Africa.[49]

Table 79: Summary of pricing structure and approach in Botswana

Price elements	Description
Final pump price = BFP + Transportation costs + Government take + Margins	
Basic Fuel Price (BFP)	a. FOB b. Average marine freight including demurrage c. Insurance and freight d. CIF cost = (a+b+c) e. Marine losses f. Port charges by RSA's National Ports Authority g. IBLC = (d+e+f) h. Durban storage i. Durban stock financing cost j. BFP = (g+h+i)
Infrastructure, administrative and operational costs	k. Rail transport from Durban to Gaborone l. Local depot and transport costs to end users
Taxes and levies	m. Customs duty n. Fuel levy o. Road fund p. Motor vehicle accident fund q. National petrol fund levy (strategic storage) r. Government take =(m+n+o+p+q)
Margins	s. Wholesale margin t. Retail margin

Source: World Bank, 2010, Petroleum Product Markets in Sub-Saharan Africa: Comparative Efficiency Analysis of 12 Countries
Notes: These prices were effective from December 1 to 11, 2008

7.2.10 Summary

The total landed costs in Tanzania are analogous to the Basic Fuel Price (BFP) in the SACU countries selected for this benchmarking exercise i.e., South Africa, Namibia and Botswana. In Tanzania, the total landed costs are comprised of the FOB and the weighted average premium as per quotation by winning bidder in the BPS (freight + insurance + premium).

The price elements in South Africa also include insurance costs, ocean allowances and cargo dues which collectively make up the landed costs for imports at the South African ports. Added to this are coastal storage costs and stock financing costs which thus makes up the Basic Fuel Price. Tanzania and Zambia utilise the cost,

[49] World Bank, 2010, Petroleum Product Markets in Sub-Saharan Africa: Comparative Efficiency Analysis of 12 Countries

insurance and freight (CIF) at Dar es Salaam which is also analogous to the BFP in Zimbabwe. However, the CIF in Tanzania also includes a premium as per quotation by the winning bidder in the bulk procurement system. Malawi on the other hand still considers the In Bond Landed Cost (IBLC) in the final pump price. In South Africa, the IBLC lost credibility as a reasonable proxy for international fuel prices since the use of the refinery gate price posted by international refineries no longer tracks international market prices consistently, and was therefore replaced by the BFP.

The Statutory Instrument 100 of 2015 in Zimbabwe stipulates that the FOB price is based on the lower of Platts Mediterranean or Arab Gulf markets plus a premium ex-Beira. In South Africa, Malawi, Tanzania and Zambia, it was noted that all companies are expected to buy at the same reference price and therefore there is one FOB price for petroleum products in those countries.

The Statutory Instrument 80 of 2014 introduced a maximum margin for petroleum products at both the wholesale and retail levels of 7%. The regulated wholesale and retail margins in Zimbabwe are currently set at a maximum of 6 cents per litre following an amendment of the SI 100 in September 2015. In South Africa, margins on ringed-fenced regulated activities where costs are incurred, such as secondary storage, secondary distribution, wholesale and retail activities are calculated using a Regulatory Accounting System matrix where the margin on each activity is based on cost benchmarks and a nominal return on assets. One of the key principles underlying the RAS methodology is that separate margins are estimated for each ring-fenced activity on the basis of a benchmark asset base for each activity. This is in contrast to the wholesale and retail margins in Zimbabwe which are both capped at 6 cents. Similarly, wholesale and retail margins in Tanzania are calculated using the reasonable cost of service approach. This involves the identification of the components of total revenue requirements using an appropriate accounting approach, determining the 'reasonable' cost of service, and calculating the return on investments.

Taxes and levies have been included into the price-structure of each of the comparator countries, however, they have not been taken into consideration for comparison purposes since they vary drastically across countries and may therefore significantly distort prices. The consultant also collected wholesaler and retailer margin from five countries namely; Kenya, Zimbabwe, Namibia, Malawi and South Africa in order to make a comparison between such countries and Tanzania. Data from three (3) other countries i.e., Uganda, Botswana and Zambia was not available from reliable sources used.

Excerpt of Table 71: Margin Comparison

Description	Tanzania	Zimbabwe	Uganda	Kenya	South Africa	Namibia	Malawi
Wholesaler Margin	0.051	0.10	-	0.042	0.020	0.063	0.069
Retailer Margin	0.045	0.15	0.049	0.081	0.12	0.106	0.097
Method of Margin Calculation	Revenue Requirement	Percentage of Freight on Board (FOB)	-	Not Mentioned	Marketing of Petroleum Asset Retail	Basic Fuel Price (BFP)	Percentage of Freight on Board (FOB)
Source Date of the Data	January 2020	February 2019	January 2015	August 2019	November 2019	October 2019	May 2019

Note: All figures in US Dollars

Source: All sources used per each county are as mentioned in section 7.2.1 to 7.2.9

8 Findings and Recommendations

This section contains a summary of the most critical findings of the study and outlines issues to be resolved such as;

- The recommendation with respect to the wholesaler and retailers' margins;
- The effect of business models on retailers via margin sharing;
- Vertical integration and fair competition;
- Licensee database development;
- Facilitating regular data collection and regulatory reporting; and
- Enforcement of EWURA legal mandate

8.1. The Recommended Margins

The Consultant's recommendation, both based on international benchmarking and on analysis of Tanzanian data and interviews with industry players, is that the wholesaler margin be set at a maximum of TZS 124 per litre, and that the retailer's margin be at maximum TZS 127 for an urban retailer and at TZS 141 for a rural retailer given the analysis in this report.

Excerpt of Table 16: Summary of Findings for OMCs

Measurement	Unit of Measure	Rationale
WACC* RAB per litre	TZS 26.45/-	Calculated 12% of TZS 220.40
OPEX per litre:	TZS 77.30/	Actual average as reported
Taxes per litre	TZS 7.93/-	30% of WACC* RAB = 30% of 26.42 = 7.93
Depreciation per litre	TZS 12.10/-	Annual depreciation expense on trended and depreciated original cost asset base
Total per litre	TZS 123.78/-	27 + 77 + 8 + 12 = 124

Source: INNOVEX calculations

The Consultants calculations further show that retailers' margins should be based on typical urban and rural stations, which have distinct cost profiles. Like the wholesaler margin, a Regulatory Asset base was established, comprising of a station canopy, buildings, pumps and storage tanks, to which inventories are added. Combining all the components of a margin yields the following margins for an urban and rural station.

Excerpt of Table 28: Retailers' Margin

Cost component	Unit	Urban	Rural
WACC*RAB	TZS	62,786,985	20,077,138
Total Opex (including annual depreciation and Government taxes)	TZS	261,732,200	66,650,000
Company taxes	TZS	18,836,095	6,023,141
Annual Depreciation	TZS	38,533,864	9,121,891
Allowable revenue (excluding cost of sales)	TZS	381,889,143	101,872,171
Allowable revenue per litre = Margin	TZS	127	141

Source: INNOVEX calculations

The impact of business models on retailers and vertical integration

From the study several findings regarding the impact of the three business models emerged. **Firstly, it is clear that a COCO business model allows an OMC to cut cost overlaps and extract synergies from its vertical integration.** This is a common factor in the downstream petroleum industry, found in many jurisdictions. On the one hand, this ensure a competitive price to consumers (although no doubt not all of the cost savings are handed over to consumers) but on the other hand, this may lead to disadvantageous outcomes for the broader economy as multinational OMCs tend to repatriate revenues to the countries of incorporation of the head office or holding company, resulting in negative Balance of Payments effects.

Secondly, the cost savings from the OMCs' vertical integration are likely to reduce local employment and supply industry multiplier effects as the companies' aim to standardize infrastructure components (often imported) and economies on costs such as labour. Independent retailers operating as DODOs or semi-independent retailers operating under the CODO model tend to have a greater local content foot print and result in greater relative employment in the downstream petroleum industry.

It has been argued that the cost savings achieved through vertical integration do not simply yield efficiency impacts, but are in fact the result of unfair competition. International experience clearly shows that any sector in which a supplier competes with its own customers in the downstream trading sub-sector does not experience thriving competition, but rather a margin squeeze by the more powerful upstream supplier. The increasing market power that may ensue for the OMC may then render the price competition of short duration as CODOs and DODOs are steadily reduced in numbers and market share, increasing the COCO's market power.

It is also clear that the negotiated sharing of the retailer margin between the OMC and a retailer in a CODO business arrangement is not suitable for the establishment of equitable outcomes due to the lack of a level playing field. For this reason, the consultant recommends the following. In order to prevent squeezing of local retailers, a prohibition on full vertical integration may be considered.

- Internationally vertically integrated utilities were considered: costly, lacking in innovation, inefficient, with bloated work forces, non-responsive to customer needs, slow to connect new customers etc. as early as the 1980s. The first large utilities were unbundled in the US in the 1980s, e.g. AT&T (1982), followed in the UK in the 1990s, e.g. British Gas was unbundled in 1994, and a move towards

vertical unbundling was adopted in the European Union (EU directive of 1996 onwards). Whilst these unbundling trends involved primarily telecoms, electricity and natural gas sectors, a prohibition of full vertical integration was put in place in the liquid fuels sector in South Africa, where wholesalers of petroleum products are not allowed to hold retailing licences in order to protect local retailers from unfair competition from importers with downstream operations and to encourage economic empowerment of independent retailers.

