THE UNITED REPUBLIC OF TANZANIA

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Energy and Water Utilities Regulatory Authority

ISO 9001 : 2015 Certified

REGULATORY PERFORMANCE REPORT ON ELECTRICITY SUB-SECTOR FOR THE YEAR ENDED 30TH JUNE 2018



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TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

CHAIRMAN'S STATEMENT

On behalf of the Board of Directors of the Energy and Water Utilities Regulatory Authority (EWURA), I am pleased to give a brief overview of regulatory performance on Electricity Sub-Sector for the financial year ending 30th June 2018. Over the last 11 years EWURA has seen a steady growth in electricity sub-sector in terms of electricity demand, system expansion and quality of service which was enhanced by regulatory interventions. The Board of Directors will continue to oversee the regulatory functions in various aspects of the Electricity Supply Industry to ensure that electricity customers and the general public are supplied with electricity of the desired quality and reliability.

This being the third Regulatory Performance Report on Electricity Sub-Sector to be prepared by the Authority, I am convinced that the readers will find it useful and the information contained herein will assist in planning for improved performance in the subsequent years.

I wish to express my sincere thanks to the Government of the United Republic of Tanzania and other stakeholders for creating a conducive environment which enabled the Authority to conduct its functions effectively and efficiently. Furthermore, I wish to extend my special appreciation to the Minister for Water and Minister for Energy for supporting the Authority in achieving its intended goals.

Finally, let me take this opportunity to thank my fellow members of the Board of Directors for the cooperation I received from them, the Management and Staff of EWURA for their commitment, dedication and hardworking during the year under review.

Eng. Prof. Jamidu H.Y. Katima
Chairman, EWURA Board of Directors
May 2019

FOREWORD

During the period from 1st July 2017 to 30th June 2018, the Energy and Water Utilities Regulatory Authority (EWURA) continued with its commitment and dedication to oversee continuous improvement of its services to all stakeholders in regulated sectors under its purview, including the electricity sub-sector. The Authority is pleased to present to you the Annual Performance Report for the electricity sub-sector during the financial year 2017/18.

The Electricity Act, Cap 131 and EWURA Act, Cap 414 gives mandate to the Authority to regulate the electricity sub-sector in Mainland Tanzania. Under these Acts, EWURA is mandated to undertake technical and economic regulatory functions in the electricity sub-sector. Among the regulatory functions that are implemented by EWURA in the electricity sub-sector are geared towards: efficient and safe operation of the Electricity Supply Industry (ESI); protection of interests of consumers, the Government and other stakeholders; and attraction of investments into the sub-sector.

This annual performance report for electricity sub-sector presents regulatory activities carried out by EWURA and performance of licensees in the ESI in Mainland Tanzania during the period under review. It highlights the achievements attained and the challenges faced by EWURA as well as key performance indicators of the licensees operating within the electricity sector.

Some of the achievements during the fiscal year 2017/18, includes enacting subsidiary legislations, monitoring compliance of licensees and issuance of licences. Successful implementation of these activities has taken the electricity sector some steps forward as evidenced by growth in some areas such as increased energy demand and connectivity. The success is a result of hard work and cooperation from all EWURA Staff and the Board of Directors; hence I would like to take this opportunity to extend my sincere thanks to all Staff, Management and the Board of Directors of EWURA.