Furthermore, the consultant also recommends a clear prescribed margin sharing solution. The previous margin study indicated that wholesalers were 'adequately compensated' at TZS 124 per litre in the period January 2012-December 2013 (whilst the calculation of the appropriate margin yielded a value of TZS 106 for the wholesaler margin) and that retail margins were 'unlikely to cover all costs' of the retailers at TZS 64 per litre in the same period. This discrepancy has been somewhat rectified over the past 7 years, as indicated earlier, with wholesaler margins now at TZS 119 and retailers' margins at TZS 105. The consultant recommends a further reduction in this discrepancy by increasing the retailers' margin to at least the level of the wholesalers' margin or as the analysis suggest. However, the split of the retailer margin in the case of CODO business model has not been adequately addressed.

Ideally, the return on investment and depreciation should be split in precise accordance with the share of total retail infrastructure investment made by the wholesaler and the retailer respectively. However, given the excessive administrative burden that the enforcement of this arrangement would entail, the results of the analysis propose that CODO's obtain the full retailers' margin minus at the maximum the return on investment (as regulated) and the depreciation charge. However, retailers may negotiate a larger share of this return and depreciation charge and should they not be satisfied with the outcome, they should be able to complain to the regulator and request a calculation of the margin due to them for reasons of capital investment. It is of the utmost importance that the maximum margin for wholesalers in a CODO relationship be strictly enforced, in order to be useful to the CODO operators. This practical solution would allow retailers to continue making their own investments in the retail capital infrastructure and reduce the incentive for OMCs to vertically integrate into retail.

Excerpt of Table 16: Summary of Findings for OMCs

Measurement	Unit of Measure	Rationale
WACC* RAB per litre	TZS 26.45/-	Current average: 45 TZS per litre
OPEX per litre:	TZS 77.30/	Actual average as reported
Taxes per litre	TZS 7.93/-	30% of WACC* RAB = 30% of 26.42 = 7.93
Depreciation per litre	TZS 12.10/-	Annual depreciation expense on trended and depreciated original cost asset base
Total per litre	TZS 124/-	27 + 77 + 8 + 12 = 124

Source: INNOVEX calculations

It's clear that in the case of a CODO arrangement all or some of the return on investment and depreciation should be paid to the OMC but that the OMC should not appropriate more of the retailers' margin. It is recommended that EWURA insist on OMC not to appropriate more than TZS 26.45/- as Return on Investments and TZS 12.10/- as Depreciation (a total of TZS 38.55/- per litre) from CODO's retailer's margin in order to motivate investment in the industry and allow retailers to make a fair return on the business as well.

Ideally, the return on investment and depreciation should be split in precise accordance with the share of total retail infrastructure investment made by the wholesaler and the retailer respectively. However, given

the excessive administrative burden that the enforcement of this arrangement would entail, the results of the analysis propose that CODO's obtain the full retailers' margin minus at the maximum the return on investment (as regulated) and the depreciation charge.

However, retailers may negotiate a larger share of this return and depreciation charge and should they not be satisfied with the outcome, they should be able to complain to the regulator and request a calculation of the margin due to them for reasons of capital investment. It's of the utmost importance that the maximum margin for wholesalers in a CODO operational arrangement be strictly enforced, in order to be useful to the CODO operators. This practical solution would allow retailers to continue making their own investments in the retail capital infrastructure and reduce the incentive for OMCs to vertically integrate into retail and is explained in the table below.

Table 80: Equitable margin sharing formula based on an equal wholesaler of TZS 124 and retailer margin of TZS 127 in (Urban Retailer)

Type of Business Model	Type of Margin	Calculation	TZS/L	Sum of Margins
COCO	Wholesaler plus Retail Margin	Wholesaler margin = 124; retailer margin = 127	=124 + 127 = 251	251
CODO	Wholesaler plus share of Retail Return on Investment and depreciation	Wholesaler margin = 124; retailer margin return on investment = 26.45, depreciation = 12.10	=124 + max 26.45 + max 12.10 = maximum 162.55	251
	Retailer Margin minus share of Retail Return on Investment and depreciation	Retailer margin = 127; minus retailer margin return on investment = 26.45, depreciation = 12.10	= 168 – max 36 – max 16 = minimum 88.45	
DODO	Wholesaler Margin	Wholesaler margin = 124	124	251
		Retailer margin = 127	127	

Source: INNOVEX calculations

Table 81: Equitable margin sharing formula based on an equal wholesaler of TZS 124 and retailer margin of TZS 141 in (Rural Retailer)

Type of Business Model	Type of Margin	Calculation	TZS/L	Sum of Margins
COCO	Wholesaler plus Retail Margin	wholesaler margin = 124; retailer margin = 141	=124 + 141 = 265	265
CODO	Wholesaler plus share of Retail Return on Investment and depreciation	wholesaler margin = 124; retailer margin return on investment = 26.45, depreciation = 12.10	=124 + max 26.45 + max 12.10 = maximum 162.55	265
	Retailer Margin minus share of Retail Return on Investment and depreciation	retailer margin = 141; minus retailer margin return on investment = 26.45, depreciation = 12.10	= 141 – max 26.45 – max 12.10 = minimum 102.45	
DODO	Wholesaler Margin	wholesaler margin = 124	124	265
		retailer margin = 141	141	

Source: INNOVEX calculations

It is critically important that the charging of fees in excess of the allowable wholesaler margin to CODO retailers is reigned in, so as to safeguard the livelihood of many retailers. Both the international experience and the anecdotal Tanzanian experience suggests that retailers face significant sustainability risks if their exposure to OMCs is not limited and they are not protected by the regulator.

8.2. LPG Price Regulation

The Consultant recommends that LPG wholesale margins be determined at TZS 1,382/- and super dealers' margin be determined at TZS 53/- per kilogram. The consultant further recommends dealers' margin be determined at TZS 370/- per kilogram while keeping retail price of LPG at TZS 3,250/- per kilogram.

Given the analysis performed, it is the consultant's recommendation for EWURA to introduce price regulation on LPG wholesalers following a Rate of Return approach as explained above in Section 3.1.3 and hold off regulating the rest of the downstream industry, i.e., Super Dealers and Dealers on an account of the infancy of the LPG industry in Tanzania.

8.3. Transport

In Dar es Salaam, the consultant recommends an average of TZS 15/- per litre to be applicable as a viable transport charge within the city and its suburbs. In the case of other districts in the country, an average of TZS 0.2011/- per litre per kilometre is recommended to be representative of the current market transport charges.

Consultant also recommends a maximum rate of TZS 0.2653/- per litre per kilometre to be allowed for specific remote districts i.e., that are only accessible after crossing a water body and require a bridge toll.

With respect to transport charge, the consultant recommends below measures to be put in place in order to ensure proper collection of data from transporter as an initial stage.

- A proper mechanism is to be established in order to collect actual transportation costs monitored by EWURA in at least the next three (3) years.
- Working closely with the Tanzania Revenue Authority (TRA). Since the TRA licenses all transporters in the country, at a request of EWURA, the transporters can be pressed by the TRA into populating above cost build-up as a license or license renewal condition for all transporters of oil and gas products.

8.4. Economic Useful Life of Assets

The consultant recommends to the regulator to use the following economically useful life for industry regulated assets as adopted from The National Energy Regulator of South Africa (NERSA):

Excerpt of Table 4: Recommended Asset Economic Useful Life for Wholesalers (years):

Asset category - Wholesale				
Canopy Structure including roofing, footing and the interchange system of the filling point	Storage tanks (primary tanks at the port of receipt; secondary tanks inland)	Transmission pipelines and auxiliary infrastructure (e.g., pipeline inspection gadgets)	Pump stations and auxiliary infrastructure (platforms, electricity supply, security etc.)	Heavy equipment / power operated equipment
30	40	40	15	5

Excerpt of Table 5: Recommended Asset Economic Useful Life for Retailers (years):

Asset category – Retail			
Fuel pumps		Storage tanks	On site pipelines
Traditional technology	Pay at pump technology		
15	15	40	40

Excerpt of Table 34: Recommended Asset Economic Useful Life for LPG Wholesaler (years):

Fixed Assets	Economically useful life
Plant (building, pipes, land, safety and security installations, gantries) + 800 sqm reinforced floor	30
Storage tanks (sphere 3,000 metric tonnes)	40
Cylinders (33,300 of 6 kg, 6,600 of 15 kg and 1,700 of 38 kg)	15
Filling (bottling) facility	20

8.5. Local OMC Participation in the BPS Tenders

From the named reasons for limited participation by pre-qualified bidders, the consultant suggests the following recommendations:

- Encouraging partnership between multinational companies and local pre-qualified OMCs in bidding for BPS tenders. In order to promote local participation and boost local economy, regulator may consider allowing multinational OMCs to bid only when they are in partnership with a local OMC. This will improve participation of local OMCs in pre-qualification process and ultimately, building local capacity to tender.

- Simplification of the multiple steps in the tendering process, to enable the participation in the tender process. For instance, registration, planning and pre-qualification as separate steps are likely considered burdensome by participants.

- A relaxation of the financial requirements in terms of the bond security and annual turnover amounts is likely to encourage participation from local participants.

- A streamlining of the bureaucratic hurdles (e.g., delays in tax imposition, requirement for multiple licenses from different entities) would also encourage participation in the tender processes.

8.6. Licensee Database Development

The research conducted by INNOVEX has revealed significant difficulties in the effective management of licensee data, especially at the retailer level. It is therefore recommended that a comprehensive database be developed, with current information of all licensed retailers and that the submission of a notification of data changes pertaining to a retailer's physical address, contact details, ownership or fuel offering be required by license condition within 7 days of such change occurring. Such changes should be captured and, where appropriate, authenticated by EWURA so as to ensure reliable licensee data is at the Regulator's disposal.

8.7. Facilitating Regular Data Collection and Regulatory Reporting

In order to regulate the licensees effectively, the licensee database is the first step, which is a means to achieve data collection from the licensees. Here, the consultant recommends to the regulator to keep updating the licensees' database on a regular interval to allow for easy access of the industry players at any point in time. Data collection is of critical importance in the ability of EWURA to employ evidence-based decision-making. The scope of the assignment can reveal how far individual licensees are from the average performance level, but the data available does not allow for an assessment of the efficiency frontier for each regulated activity so as to enable the calculation of a target efficiency improvement for each licensee.

Hence it is the recommendation of the consultant that EWURA considers the option to develop and implement regulatory reporting requirements. The consultant understands that the regulator is implementing a system named National Petroleum and Gas Information System (NPGIS) aiming at collecting industry information. The regulator could consider widening the scope of this system to include other regulatory reporting requirements and fulfil the same purpose of Regulatory Accounting to the downstream petroleum industry.

As is done in most mature regulatory environments, such as the US, Canada and the EU, licensees are required to maintain financial records in the form, manner and with contents as prescribed by the regulatory authorities. The regulatory reporting requirements are typically captured in Regulatory Accounts, a prescribed Chart of Accounts, or a Regulatory Reporting Manual, which typically are accompanied by or incorporate cost allocation rules aimed at separation of the regulated and non-regulated businesses of a regulated entity as well as the correct allocation of costs to each regulated activity. It is both possible and recommended to roll-out such regulatory reporting requirements in a graduated fashion, allowing those firms best able to implement the requirements a relatively shorter period of time to comply and imposing lighter requirements on smaller retailers initially.

8.8. Enforcement of EWURA Legal Mandate

Lastly the study found that, as is the case in many SADC countries, the liquid fuels sector consists of divergent levels of market power at different levels of the value chain. Wholesalers, be they local subsidiaries of multinational companies, or Independent Oil Companies, National Oil Companies etc., tend to control critical midstream, transport, and storage facilities and have considerable market share. The wholesalers tend to be well-versed in legislative and regulatory requirements across the countries they operate in and are typically well-equipped to participate in legislative and regulatory decision–making Retailers on the other hand, tend to be a more diverse group of licensees, many of which can be small businesses or franchisees, or fully owned by wholesalers. In accordance with overall findings, it is recommended that EWURA conducts a study on potential

liquid fuel market reforms so as to ensure energy policy and general national economic policy objectives are met and to enable fair competition in a level playing field, particularly for retailers.

A growing share of COCO and CODO style retailers may have implications for economic indicators such as the Balance of Payments, foreign exchange rates and economic objectives regarding small and medium sized independently owned businesses. Although the resultant findings or recommendations may not be in EWURA's direct executive mandate or authority, it is clear that well-thought through analyses and suggestions from sector regulators tend to be well-received by government departments and other decision makers and that effective regulators play important advocacy roles. For this reason, the consultant rounds off a list of recommendations with a comprehensive liquid fuel sector study, which could incorporate many of the issues identified in this study.

9 Annex:

9.1 The Petroleum Subsector and Supply Chain in Tanzania Mainland

9.1.1 Annex I: Supply of Petroleum Products into Tanzania Mainland

Facilities for Importation of Petroleum Products

In Tanzania, petroleum products are received in, Tanga and Dar es Salaam Ports. At the Tanga Port there is Conventional Buoy Mooring (CBM) capable of handling vessels of up to 40,000 Dead Weight Tonnage (DWT). Dar es Salaam Port has three (3) berthing facilities namely Single Buoy Mooring (SBM), Kurasini Oil Jetty 1 (KOJ1) and Kurasini Oil Jetty 2 (KOJ2). The SBM can handle vessels of up to 150,000 DWT while KOJ1 and KOJ2 can handle vessels with maximum capacities of 45,000 DWT and 5,000 DWT respectively.

The Bulk Procurement System (BPS)

The Bulk Procurement System (BPS) is the system through which white petroleum products are imported in the country. The products that are imported through BPS are diesel (AGO), petrol (PMS), kerosene (IK) and jet A-1. The system operates in accordance with the BPS Regulations issued and enforced by EWURA. The Authority on a monthly basis, diligently analyses all BPS tenders floated by Petroleum Bulk Procurement Agency (PBPA) to ensure that there is transparency, fair treatment to all bidders, healthy competition. Also, the Authority ensures the quantities ordered are sufficient to cater country demands.

Multiple petroleum products importers participate in every month's tendering through BPS cargo-by-cargo tender system, which was adopted in November 2016. The cargo-by-cargo tender system allows many bidders to participate in the tendering process including individuals with relatively smaller financial capability. As the system does not require bidders to have huge financial capability, the BPS Regulations cargo-by-cargo system allows local OMCs to participate in BPS tender.

In 2018, the average premium stood at US$25.68 /MT, US$26.65 /MT, and US$37.83 /MT for diesel, petrol and kerosene/jetA1 respectively. Table (a) shows the BPS tender winners and the number of tenders won in 2018.

Table (a): Winning Suppliers and Number of Tender Won

S. No	BPS Tender Winner	No. Tender Won	%
1	Sahara Energy Resources	37	45%
2	Addax Energy SA	23	28%
3	Augusta Energy SA	12	15%
4	Trafigura PTE Ltd	7	9%
5	Totsal Total Oil Trading SA	2	2%
6	Vitol Bahrain EC	1	1%
	TOTAL BPS Tender	82	100%

In 2018, petroleum products imported through Tanga, Dar es Salaam and Mtwara port had different premiums due to the fact that each port received different petroleum cargoes. The average premiums for the cargoes offloaded in the Tanga, Dar es Salaam and Mtwara ports stood at as seen in Table (b).

Table (b): Average premiums for each port

Fuel type	Dar es Salaam	Tanga	Mtwara
Petrol	24.37	39.31	11.00
Diesel	22.29	35.96	42.00
Kerosene	36.87	41.90	-
Average of the Averages	27.84	39.06	26.50

Relatively, Dar es Salaam port attracts low premium than other ports because the big consignment is via Dar es Salaam port.

Importation of Petroleum Products

Petroleum products are mainly imported into Tanzania through BPS whereby Dar es Salaam, Tanga and Mtwara are currently the receiving ports. The main petroleum products imported into the country are petrol, diesel, kerosene, Jet A1, HFO. In 2018, a total of 5,704,810,644 litres were imported. The volume imported for domestic use in 2018 was 3,264,785,479 litres and 2,440,025,165 litres was imported for transit to the neighbouring countries.

In 2018, LPG imports were 142,940 MT. The development of the LPG market has motivated LPG operators to develop confidence to invest more in the LPG business segment. The Government has also been promoting substitution of charcoal and firewood by providing tax reliefs to investors to stimulate the use of LPG which is environmentally friendlier and cost-effective fuel compared to firewood, charcoal and kerosene.

9.1.2 Annex II: Storage of Petroleum Products in Tanzania Mainland

In mainland Tanzania there are currently twenty-two (22) operational receiving oil terminals which are located around Dar es Salaam, Tanga and Mtwara ports with total storage capacity of 1,127,611 cubic metres (m3). Import terminals receive petroleum products from ships. On the other hand, there are twenty-nine (29) inland terminals which are located upcountry with a total storage capacity of 75,625 cubic metres (m3). However, most of the inland terminals are not operational. The total storage capacity of all receiving oil terminals suffices to store petroleum products that can cater for about 120 days of the country's demand.

9.1.3 Annex III: Distribution of Petroleum Products in Tanzania Mainland

The petroleum sub-sector relies on the transportation industry for transporting petroleum products to consumers. Four primary modes of transport exist. These include; pipeline, railway, roadway through road tanker trucks and marine oil tankers (barges). Despite the various modes of transport that exist, roadway remained to be the dominating mode of transporting petroleum products in Tanzania. Road fuel tankers are used to distribute petroleum products from the receiving terminals at Dar es Salaam, Tanga and Mtwara to local consumers in mainland Tanzania and also transiting to neighbouring countries of Rwanda, Burundi, Malawi, Zambia, Democratic Republic of Congo and Uganda.