Nzinyangwa E. Mchany
ACTING DIRECTOR GENERAL
May 2019

ABBREVIATIONS AND ACRONYMS

AHEPO	:	Andoya Hydro Electric Power Limited
CAP.	:	Chapter
EMC	:	Electromagnetic Compatibility
ESI	:	Electricity Supply Industry
ESIRSR	:	Electricity Supply Industry Reform Strategy and Roadmap
EWURA	:	Energy and Water Utilities Regulatory Authority
GN	:	Government Notice
GO	:	Gas Oil
GW	:	Giga Watt
GWh	:	Gigawatt-hour
HFO	:	Heavy Fuel Oil
HSE	:	Health, Safety and Environment
IDO	:	Industrial Diesel Oil
IMO	:	Independent Market Operator
IPP	:	Independent Power Producer
IPTL	:	Independent Power Tanzania Limited
ISO	:	Independent System Operator
km	:	Kilometre
kV	:	Kilo Volt
LV	:	Low Voltage
MOE	:	Ministry of Energy
MV	:	Medium Voltage
MVA	:	Mega Volt Ampere
MW	:	Mega Watt
MWh	:	MegaWatt-hour
PPA	:	Power Purchase Agreement
REA	:	Rural Energy Agency
RPDL	:	Rural Power Development Limited
SPP	:	Small Power Producer
SPPA	:	Standardized Power Purchase Agreement
SPPT	:	Standardized Small Power Projects Tariff
TANESCO	:	Tanzania Electric Supply Company Limited
TANWAT	:	Tanganyika Wattle Company Limited
TBS	:	Tanzania Bureau of Standards
TGP	:	Tegeta Power Plant
TPC	:	Tanganyika Planting Company
UGP2	:	Ubungo Gas Plant 2
ZECO	:	Zanzibar Electricity Corporation
SAIFI-CP	:	System Avarage Interruption Frequency Index at Connection Point
COD	:	Commercial Operation Date

EXECUTIVE SUMMARY

The Electricity Act, Cap. 131 gives EWURA mandates to perform both technical and economic regulation of the Electricity Supply Industry (ESI) in Tanzania Mainland pursuant to Section 5 and 6 of the Act. This report presents the performance of the Electricity sub-sector during the period from 1st July 2017 to 30th June 2018.

During the reporting period, four regulatory tools were developed. These are the Electricity (Grid and Distribution Codes) Rules 2017; the Electricity (Net Metering) Rules 2017; the Electricity (Development of Small Power Projects) Rules 2017; and the Electricity (Procurement of Power Projects and Approval of Power Purchase Agreements) Rules 2017.

In executing the requirement of section 5 and 8 of the Electricity Act, six hundred and seven (607) licenses were issued of which seven (7) were electricity generation licenses and six hundred (600) were electrical installation licenses issued to individuals qualified to carry out electrical installation works.

As of 30th June 2018, the installed capacity was 1,518.2MW of which 1,461.06 MW was for main grid and 57.14MW was for off-grids. However, this capacity does not include own use generation. Maximum Demand for the main grid, during the year under review, was 1,045.70MW as recorded on 27th June 2018 while the generation mix consisted of natural gas 64.11%, hydropower 31.89%, liquid fuel (HFO/IDO/GO) 3.75% and biomass 0.25%.

During the reporting period, there were twelve entities licensed to conduct electricity activities. One licensee, (TANESCO) was engaged in electricity generation, transmission, distribution, supply and cross border trade activities. Nine (9) licensees were engaged in electricity generation, these are: Songas Tanzania Limited, Mwenga Hydropower Limited (MHL), Tanzania Wattle Company (TANWAT), Tanganyika Planting Company Limited (TPC), Andoya Hydro Electric Power Company Limited (AHEPO), Tulila Hydroelectric Power Company Limited, Yovi Hydropower Company Limited, Darakuta Hydropower Development Company Limited and Matembwe Village Company Limited. Two (02) licensees were involved in electricity distribution and supply, namely, Mwenga Power Services limited and Andoya Hydro Electric Power Company (AHEPO).

As of 30th June 2018, the transmission network comprised of 5,646.27km of which 543km were for 66kV; 1,672.57km for 132kV; 2,760.7km for 220kV; and 670km for 400kV. The distribution network comprised of 103,663.86km of which 103,289.36km were for TANESCO, 351km for Mwenga Power Services Limited and 23.5km for Andoya Hydro Electric Power Company Limited.

The electricity energy losses for TANESCO were 14.72% of which 5.89% was for transmission system and 8.83% for distribution system. Mwenga Power Services limited has a distribution loss of 3.69% and Andoya 7.412%. The relatively lower distribution losses for Mwenga and Andoya are attributed to their relatively smaller in size and better maintained networks.

In financial performance, revenue generation, collection efficiency, profitability and cost per unit supplies were analyzed for TANESCO, Andoya, Mwenga Power Services limited, Songas, Mwenga Hydo and Tulila Hydro. All utilities reported increases in total revenue and improvement in collection efficiency with the exception of Mwenga Power Services limited. Profitability trends show that generation utilities i.e. Songas, Mwenga Hydro and Tulila earned profit, while those doing distribution i.e. TANESCO and Mwenga Power Services limited made losses. The losses generated by distribution utilities is mainly due to increased costs of providing electricity services and low growth in electricity demand.

Sector achievements during the reporting period includes increased level of awareness to electrical installation licenses, issuance of six hundred (600) electrical installation licences; issuance of seven (07) generation licences; publishing four regulatory tools; connection of 198,286 new customers; reduced electricity losses, and increased demand of the regulatory intervention to matters regarding licensing, consumer complaints resolution and electricity accident investigation;

Challenges observed during the period under review include low electricity demand growth, low power reliability caused mainly by poorly maintained supply network and low private sector participation in the power sector. To address these challenges, the Authority will continue and intensify various regulatory interventions which include regulatory tools development, awareness campaigns, monitoring and inspections.

1. INTRODUCTION

Energy and particularly electricity plays a critical and vital role in the socio-economic development of any country. Availability, affordability, reliability and access to electricity services are key ingredients towards achieving desired socio-economic development in Tanzania. To ensure continuous improvement of these aspects of the electricity supply system, the Energy and Water Utilities Regulatory Authority continued to implement its mandate to regulate the sector during the financial year 2017/2018, which ended on the 30th June 2018. This report presents a snapshot of the sector performance implemented by various stakeholders.

In line with the National goals as stipulated in the National Plans and the industrialisation agenda, EWURA's strategic objective was to improve quality, availability and affordability of the regulated services, electricity being among them. The strategies for implementation of this objective included development and review of regulatory tools; monitoring and enforcing quality of service standards; promotion of commercial viability of regulated suppliers; development and implementation of measures to protect consumer interests; licensing and registration of regulated suppliers; promotion of modern energy use; ensuring efficient procurement of regulated infrastructure; and facilitating investments for sustainable supply of electricity. The Electricity Act, Cap. 131 gives EWURA mandates to perform both technical and economic regulation of the Electricity Supply Industry (ESI) in Mainland Tanzania pursuant to Section 5 and 6 of the Act.

The Authority's activities in relation to electricity sub-sector include: protecting customer interests through the promotion of competition; promoting access to, and affordability of electricity services particularly in rural areas; promoting least-cost investment and the security of supply for the benefit of customers; promoting improvement in the operational and economic efficiency of the electricity supply industry and efficiency use of electricity; promoting appropriate standards of quality, reliability and affordability of electricity supply; taking into account the effect of the activities of the electricity supply industry on the environment; protecting the public from dangers arising from the activities of the electricity supply industry; and promoting the health and safety of the persons employed in the electricity supply industry.

This report presents the performance of key players in the electricity sub-sector, particularly in electricity generation, transmission, distribution, supply and cross border trade, during the period from 1st July 2017 to 30th June 2018. Currently the ESI is dominated by TANESCO, a vertically integrated utility, 100% owned by the Government of Tanzania while other players have relatively small stake in the ESI in the generation and distribution segment. The report also, presents the overall performance of regulatory activities accomplished, achievements attained, and challenges faced during the period under review.

The Authority therefore expects that this report will provide useful information or data to stakeholders and readers as far as the electricity sub sector is concerned. Moreover, the Authority is looking forward to receiving constructive and candid feedback on ways to improve the report, so that future similar ones are authored in a manner that will meet stakeholders' expectations and satisfaction.