It is worth noting that, although roadway is the dominant mode of transport in mainland Tanzania, bad roads, accidents, robbery, theft and traffic congestion are the main challenges facing this mode of transport. Another mode of transport used though to a lesser extent is railway. There are some companies that transport liquid petroleum products from the receiving terminals in Dar es Salaam and Tanga by rail wagons to Mwanza and Kigoma.

Currently, the country does not have a dedicated pipeline for transportation of petroleum products to upcountry. There is only TAZAMA pipeline for transporting spiked crude oil from Kigamboni, Dar es Salaam to Ndola, Zambia. The pipeline has a total length of 1,710 km and a designed throughput of 1,100,000 MT per annum. The pipeline which was commissioned in 1968 is owned by the Tanzanian Government with a share of 33.3% and the Zambian Government with a share of 66.7%.

In 2018, TAZAMA pipelines Limited continued to undertake rehabilitation works to the pipeline. Major rehabilitation works done on the Tanzanian side include: replacement of a 5km corroded pipeline at Mikumi, replacement of the new pump at Kigamboni and rehabilitation of the petroleum feedstock storage tank (Tank no. 1). This rehabilitation work aimed at improving the pipeline throughput, protection of the environment against oil leaks and improving the pump discharge.

OMCs Market Share

In 2018, the petroleum market was fairly distributed among different oil marketing companies. The market has an oligopolistic structure. Six OMCs WF7 (15.1%), WF9 (14%), GBP (13.5%), Total (9%), Moil (6.3%) and Camel Oil (5.5%) dominated 63.4% of the market. Although few firms dominate, there are many small firms which operate in the market as well. Table (c) shows the sales figures and market share of each OMC.

Table (c): OMCs Market Share for 2018

OMC Name	AGO	PMS	IK	HFO	JET A1	IDO	Total	Market Share
PUMA	245,702,772	89,374,374	991,200	3,046,000	167,924,023	-	507,038,369	15.10%
ORYX	303,227,009	142,003,834	10,361,945	13,249,804	-	520,939	469,363,531	14.00%
GBP	254,463,929	185,213,396	6,644,315	5,023,500	-	-	451,345,140	13.50%
TOTAL	160,643,995	90,203,134	7,750,420	15,937,000	26,531,464	50,000	301,116,013	9.00%
MOIL	114,745,497	95,289,960	-	-	-	-	210,035,457	6.30%
CAMEL OIL	101,767,927	75,770,518	-	5,534,207	-	-	183,072,652	5.50%
OILCOM	70,406,580	66,135,621	13,988,874	-	23,168,649	-	173,699,724	5.20%
GAPCO	60,788,621	68,298,210	2,427,050	-	6,253,347	-	137,767,228	4.10%
ACER	65,630,216	54,300,736	-	-	-	-	119,930,952	3.60%
STAR OIL	65,499,299	49,956,391	-	-		-	115,455,690	3.40%
MT. MERU	60,457,795	45,768,337	1,933,081	-	-	-	108,159,213	3.20%
LAKEOIL	61,799,000	45,604,571	-	-	-	-	107,403,571	3.20%
MOGAS	34,419,437	31,636,468	188,938	-	-	-	66,244,843	2.00%
ENGEN	39,092,843	18,588,918	248,000	-	-	-	57,929,760	1.70%
BARREL P. E.	29,727,572	17,844,195	-	-	-	-	47,571,767	1.40%
PETROFUEL	44,300,860	-	-	-	-	-	44,300,860	1.30%
HASS	27,182,463	11,620,987	-	-	-	-	38,803,450	1.20%
AFROIL INVST.	26,898,220	12,935,445	-	-	-	-	39,833,665	1.20%
APEL	18,784,500	14,439,500	-	-	-	-	33,224,000	1.00%
DALBIT	16,627,976	14,724,562	2,413,967	-	-	-	33,766,505	1.00%
OLYMPIC	18,684,400	15,940,000	-	-	-	-	34,624,400	1.00%
PETROAFRICA	23,601,000	1,657,000	-	-	-	-	25,258,000	0.80%

OMC Name	AGO	PMS	IK	HFO	JET A1	IDO	Total	Market Share
NATOIL	2,706,659	3,281,163	171,197	-	-	-	6,159,019	0.20%
PRIME REGIONAL	2,468,651	187,290	-	-	386,134	-	3,042,075	0.10%
OTHERS	27,195,571	5,318,672	-	-	-	-	32,514,243	1.00%
TOTAL	1,876,822,793	1,156,093,281	47,118,987	42,790,511	224,263,617	570,939	3,347,660,127	100.00%

9.1.4 Annex IV: Consumption of Petroleum Products

The petroleum product consumption in 2018 was 3,347,660,127 litres. Sectors that consume petroleum products include transportation, industries, construction, power generation, mining and aviation. Table (d) shows the petroleum products consumed in the country in 2018.

Table (d): Petroleum Product Consumption for 2018

AGO LTRS	PMS LTRS	IK LTRS	HFO LTRS	JET A1 LTRS	IDO LTRS	TOTAL LTRS
1,876,822,793	1,156,093,281	47,118,987	42,790,511	224,263,617	570,939	3,347,660,127

9.1.5 Annex V: Retailing of Petroleum Products (Petrol Stations)

Table (e) shows the average total regional consumption in litres, the number of petrol stations in each region and the average petrol station sales volumes for 2018. The table shows that Dar es Salaam, Mwanza and Mtwara have the highest average annual sales volume per petrol station compared with other regions. The average annual sales of these regions are 2,467,365 litres, 1,561,660 litres and 1,420,037 litres respectively. There is saturation of petrol stations especially in urban areas. Though the volumes in rural and remote areas are small, there is a potential investment opportunity in petroleum retail business in these areas.

Table (e): Average sales of Petrol Stations per Region for 2018

Region	Average Total Regional Consumption (Lt)	No of Petrol Station/Region	Average Petrol Station Sales Volumes/Year (Lt)
Arusha	96,950,638	98	989,292
Coast	74,434,223	94	791,853
Dar es Salaam	493,472,968	200	2,467,365
Dodoma	54,953,984	66	832,636
Geita	18,332,546	55	333,319
Iringa	43,023,787	34	1,265,405
Kagera	32,530,523	70	464,722
Katavi	4,839,897	9	537,766
Kigoma	13,708,412	44	311,555
Kilimanjaro	52,070,384	92	565,982
Lindi	14,020,811	32	438,150
Manyara	15,105,887	48	314,706
Mara	14,038,293	55	255,242
Mbeya	80,767,764	62	1,302,706
Morogoro	61,203,623	73	838,406
Mtwara	51,121,346	36	1,420,037
Mwanza	137,426,041	88	1,561,660

Region	Average Total Regional Consumption (Lt)	No of Petrol Station/Region	Average Petrol Station Sales Volumes/Year (Lt)
Njombe	29,818,207	32	931,819
Rukwa	13,741,841	17	808,344
Ruvuma	30,352,084	39	778,259
Shinyanga	35,280,506	53	665,670
Simiyu	3,654,477	26	140,557
Singida	16,445,910	20	822,296
Songwe	9,187,073	28	328,110
Tabora	18,125,550	30	604,185
Tanga	59,305,549	59	1,005,179
Total	1,473,912,325	1,460	20,775,220

9.1.6 Annex VI: LPG Facilities

In 2018, total operational storage capacity for LPG receiving facilities in Dar es Salaam and Tanga stood at 8,273 MT. Mihan Gas (T) Ltd and Manjis Gas Supply Co. Ltd finalized construction of LPG facilities with 6,000 MT and 2,700 MT storage capacities respectively.

The storage capacity of LPG facilities in upcountry increased from 1,332 MT in year 2017 to 1,522 MT in 2018. The increase in storage capacities is due to expansion of some facilities and building of new facilities to carter for the growing LPG demand in the country. Table (f) presents a list of LPGs receiving facilities (Dar es Salaam and Tanga).

Table (f): List of LPG Facilities in Dar es Salaam and Tanga as of December 2018

S/N	Name of Facility	Physical Location	Storage Capacity (MT)	Operational Capacity
1	Oryx Energies Tanzania Limited – Kurasini LPG Facility	Kurasini, Dar es Salaam	1,250	1,250
2	Oryx Energies Tanzania Limited - Kigamboni LPG Facility	Kigamboni, Dar es Salaam	3,100	3,100
3	Mihan Gas Tanzania Limited - Kigamboni LPG Facility	Kigamboni, Dar es Salaam	7,500	1,500
4	Mihan Gas Tanzania Limited - Tanga LPG Facility	Tanga	23	23
5	Lake Gas Limited - Kigamboni LPG Facility	Kigamboni, Dar es Salaam	750	750
6	Lake Gas Limited - Tanga LPG Facility	Chumbageni, Tanga	1,050	1,050
7	Oilcom Tanzania Limited - Kurasini LPG Facility	Kurasini, Dar es Salaam	500	500
8	Cam Gas Limited – Kurasini LPG Facility	Kurasini, Dar es Salaam	100	100
9	Manjis Gas Supply Company Ltd	Kigamboni, Dar es Salaam	2,700	0
	TOTAL		16,973	8,273

9.2 Governance of the Petroleum Sector

The petroleum sub-sector activities in Tanzania mainland are governed by the National Energy Policy 2015 and legislations which are the instruments that empowered the Authority to carry out its regulatory roles and functions efficiently and effectively.