2. REGULATORY TOOLS AND STANDARDS

During the reporting period, various regulatory tools and standards were developed by the Authority and other key stakeholders. Section 40 of the EWURA Act Cap 414 and Section 45 of the Electricity Act 2008 give mandate to the Authority to make subsidiary regulatory tools (rules, codes, guidelines, manuals and declarations) in respect of all matters considered necessary or desirable to give effect to the Acts. A list of all the existing regulatory tools and standards is as shown in **Annex 1**.

For the financial year which ended on 30th June 2018, the following regulatory tools were reviewed and/or prepared:

a) The Electricity (Grid and Distribution Codes) Rules, 2017, Government Notice No. 451, published on 17th November 2017 which provides technical and procedural rules and standards for the transmission and distribution system participants;

b) The Electricity (Net Metering) Rules, 2017, Government Notice No. 441/2017, published on 27th October 2017 which provides rules for connecting small (up to 1MW) renewable generation facilities to the DNO system for the purpose of storing energy which can be used when the generation facility is not able to generate;

c) The Electricity (Development of Small Power Projects) Rules, 2017, GN. 440/2017, published on 27th October 2017 which governs small power projects (generation and min-grids) up to 10MW; and

d) The Electricity (Procurement of Power Projects and Approval of Power Purchase Agreements) Rules 2017, Government Notice No. 245/2017, published on 14th July 2017 which governs efficient procurement of power projects and procedure for PPA approvals.

3. LICENSING AND REGISTRATION

Pursuant to Section 8 of the Electricity Act, 2008, any person undertaking or seeking to undertake generation, transmission, distribution, supply, system operation, cross-border trade in electricity, physical and financial trade in electricity, and electrical installation activities shall require a licence. Section 5 of the Electricity Act, 2008, mandates the Authority to award licences to entities undertaking or seeking to undertake a licenced activity.

However, Section 18 of the Electricity Act, 2008, mandates the Authority to exempt any person from application of the requirement of Section 8. Subsequent to this, Section 50 of the Electricity (Development of Small Power Projects) Rules 2018, Government Notice No. 77, published on 02nd March 2018, exempt Service providers of electricity services below 1 MW from requiring licenses but must be registered by the Authority.

During the period under review, six hundred and seven (607) licenses were issued of which seven (07) were electricity generation licenses and six hundred (600) were electrical installation licenses issued to individuals qualified to carry out electrical installation works. Electricity generation licences issued have a potential generation capacity of 97.3MW when commissioned as per **Table 1** which indicates a decrease of 52.7MW comparing with previous year where generation licences issued had potential generation capacity of 150MW when commissioned. A list of all power supply services licensees is as per **Annex 2.**

Table 1: Electricity Generation Licenses Issued for Year 2017/18

S/N	Name of Licensee	Region	Capacity (MW)	Source	Duration	Description of licence
a	Dangote Cement Limited	Mtwara	60	Diesel	3 years from 3rd November 2017 to 2nd November 2020	Provisional, PEGL-2017-006
b	Shanta Mine Co. Ltd	Mbeya	7.5	Diesel	3 years from 7th December 2016 to 6th December 2019	Provisional, No. PEGL-2016-008
			0.7	solar		
c	Kagera Sugar Limited	Kagera	6.2	Hybrid (Biomas	3 years from 1st march 2018 to 28th February 2021	Provisional, No. PEGL-2018-002
d	Ludewa Capacity Building	Njombe	10	Hydro	3 years from 29th August 2017 to 28th August 2020	Provisional, No. PEGL-2017-005
e	Mkonge Energy Systems Co. Ltd	Tanga	9	Hydro	3 years from 15th December 2017 to 14th December 2020	Provisional, No. PEGL-2017-007
f	Mkonge Energy Systems Co. Ltd	Tanga	2	Hydro	3 years from 15th December 2017 to 14th December 2020	Provisional licence, No. PEGL-2017-008
g	Ninety - Two Limited	Arusha	1.9	Hydro	3 years from 2nd February 2018 to 1st February 2021	Provisional, PEGL-2018-001
	Total		**97.3**			

Source: EWURA Licence Data Base

Electrical installations licenses issued were in classes A, B, C, D and W as shown in **Table 2**. This indicates a decrease of 56 licenses when compared with previous year where 656 licenses were issued. A complete list of electrical installation licensees can be accessed through the Authority's website "www.ewura.go.tz".

Table 2: Electrical Installation Licenses Issued for Year 2017/18

S/N	Type of Licence	Number
	Class A	12
	Class B	52
	Class C	225
	Class D	255
	Class W	56
	Total	**600**

Source: EWURA Licence Data Base

As of 30th June 2018, four Very Small Power Producers (VSPP) with total installed capacity of 453.03kW were registered for conducting generation and min-grid distribution activities, serving 887 customers in areas TANESCO grid has not reached. Additionally, two VSSP were issued with Provisional registration with potential generation capacity of 72kW that will serve 60 potential customers, as per **Table 3**. There is an increase of number of registered VSPP as compared to the previous financial year where two VSPP were registered. The complete list of registered VSPP is as per **Annex 3.**

Table 3: Registered entities for the year 2017/18

S/N	Entity with Full Registered	Region	District	Village	Type of Activity	Generation Capacity (MW)	Number of customers served	Source
1	E-On Off Grid Solution	Arusha	Ngorongoro	Ololosokwan	Generation and Distribution	0.006	25	Solar
				Soitsambu	Generation and Distribution	0.006	24	Solar
				Digodigo	Generation and Distribution	0.006	56	Solar
				Malambo	Generation and Distribution	0.01314	86	Solar
		Dodoma	Chemba	Itaswi	Generation and Distribution	0.00639	136	Solar
			Kondoa	Kwa Mtoro	Generation and Distribution	0.0095	189	Solar
2	Ruaha Energy Company Limited	Morogoro	Kilosa	Zombo	Generation and Distribution	0.128	200	Solar
3	Kiliflora Limited	Arusha	Usa River	Magadirisho	Generation	0.23	1	Small Hydro
4	Watu na Umeme.	Tanga	Korogwe	Zombo	Generationand Distribution	0.048	170	Solar
					Total	**0.45303**	**887**	
	Entity with Provisional Registration	**Region**	**District**	**Village**	**Type of Activity**	**Capacity (MW)**		**Source**
1	Husk Power Systems Limited	Morogoro	Kilosa	Malangali	Generation and Distribution	0.048	20	Solar
2	Sustainable Energy Services Company Ltd.	Coast	Chalinze	Kibindu	Generation and Distribution	0.024	40	Solar
					Total	**0.072**	**60**	

Source: EWURA Licence Data Base

4. REGULATORY APPROVALS

Pursuant to Section 5 of the Electricity Act, 2008, the Authority has mandate to approve and enforce tariff and fees charged by licensees and approve the initiation of procurement of new installation of the electricity supply. Also, pursuant to Section 25 of the Electricity Act, the Authority has mandate to approve Power Purchase Agreements (PPAs) and Section 7 of the EWURA Act, Cap. 414 mandates the Authority to facilitate resolution of complaints and disputes between service providers and their customers.

4.1 Initiation of Procurement of New Electricity Supply Installations

During the reporting period, the Authority did not receive any application for approval for Initiation of Procurement of new electricity supply installations. As part of its regulatory function, the Authority continued to monitor implementation of previous approvals, including those approved in the year ended June 2017 where two power projects were approved, namely Kikagati Power Company Limited (KPCL) for development of a 14MW hydropower project located at the border townships of Kikagati in Uganda and Murongo in Kyerwa District of Tanzania and 200-350MW Combined Cycle Gas Power Project (Somanga PPP) to be implemented by TANESCO and a private entity at Somanga Fungu in Kilwa District.

4.2 Power Purchase Agreements

During the period under review, the Authority did not receive any application for approval of Power Purchase Agreement, instead it continued to monitor implementation of previously approved PPAs between power producers and TANESCO as an off taker as per **Table 4**.