9.2.1 Annex VII: The National Energy Policy 2015

The National Energy Policy was a result of merging several policies such as: the Petroleum Policy, the Local Content Policy, the Subsidy Policy, the Natural Gas Policy, the Renewable Energy Policy and the Revised National Energy Policy 2003 to simplify its administration. The policy provides the right direction for the development of the energy sector with major objective of providing an input in the development process by establishing an efficient energy production, procurement, transportation, distribution, end-user systems in an environmentally sound manner and due regard to gender issues.

9.2.2 Annex VIII: Legislation

The petroleum sub-sector is regulated as per the Act, rules and legislation. The main legislation comprises the following two (2) Acts:
(i) EWURA Act, Cap 414; and
(ii) The Petroleum Act, 2015.

Subsidiary legislation are composed of regulations and rules which are developed by the Minister responsible for petroleum affairs and the Authority respectively in accordance with Section 40 of the EWURA Act, Cap 414 which allows the Authority, in consultation with the Minister responsible for the petroleum affairs to make rules. The following subsidiary legislation rules are used by EWURA to conduct its regulatory roles:

i.) The Petroleum (Bulk Procurement) Regulations, 2017;
ii.) The Petroleum (Marine Loading and Offloading Operations) Rules 2016;
iii.) The Petroleum (Bitumen and Petcoke Operations) Rules 2016;
iv.) The Petroleum (Pipeline Operations) Rules, 2015;
v.) The Petroleum (Consumer Installations and Operations) Rules, 2015;
vi.) The Petroleum (Wholesale Operation) Rules, 2014;
vii.) The Petroleum (Retail Operations) Rules, 2014;
viii.) The Petroleum (Lubricant Operations) Rules, 2014;
ix.) The Petroleum (Lubricants and Sampling Testing) Rules, 2014;
x.) Petroleum (Liquefied Petroleum Gas) Rules, 2012;
xi.) The Petroleum (Licensing Fee) Rules, 2012;
xii.) The Petroleum (Road Transportation) Rules, 2010;
xiii.) The Petroleum (Marking and Quality Control) Rules, 2010;
xiv.) The Energy and Water Utilities Regulatory Authority (Fees and Levies Collection Procedure) Rules, 2010;
xv.) The Petroleum (Sampling and Testing) Rules, 2010;
xvi.) The Energy and Water Utilities Regulatory Authority (Petroleum Products Price Setting) Rules, 2009;
xvii.) The Petroleum (Village and Township Retail Outlet Operations) Rules, 2017, GN. No. 14;
xviii.) The Petroleum (Refinery Operations) Rules, 2017 GN No. 218;
xix.) The Energy and Water Utilities Regulatory Authority (Petroleum Products Price Setting) (Amendment) Rules, 2017;
xx.) The Petroleum (Licensing Fees) Rules, 2017 GN No. 325;
xxi.) The Petroleum (Waste Oil Recycling) Rules, 2017 GN No. 220;

9.3 Petroleum Products Prices Regulation

EWURA monitors petroleum products prices in Mainland Tanzania. The Authority sets local wholesale and pump prices, for refined petrol, diesel and kerosene in compliance to the Energy and Water Utilities Regulatory Authority (Petroleum Products Price Setting) Rules, 2017. LPG local prices are determined by the market forces of supply and demand, and it was the Authority's role to ensure there was a level playing field for the market forces to work fairly.

The key components in the Price Setting Formula for the determination of the local prices are Weighted Average Platt's FOBs and Premium Quotations as per signed BPS Supply Contracts with PBPA. These two are the cost components forming a total CIF. CIF is an international commercial term for Cost, Freight and Insurance of buying and transporting fuel cargo in a Tankship. Other price components include local charges, fees and levies, Government Taxes, Oil Marketing Companies and dealers' Margins.

9.3.1 Annex IX: Domestic Prices for Petroleum Products

The local pump prices or retail prices were computed based on the cost of discharge at Dar es Salaam and Tanga ports. Delivery costs at Dar es Salaam and Tanga provide the basis for computing pump prices for all regions. The cost of discharge at Tanga port is used to compute pump prices for Tanga region and other northern regions which are Kilimanjaro, Manyara and Arusha.

In 2018, the Authority continued to prepare and publish wholesale and retail cap prices for petrol, diesel and kerosene that covered all regional centres, districts and small townships in mainland Tanzania.

Since July 2018, Mtwara port commenced receiving BPS cargoes that prompted the Authority to publish monthly cap prices for Mtwara, Lindi and Ruvuma regions based on the products received at Mtwara. The average pump prices per litre ex Dar es Salaam for 2018 were TZS 2318, TZS 2229 and TZS 2188 per litre for petrol, diesel and kerosene respectively. The current pump prices and their price build up are as indicated in Table (g):

Table (g): Pump Price Build Up as at June 2019

EWURA					Revision No. 4
Document Name: Petroleum Products Cap Price Template - Dar Es Salaam					
Document No.: RE-04-A				Revision Date:	30/04/2018
DAR ES SALAAM - CAP PRICES WEF FROM WEDNESDAY, <05 JUNE 2019>					
GN NO. 163/2018					
Weighted Average of Actual Exchange Rates of the Previous Month (M-1) plus the Difference between the Weighted Average of Actual Exchange Rates of the Previous Month (M-1) and that of the three months ago (M-3)				Exchange Rate	2,270.31
WT Average Actual Conversion Factors of the Previous Month (M-1):			0.7513	0.8257	0.7975
			Petrol	Diesel	Kerosene
DESCRIPTION		UNIT	PRICE	PRICE	PRICE
	Weighted Average Platt's FOB	TZS/l	1,154.39	1,158.79	1,132.32
Plus	Weighted Average Premium as Per Quotation (Freight + Insurance + Premium)	TZS/l	70.95	58.17	102.22
Subtotal	COST CIF DAR	TZS/l	1,225.35	1,216.95	1,234.54
	LOCAL COSTS PAYABLE TO OTHER AUTHORITIES				
	Wharfage $10/MT + 18% VAT	TZS/l	20.13	22.12	21.37
	Railway Development Levy (1.5% CIF)	TZS/l	18.38	18.25	18.52
	Customs Processing Fee (TZS 4.80/Lt)	TZS/l	4.80	4.80	4.80
	Weights & Measures Fee (TZS. 1.00/Lt)	TZS/l	1.00	1.00	1.00
	TBS Charge	TZS/l	1.24	1.24	1.24
	Regulatory Levy	TZS/l	6.10	6.80	3.50
	Petroleum Marking Cost ($6.077/CM VAT inclusive)	TZS/l	13.80	13.80	13.80
	Demurrage Cost (1.4442 USD/MT)	TZS/l	2.56	2.81	2.71
	Ocean Losses (DAP Terms)	TZS/l	-	-	-
	Surveyors Cost (Actual weighted Average tendered Rate)	TZS/l	0.06	0.04	0.06
	Financing Cost (1.00% CIF)	TZS/l	12.25	12.17	12.35
	Evaporation Losses (0.5% MSP, 0.30% GO % IK) CIF	TZS/l	6.13	3.65	3.70
	TOTAL LOCAL COSTS (LC)	TZS/l	86.44	86.68	83.04
	GOVERNMENT TAXES				
	Fuel Levy	TZS/l	313.00	313.00	-
	Excise Duty	TZS/l	379.00	255.00	465.00
	Petroleum Fee	TZS/l	100.00	100.00	150.00
Sub Total	TOTAL GOVERNMENT TAXES	TZS/l	792.00	668.00	615.00
Plus	OMC's Overheads & Margins	TZS/l	118.00	118.00	118.00
	Charges payable to Executive Agencies	TZS/l	1.03	1.03	1.03
	Service Levy payable to LGAs (0.3% of turnover net of excise duty and VAT in wharfage and petroleum marking cost)	TZS/l	5.53	5.51	4.76
	WHOLESALE PRICE CAP (DSM)	TZS/l	2,228.35	2,096.17	2,056.37

Plus	Retailers Margin	TZS/l	103.00	103.00	103.00
	Charges payable to Executive Agencies	TZS/l	5.44	5.44	5.44
	Transport Charges (Local)	TZS/l	10.00	10.00	10.00
	Service Levy payable to LGAs (0.3% of turnover net of excise duty and VAT in wharfage and petroleum marking cost)	TZS/l	5.91	5.88	5.13
Price	PUMP PRICE CAP (DSM)	TZS/l	2,353	2,220	2,180