Table 4: PPA and SPPA for Year 2017/18 for operating Power Plant

S/N	Name of Power Producer	Capacity (MW)	Location
	Songas Tanzania Ltd	189	Dar es Salaam
	Darakuta Hydropower Development Co. Ltd	0.32	Magugu – Babati
	Ruaha Energy Company Limited	0.59	Njombe
	Tanganyika Wattle Company Ltd	2.75	Njombe
	Mwenga Hydro Ltd (MHL)	4.00	Mufindi
	Tulila Hydro Electric Plant Co. Ltd	7.50	Songea
	Andoya Hydro Electric Power Co. Ltd	1.00	Mbinga
	Ngombeni Power Limited	1.40	Mafia
	TPC Ltd	17.5	Moshi
	Total	**224.06**	

Source: EWURA PPA & SPPA Data Base

4.3 Rates and Charges

During the year under review, the Authority did not receive any application for approval of tariffs; instead, it continued to monitor implementation of previous approvals as shown here under;

a) The Electricity (standardized small power projects tariff) Order 2017 with Government Notice No. 389 which was published on 29th September 2018 and came into operation on 1st April 2017. It guides the development of SPPs for hydro, biomass, solar and wind technology. Furthermore, it guides on the feed in tariff to the main and mini grid which includes tariff for avoided cost and technology based tariff for SPP which entered SPPA with TANESCO before and after May 2015 respectively as per **Annex 4**.

b) The Tanzania Electric Supply Company Limited ("TANESCO") Tariff Adjustment Order No. 2016-010 of 1st April 2016. It guides sales of electricity to its customers in different categories as per **Annex 5**.

c) The Electricity (Mwenga Hydro Limited tariff application) order, 2012 effective from 1st July 2012. It guides sales of electricity to customers in different categories as per **Annex 6**.

4.4 Complaints and Dispute Resolutions

During the reporting period, a total of 134 complaints raised by customers on various matters related to electricity supply services were attended to by the Authority. Out of these, 65 (sixty-five) complaints were resolved and 69 (sixty-nine) were in progress of being resolved**.** The nature of complaints disputes included; electricity billings, compensation due to fire accident and power disconnection disputes.

The Authority will continue to raise awareness to service providers on the importance of providing satisfactory service to their customers as well as resolving disputes before they are reported to the Authority by their customers. Also, the Authority will continue to raise awareness to customers of service providers to report to the Authority on any disputes related to unsatisfactory provision of services that has been reported but not resolved by their respective service providers.

5. PERFORMANCE MONITORING

Section 31 of the Electricity Act, 2008 mandates the Authority to monitor and assess compliance with the Electricity Act. Section 30(1) of the Electricity Act, 2008 requires the Authority to establish system and procedures to monitor and measure licensees' performance. Section 15(4) of the Electricity Act, 2008 requires licensees to submit to the Authority, data and information relating to performance of their functions.

5.1 Technical Performance

Technical performance in this report, considers performance in electricity generation, transmission, distribution, supply and cross-border trading.

5.1.1 Electricity Generation Performance

Performance in electricity generation is analysed with respect to installed capacity, maximum demand, generation mix, plant availability, plants utilisation and energy dispatched for the 10 (ten) licensees who were operating during the period under review as per **Table 5**.

a) Installed Capacity

Installed Capacity refers to the total name plate capacity (MW) of all generators connected in the grid (main grid and off grid).

As of June 2018, the installed capacity was 1,518.2MW (1,461.06 for main grid and 57.14 for off-grid)**.** Contribution of each power plant and each licensee in the installed capacity is as per **Annex 7** and **Table 5,** respectively.

Comparing to last year which ended June 2017 with installed capacity of 1,457.16MW (1,366.60MW for main grid and 90.56MW for mini grid), there is an increase of 61MW (4%) which implies increase in power generation investment. Furthermore, there is increase of 94.4MW (6.91%) in the main grid and decrease of 33.42MW (39.9%) in off-grid which implies increase in investment in expanding and connecting main grid into areas served by mini-grids.

Additional capacity is expected from power plant currently under development which includes; Stigler's Gorge hydro power plant - 2,100MW, Kinyerezi II gas power plant - 248.22MW, Kinyerezi I extension gas power plant - 185MW, and a share of 27MW from Rusumo hydro power plant (80MW).

Table 5: Licensees Contribution in Installed Capacity for Year 2017/18

S/N	Name of Licensee	Number of Power Plants	Installed Capacity (MW)	% Contribution
	TANESCO	27	1,305.56	85.99%
	Songas Tanzania Limited	1	189.00	12.45%
	Mwenga Hydropower Limited (MHL)	1	4.00	0.26%
	Tanzania Wattle Company (TANWAT)	1	1.5	0.10%
	Tanganyika Planting Company Limited (TPC)	1	9.00	0.59%
	Andoya Hydro Electric Power Company Limited,	1	0.50	0.03%
	Tulila Hydroelectric Power Company Limited	1	5.00	0.33%
	Yovi Hydropower Company Limited	1	0.95	0.06%

	Darakuta Hydropower Development Company Limited	1	0.32	0.02%
	Matembwe Village Company Limited.	1	0.59	0.04%
	Other SPP (Very Small Power Project)	27	1.78	
	Total	**36**	**1,518.2**	

Source: EWURA Licence Data Base

The list and capacity of power plant owned by TANESCO that contributes 1,305.56MW in the installed capacity as shown in Table 5, is shown in annex 7. Furthermore, list and capacity of off-grid power plant that contributes 57.14MW in the installed capacity is shown in Annex 7.

b) Maximum Demand

Maximum demand refers to the highest level of electrical demand recorded during the period under review.

During the period under review, Maximum Demand for the main grid was 1,045.70MW as recorded on 27th June 2018.

Comparing to the previous year, which ended June 2017, where maximum demand was 1,051.27MW as recorded on 14th February 2017, there is a decrease of 5.57MW.

c) Electricity Generation Mix

Electricity generation mix refers to a group of different primary energy sources (e.g. hydro, gas, coal etc.) from which secondary energy (electricity) is produced. During the period under review, generation mix consisted of natural gas 64.11%, hydropower 31.89%, liquid fuel (HFO/IDO/GO) 3.75% and biomass 0.25% as shown in **Figure 1.**