9.4 Transport Charges

9.4.1 Annex X: Transport Charges using Regional Distance Data

Regional Centers	EWURA Delivery Rate from DSM (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga (TZS/ltr)	Distance from Mtwara Port	Consultant's Proposed Transport Charge from Mtwara (TZS/ltr)
Dar es Salaam	10.00	-	15.00	333.7	67.11	567.2	114.06
Arusha	83.98	601.1	120.88	440.3	88.54	1189.7	239.25
Coast (Kibaha)	4.55	26.7	5.37	323.7	65.10	592.7	119.19
Dodoma	58.63	443.3	89.15	514.7	103.51	1009.2	202.95
Geita	165.00	1,115.0	224.23	1,026.5	206.43	1681	338.05
Iringa	63.96	488.8	98.30	638.7	128.44	1099.4	221.09
Kagera (Bukoba)	214.95	1,447.6	291.11	1,359.1	273.32	1946.4	391.42
Katavi (Mpanda)	207.45	1,127.9	226.82	1,199.4	241.20	1666.8	335.19
Kigoma	230.85	1,238.6	249.08	1,310.1	263.46	1804.6	362.91
Kilimanjaro (Moshi)	73.58	540.8	108.75	358.6	72.11	1108.4	222.90
Lindi	58.76	458.2	92.14	791.8	159.23	111.5	22.42
Manyara (Babati)	122.10	500.9	100.73	614.3	123.54	1193.6	240.03
Mara (Musoma)	178.10	1,099.4	221.09	952.6	191.57	1702	342.27
Mbeya	106.86	813.3	163.55	963.2	193.70	1104.9	222.20
Morogoro	24.96	185.1	37.22	335.0	67.37	751.1	151.05
Mtwara	72.28	560.9	112.80	894.5	179.88	-	-
Mwanza	149.76	1,128.1	226.86	1,039.6	209.06	1694.1	340.68
Njombe	92.30	709.4	142.66	859.3	172.81	869	174.76
Rukwa (Sumbawanga)	172.50	1,160.5	233.38	1,289.6	259.34	1431.2	287.81
Ruvuma (Songea)	123.11	1,059.5	213.07	1,087.0	218.60	658.7	132.46
Shinyanga	128.57	978.6	196.80	890.1	179.00	1,544.6	310.62
Simiyu (Bariadi)	170.00	1,137.7	228.79	1,005.7	202.25	1,680.2	337.89

Regional Centers	EWURA Delivery Rate from DSM (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga (TZS/ltr)	Distance from Mtwara Port	Consultant's Proposed Transport Charge from Mtwara (TZS/ltr)
Singida	90.48	686.6	138.08	773.5	155.55	1,252.6	251.90
Songwe (Vwawa)	116.09	839.4	168.80	1,035.2	208.18	1,176.9	236.67
Tabora	153.90	825.0	165.91	896.5	180.29	1391	279.73
Tanga	46.02	331.1	66.58	-	-	898.3	180.65

Source: INNOVEX calculations

9.4.2 Annex XI: Transport Charges Per District Distance Data

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Dar es Salaam	-	-	15.00	333.7	67.11	567.2	114.06
Arusha	83.98	601.1	120.88	440.3	88.54	1,189.7	239.25
Arumeru (Usa West)	83.98	646.0	129.91	435.0	87.48	1,179.9	237.28
Karatu	102.18	770.8	155.01	589.6	118.57	1,338.0	269.07
Longido	94.90	678.4	136.43	499.4	100.43	1,248.7	251.11
Monduli	89.31	672.3	135.20	490.7	98.68	1,240.1	249.38
Monduli-Makuyuni	94.25	672.9	135.32	525.2	105.62	1,274.5	256.30
Ngorongoro (Loliondo)	175.25	977.4	196.56	602.4	121.14	1,544.6	310.62
Coast (Kibaha)	4.55	26.7	5.37	323.7	65.10	592.7	119.19
Bagamoyo	11.05	59.7	12.01	275.2	55.34	628.0	126.29
Chalinze Junction	14.17	100.0	20.11	249.9	50.25	666.0	133.93
Chalinze Township (Msata)	18.33	121.6	24.45	212.9	42.81	688.8	138.52
Kibiti	20.41	141.1	28.38	474.7	95.46	424.9	85.45
Kisarawe	7.15	29.8	5.99	353.3	71.05	579.6	116.56
Mkuranga	9.75	48.7	9.79	382.3	76.88	517.3	104.03
Rufiji	27.56	190.9	38.39	339.7	68.31	419.1	84.28
Dodoma	58.63	443.3	89.15	514.7	103.51	1,009.2	202.95
Bahi	65.91	498.7	100.29	570.3	114.69	1,064.9	214.15
Chamwino	53.95	417.3	83.92	488.8	98.30	983.3	197.74
Chemba	85.05	590.4	118.73	513.5	103.26	1,156.4	232.55
Kondoa	91.35	528.9	106.36	440.4	88.56	1,096.1	220.43

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Kongwa	55.90	374.9	75.39	446.4	89.77	940.9	189.21
Mpwapwa	59.80	305.0	61.34	514.0	103.37	1,046.3	210.41
Mtera (Makatopora)	77.48	575.1	115.65	634.5	127.60	1,147.2	230.70
Geita	165.00	1,115.0	224.23	1,026.5	206.43	1,681.0	338.05
Bukombe	154.00	1,078.5	216.89	973.0	195.67	1,627.5	327.29
Chato	186.00	1,199.6	241.24	1,111.1	223.44	1,765.6	355.06
Mbogwe	203.00	1,078.2	216.83	989.6	199.01	1,644.2	330.65
Nyang'hwale	180.00	1,073.0	215.78	984.5	197.98	1,639.0	329.60
Iringa	63.96	488.8	98.30	638.7	128.44	1,099.4	221.09
Ismani	69.16	529.0	106.38	678.9	136.53	1,139.6	229.17
Kilolo	68.38	514.8	103.53	628.1	126.31	1,044.2	209.99
Mufindi (Mafinga)	74.00	600.7	120.80	750.6	150.95	1,019.3	204.98
Kagera (Bukoba)	214.95	1,447.6	291.11	1,359.1	273.32	1,946.4	391.42
Biharamulo	189.30	1,215.6	244.46	1,127.1	226.66	1,781.6	358.28
Karagwe (Kayanga)	231.30	1,480.2	297.67	1,391.6	279.85	2,046.1	411.47
Kyerwa (Ruberwa)	237.00	1,490.6	299.76	1,016.6	204.44	2,153.2	433.02
Muleba	214.95	1,312.2	263.88	1,223.6	246.07	1,878.1	377.69
Ngara	202.80	1,286.8	258.78	1,198.3	240.98	1,852.8	372.60
Misenyi	223.35	1,434.4	288.46	1,357.2	272.93	2,011.7	404.55
Katavi (Mpanda)	207.45	1,127.9	226.82	1,199.4	241.20	1,666.8	335.19
Mlele (Inyonga)	189.30	1,026.0	206.33	1,351.4	271.77	1,698.2	341.51
Mpimbwe (Majimoto)	199.71	1,026.0	206.33	1,353.7	272.23	1,688.0	339.46
Kigoma	230.85	1,238.6	249.08	1,310.1	263.46	1,804.6	362.91

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Uvinza (Lugufu)	243.00	1,134.2	228.09	1,205.7	242.47	1,700.2	341.91
Buhigwe	220.00	1,238.6	249.08	1,310.1	263.46	1,804.6	362.91
Kakonko	188.00	1,216.7	244.68	1,128.2	226.88	1,782.7	358.50
Kasulu	216.90	1,204.6	242.25	1,276.0	256.60	1,770.5	356.05
Kibondo	195.15	1,262.5	253.89	1,174.0	236.09	1,828.5	367.71
Kilimanjaro (Moshi)	73.58	540.8	108.75	358.6	72.11	1,108.4	222.90
Hai (Bomang'ombe)	76.83	574.9	115.61	392.7	78.97	1,135.2	228.29
Mwanga	66.69	488.6	98.26	306.4	61.62	1,055.8	212.32
Rombo (Mkuu)	94.50	557.2	112.05	368.5	74.11	1,117.9	224.81
Same	59.93	437.1	87.90	254.9	51.26	1,004.3	201.96
Siha (Sanya Juu)	80.08	605.2	121.71	423.0	85.07	1,153.4	231.95
Lindi	58.76	458.2	92.14	791.8	159.23	111.5	22.42
Lindi-Mtama	76.80	520.1	104.59	853.7	171.68	119.4	24.01
Kilwa Masoko	33.80	322.1	64.77	655.7	131.86	301.2	60.57
Liwale	79.65	522.6	105.09	856.8	172.30	318.5	64.05
Nachingwea	87.90	600.6	120.78	934.2	187.87	199.8	40.18
Ruangwa	89.55	605.9	121.85	939.4	188.91	205.1	41.25
Manyara (Babati)	122.10	500.9	100.73	614.3	123.54	1,193.6	240.03
Hanang (Katesh)	132.60	737.5	148.31	685.3	137.81	1,302.2	261.87
Kiteto (Kibaya)	133.12	424.8	85.43	336.3	67.63	992.0	199.49
Mbulu	134.85	709.8	142.74	627.9	126.27	1,277.0	256.80
Simanjiro (Orkasumet)	154.05	466.4	93.79	303.8	61.09	1,045.4	210.23
Mara (Musoma)	178.10	1,099.4	221.09	952.6	191.57	1,702.0	342.27

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Musoma Vijijini (Busekela)	218.76	1,297.4	260.91	1,032.0	207.54	1,702.0	342.27
Rorya (Ingirijuu)	187.00	1,243.7	250.11	962.3	193.52	1,711.6	344.20
Rorya (Shirati)	221.66	1,203.4	242.00	1,021.3	205.38	1,770.6	356.07
Bunda	169.26	1,213.0	243.93	913.9	183.79	1,779.0	357.76
Butiama	175.00	1,089.2	219.04	907.0	182.40	1,656.4	333.10
Serengeti (Mugumu)	223.65	1,011.8	203.47	826.6	166.23	1,586.0	318.94
Tarime	189.15	1,112.9	223.80	930.7	187.16	1,680.1	337.87
Tarime (Kewanja/Nyamongo)	193.70	1,078.0	216.79	894.8	179.94	1,645.2	330.85
Mbeya	106.86	813.3	163.55	963.2	193.70	1,104.9	222.20
Chunya	116.35	924.5	185.92	1,033.1	207.76	1,174.7	236.23
Chunya (Makongolosi)	130.52	888.1	178.60	1,057.9	212.74	1,216.1	244.56
Kyela	122.59	911.9	183.38	1,061.8	213.53	1,161.9	233.66
Mbarali (Rujewa)	91.00	706.2	142.02	856.1	172.16	997.8	200.66
Rungwe (Tukuyu)	115.83	858.0	172.54	1,001.6	201.42	1,101.6	221.53
Morogoro	24.96	185.1	37.22	335.0	67.37	751.1	151.05
Mikumi	40.56	300.7	60.47	450.6	90.62	866.7	174.29
Kilombero (Ifakara)	62.70	411.9	82.83	561.8	112.98	977.9	196.66
Kilombero (Mlimba)	85.05	641.5	129.01	791.4	159.15	1,187.3	238.77
Kilombero (Mngeta)	74.25	456.5	91.80	606.4	121.95	1,209.3	243.19
Ulanga (Mahenge)	73.35	315.5	63.45	465.4	93.59	881.5	177.27
Malinyi	83.55	414.0	83.26	541.0	108.80	869.0	174.76
Kilosa	43.35	277.3	55.77	390.6	78.55	843.3	169.59

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Gairo	43.35	314.0	63.15	385.5	77.52	880.0	176.97
Mvomero (Wami Sokoine)	35.40	212.6	42.75	335.0	67.37	751.1	151.05
Turian	50.00	293.1	58.94	279.0	56.11	859.1	172.77
Mtwara	72.28	560.9	112.80	894.5	179.88	-	-
Nanyumbu (Mangaka)	121.00	658.1	132.34	989.5	198.99	255.1	51.30
Masasi	97.89	667.4	134.21	935.3	188.09	201.0	40.42
Newala	104.25	601.7	121.00	930.8	187.18	141.9	28.54
Tandahimba	97.35	597.3	120.12	927.7	186.56	96.2	19.35
Nanyamba	97.35	589.1	118.47	922.7	185.55	71.2	14.32
Mwanza	149.76	1,128.1	226.86	1,039.6	209.06	1,694.1	340.68
Kwimba	167.55	1,083.2	217.83	994.7	200.03	1,649.2	331.65
Magu	157.82	1,126.0	226.44	998.6	200.82	1,692.0	340.26
Misungwi	144.17	1,083.5	217.89	995.0	200.09	1,649.5	331.71
Sengerema	182.10	1,148.2	230.90	1,065.7	214.31	1,720.2	345.93
Ukerewe	209.10	865.0	173.95	754.0	151.63	1,210.0	243.33
Njombe	92.30	709.4	142.66	859.3	172.81	869.0	174.76
Njombe (Kidegembye)	112.80	715.7	143.93	865.6	174.07	916.7	184.35
Ludewa	130.05	620.0	124.68	744.0	149.62	804.0	161.68
Makambako	84.50	641.5	129.01	793.6	159.59	935.2	188.07
Makete	123.00	800.3	160.94	960.3	193.12	984.4	197.96
Wanging'ombe (Igwachanya)	90.00	701.2	141.01	851.1	171.16	914.4	183.89
Rukwa (Sumbawanga)	172.50	1,160.5	233.38	1,289.6	259.34	1,431.2	287.81

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Sumbawanga Rural (Mtowisa)	172.50	1,139.7	229.19	1,289.6	259.34	1,442.2	290.03
Kalambo (Matai)	179.70	1,184.4	238.18	1,291.2	259.66	1,432.8	288.14
Nkasi (Namanyele)	186.00	1,226.9	246.73	1,383.8	278.28	1,518.6	305.39
Ruvuma (Songea)	123.11	1,059.5	213.07	1,087.0	218.60	658.7	132.46
Mbinga	156.60	1,156.9	232.65	1,186.2	238.54	756.1	152.05
Namtumbo	152.40	990.1	199.11	1,139.7	229.19	589.3	118.51
Nyasa (Mbamba Bay)	166.80	1,221.8	245.70	1,251.1	251.60	821.1	165.12
Tunduru	181.95	794.7	159.81	1,128.3	226.90	393.9	79.21
Shinyanga	128.57	978.6	196.80	890.1	179.00	1,544.6	310.62
Kahama	142.22	987.2	198.53	898.7	180.73	1,553.2	312.35
Kishapu	157.00	996.1	200.32	907.6	182.52	1,562.1	314.14
Ushetu (Nyamilangano)	159.75	1,002.5	201.60	1,074.0	215.98	1,568.5	315.43
Simiyu (Bariadi)	170.00	1,137.7	228.79	1,005.7	202.25	1,680.2	337.89
Busega (Nyashimo)	163.00	1,183.5	238.00	966.9	194.44	1,722.8	346.46
Itilima (Lagangabilili)	173.00	1,122.9	225.82	1,031.0	207.33	1,687.7	339.40
Maswa	161.40	1,055.4	212.24	966.9	194.44	1,621.4	326.06
Meatu (Mwanhuzi)	168.45	683.3	137.41	990.0	199.09	1,677.0	337.24
Singida	90.48	686.6	138.08	773.5	155.55	1,252.6	251.90
Iramba	102.57	773.9	155.63	685.4	137.83	1,339.9	269.45
Manyoni	75.01	567.6	114.14	639.1	128.52	1,133.6	227.97
Ikungi	86.00	650.1	130.74	721.5	145.09	1,216.1	244.56
Mkalama (Nduguti)	115.00	782.7	157.40	750.8	150.99	1,326.5	266.76

Regions with Districts	EWURA Delivery Rate from DSM Port (TZS/Ltr)	Distance from DSM Port	Consultant's Proposed Transport Charge from DSM (TZS/ltr)	Distance from Tanga Port	Consultant's Proposed Transport Charge from Tanga Port (TZS/ltr)	Distance from Mtwara Port	Proposed Transport Charge from Mtwara Port (TZS/ltr)
Songwe (Vwawa)	116.09	839.4	168.80	1,035.2	208.18	1,176.9	236.67
Songwe (Mkwajuni)	122.98	914.1	183.83	1,086.6	218.52	1,205.6	242.45
Ileje	119.99	898.9	180.77	1,048.8	210.91	1,158.5	232.97
Momba (Chitete)	125.19	969.9	195.05	1,066.5	214.47	1,261.4	253.67
Tunduma	120.25	914.7	183.95	1,064.6	214.09	1,206.2	242.57
Tabora	153.90	825.0	165.91	896.5	180.29	1,391.0	279.73
Igunga	107.90	821.3	165.16	733.1	147.43	1,387.3	278.99
Kaliua	172.80	948.2	190.68	1,019.7	205.06	1,514.2	304.51
Ulyankulu	166.95	892.0	179.38	963.4	193.74	1,458.0	293.20
Nzega	118.43	901.3	181.25	812.7	163.43	1,467.3	295.07
Sikonge	165.60	868.5	174.66	940.0	189.03	1,434.5	288.48
Urambo	166.95	915.2	184.05	986.6	198.41	1,481.2	297.87
Uyui	154.80	767.3	154.30	838.8	168.68	1,333.3	268.13
Tanga	46.02	331.1	66.58	-	-	898.3	180.65
Handeni	25.48	252.2	50.72	161.0	32.38	819.4	164.78
Kilindi	60.00	310.2	62.38	221.7	44.58	877.4	176.45
Korogwe	39.00	281.1	56.53	99.0	19.91	848.3	170.59
Lushoto	48.75	353.7	71.13	171.6	34.51	920.9	185.19
Mkinga (Maramba)	60.30	375.0	75.41	51.4	10.34	942.8	189.60
Muheza	46.02	292.4	58.80	41.3	8.31	859.6	172.87
Pangani	52.65	361.4	72.68	53.5	10.76	928.6	186.74

9.5 OMCs Observations

Data collected from OMCs covered a significant share of total volumes sold. A total of 13 OMCs provided their data, namely: WF1 up to WF13.

Specifically, WF4 did not submit the data as required by the questionnaire. The consultant filled the questionnaire in based on annual financial data submitted by WF4 in from Audited Financial Statements for the years 2013 to 2018 but was unable to split the amounts between retail and non-retail. As a result, the totals were used as an approximation of the wholesale business. Several other businesses, namely WF4, WF6, WF8, WF9 and WF11 did not provide volume information, rendering meaningful analysis challenging.

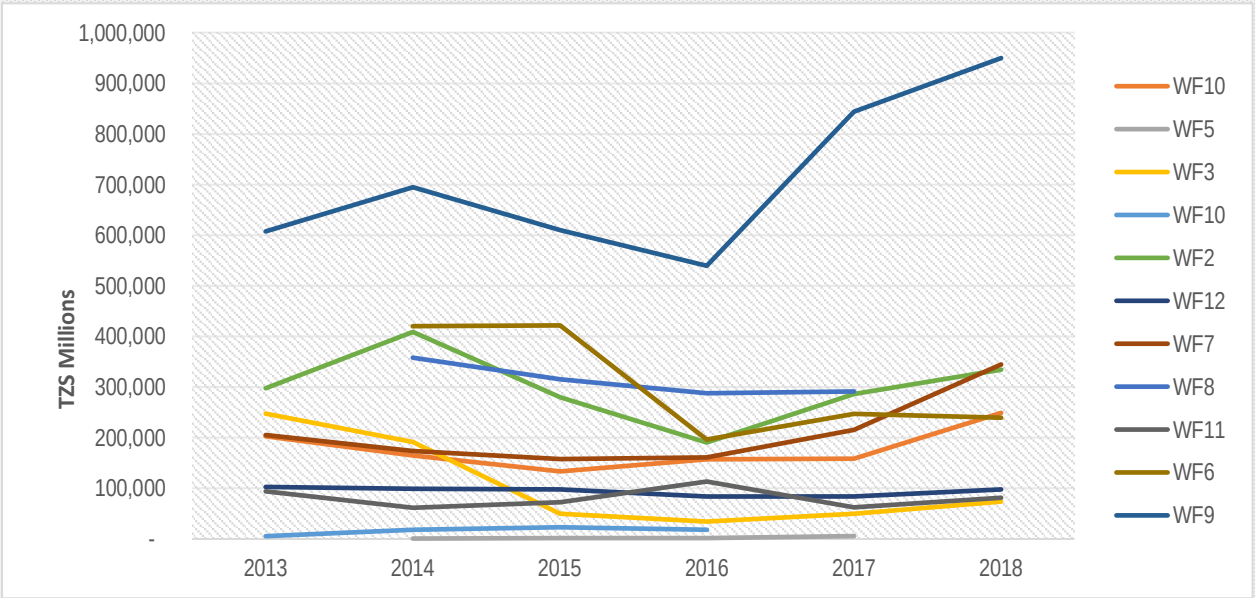
The consultant noted gaps and inconsistencies in the data provided. However, the consulting team was able to use experience of the industry, team leader expertise, background in financial management as well as general common-sense approaches to clean the data where possible so as to render it usable. For instance, where an OMC reported its revenues and expenditure as retail revenues and expenditure with no 'non-retail' revenues and expenditure, it was assumed to be an error and the data was transferred to the non-retail section (e.g., WF1, WF5, WF9, WF11).

Where OMCs reported combined retail and wholesale data, the consulting team used the totals as representative of wholesale margins (e.g., WF2 and WF4). It was challenging to utilise only the gross and net margin information calculated from the data from the following OMCs due to the lack of product volume information from five (5) of the OMCs regardless of the efforts made to specifically request for volume information from such OMCs namely:

- WF4
- WF8
- WF9
- WF11
- WF12

The following Figure illustrates the revenues in TZS million over the period 2013 - 2018 for the OMCs for which data was submitted.

Figure 17: OMC Revenue 2013 - 2018



Source: INNOVEX calculations

From the above graph it was clear that of this self-selected sample WF9 had the largest revenues and therefore volumes by far. The data also illustrated an almost industry wide decline in revenues in 2015-2016, a trend only bucked by a few largely smaller OMCs and by WF8.

9.5.1 WF1

WF1 experienced a sharp increase in volumes from 2014 onwards with positive gross margin around 8%, and negative net margins, with net margins on value add typically below 1%. WF1 submitted its wholesale data as retail data which was corrected in the analysis.

9.5.2 WF2

WF2 submitted combined retail and wholesale data which was analysed as representative of wholesale data. WF2 experienced a positive gross margin for all the years for which data was submitted and a negative net margin from 2014 onwards. The net margin on value add was positive in 2013 only.

9.5.3 WF3

WF3 provided completed retail and non-retail data with split expenses, depreciation and taxes. The basis of the split of the costs between the two activities was not entirely clear but appears to be close in line with the volumes sold per activity. For the OMC margin analysis, the consultant therefore isolated the wholesale revenues and costs for the margin calculations.

WF3's gross margin had increased from a low base in 2013 and 2014 to over 6% in 2018. Net margins had been consistently negative at implausible levels of over -200% on average, which deteriorated even further when 2014, considered an outlier year was retained in the calculation of the average, for all the years for which data was submitted (2013-2018).

The share of retail sales volumes as a percentage of total sales volumes increased dramatically, reaching 35.8% in 2018 from only 11.4% in 2013.

The retail gross margin had been consistently positive, increasing from 6.8% in 2013 to 9.1% in 2018. The net margin had also been consistently positive, averaging at 2.6%. The net margin on value add had been significantly positive, averaging at 29.6%.

Wholesale volumes sold decreased dramatically from 2015 onwards and as positive margins were experienced in the retail sales, it's therefore safe to assume that the retail sales cross-subsidised the wholesale business to some extent, although they could not fully cover them.

9.5.4 WF4

WF4 did not provide the data as requested. The questionnaire was filled in using annual reports, which do not contain detailed volume information or data according to a precise split in revenues and cost allocation between wholesale and retail activities.

The consultant therefore treated the totals obtained as an approximation for the wholesale activities of WF4. It's important to note that wholesale activities are often more lucrative than retail activities and that the aggregation of the data may result in an underestimation of WF4's wholesale margins.

WF4 achieved a gross margin that was consistently positive, at approximately 8.7% on average for the period 2013-2018. Its net margin had been substantially lower, at approximately 0.9% per annum. The net margin on value add had been consistently positive, except for 2016 when revenues dropped significantly, but remained robust at 10.8% per annum on average. Its revenues had been increasing at an average annual rate of 9.2%.

9.5.5 WF5

WF5 experienced relatively high gross margins, at an average of around 10%, declining net margins and net margins on value add, both turning negative in 2017. Volumes and turnover had been growing rapidly from a small base in 2014.

9.5.6 WF6

WF6 has experienced steadfast positive gross margins of approximately 3.2% on average, and minimal net margins of 0.3% on average. The net margin on value add however had been consistently more positive, at 9.8% on average.

9.5.7 WF7

WF7 had shown substantial retail sales in addition to non-retail sales, with total retail sales volumes amounting to 42-47% of total volumes sold. WF7 submitted its data disaggregated for retail and non-retail, with separate depreciation and taxes, although the basis for the depreciation and other cost allocation was not explicit as the cost allocation method was not prescribed.

WF7's wholesale gross margin had been positive, around 3%, except for 2013 when the gross margin was1.6%. The net margin had fluctuated between positive and negative rates, and the net margin on value add had at times been highly negative or significantly positive, greater than 40% at times. Nevertheless, the average net margin on value add was negative.

WF7's gross retail margin had been positive at approximately 7% on average, although the net margin had been razored thin, close to 0.01%. The net margin on value add was steadily positive, at around 55%.

In this case, the retail margins had been a positive source of revenue, in theory cross-subsidising the wholesale margin. Subject to correctness of the cost allocation and economically useful life underpinning the depreciation charges whether these findings were the truly cost-reflective ones.

9.5.8 WF8

The data was not usable other than gross and net margin as no volume data was provided. A small gross margin was reported: 2.74% in 2013, increasing sharply to 15.11% in 2016.

The net margins were positive except in 2017 when the net margin turned sharply negative at -12.15% largely due to an unusual tax expense. The net margin on value add had been negative since 2014, suggesting either an unsustainable business model or data inaccuracies.

9.5.9 WF9

WF9 did not submit volume information. The gross wholesale margin had been consistently positive at an average of 8.6%, although was in decline since 2015.

The net margin had been positive, averaging at 3.6%, yet has recently dropped to below 1%. The net margin on value add experienced was robust at 42.5% on average.

9.5.10 WF10

A small percentage of total turnover was derived from retail sales. All costs were however ascribed to wholesale activities as no costs were provided for the retail sales. In order to maintain data consistency, the retail turnover was added to the total turnover before calculating average costs.

WF10 experienced a doubling in gross margin in the period 2013-2018 from 2-4% with a spike in 2016 of 7.2%, the net margin was negative in some of the years, with the net margin on value add turning positive from negative 2016 onwards, after a period of sustained negative net margins. The negative net margin was apparent from the high level of expenses (including cost of sales) compared to turnover.

9.5.11 WF11

The data was not usable other than gross and net margin as no volume data was provided and depreciation expenses were not provided.

WF11 did not provide any 'non-retail' data which was presumed to be an error, so the retail data submitted was used to represent the wholesale data. WF11 experienced a positive gross margin, and a small but positive net margin (except in 2015) and an increasing margin on value add.

9.5.12 WF12

WF12 did not provide tax information. WF12 experienced a positive gross margin, typically 5-8% and a small but positive net margin of around 1%. The net margin on value add had been positive and relatively large (above 20% in some years).