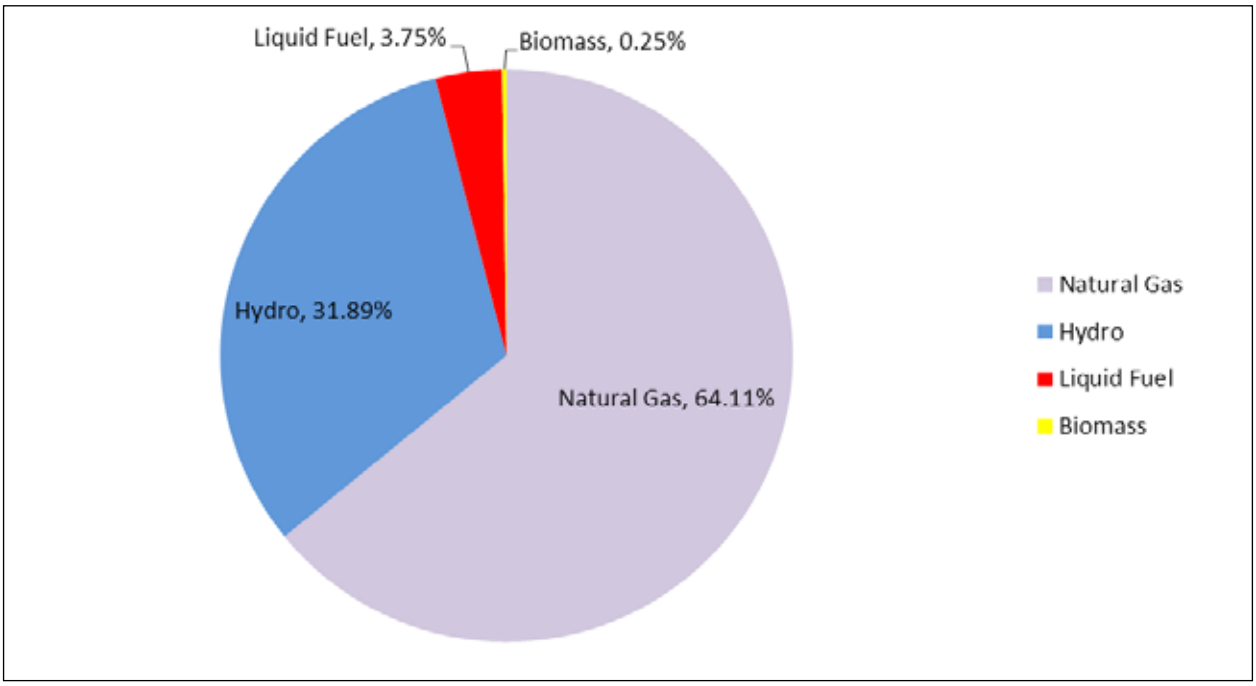

Figure 1: Electricity Generation Mix (%)

Source: Daily operation Reports from TANESCO.

d) Electricity Generation and Imports [GWh]

During the period under review, a total of 7,132 GWh were generated and imported as per **Table 6** and **7** respectively, which implies a 0.4% increase as compared to 7,100 GWh reported during the previous financial year. These units were received from TANESCO plants, IPPs, SPPs and imports from neighbouring countries (Kenya, Uganda and Zambia).

Total import was 113.62GWh of which 1.61GWh was from Kenya, 85.21GWh from Uganda and 26.80GWh from Zambia for supply of electricity to Namanga Area in Arusha Region, Kagera Region and Rukwa Region respectively. This indicates an increase of 11.228GWh equivalent to 9.88% from 102.39GWh reported in the previous year.

Table 6: Electricity Generation and Imports (GWh) - TANESCO, IPP, SPP and Imports

No.	Source	Amount (GWh)	% Contribution
1	TANESCO	5,510.76	77.27
2	IPP (Songas)	1,445.28	20.27
3	Small Power Producers (SPPs)	61.72	0.87
4	Cross Border Imports	113.62	1.59
	Total	**7,131.47**	**100**

Source: TANESCO Daily Operation Reports & Other Licensees Annual Reports

Table 7: Electricity Generation and Imports (GWh) – Grid, Off-Grid, imports and SPP

Description	Amount (GWh)	% Contribution
Grid	6,772.123	94.96
off- Grid	183.912	2.58
Cross Border Imports	113.709	1.59
SPPs	61.724	0.87
Total	**7,131.468**	**100**

Source: TANESCO Daily Operation Reports & Other Licensees Annual Reports

e) Power Generation Plants Availability

Power plant availability refers to amount of time the plant is able to produce electricity over a certain period, divided by total amount of time in the period. It measures the time the power plant is ready to generate electricity throughout the year. In this report, the plant availability recorded during maximum demand as per the daily operation system report has been assumed to be the daily availability of the power plant.

During the period under review, average availability of all hydro power generation plants was 96.195%, Gas Fired Power Plants 71.408%, and Liquid Fuel Power Plant 83.333 as per **Annex 8** and **Table 8**. The Authority will continue to monitor all power plants to ensure that maintenance is done, and each power plants availability improves towards 95% minimum.

f) Plant Utilization

Plant utilization or use factor is the ratio of the time that a power plant is in use to the total time that it could be in use. It measures the time the power plant was in operation throughout the period

when it was available. In this report, energy generated for each plant has been used to calculate utilisation of the plant as reported in the daily system report by TANESCO.

During the period under review, average utilisation of all hydro power generation plants was 51.997%, Gas Fired Power Plants 69.026%, and Liquid Fuel Power Plant 66.333% as per **Annex 8** and **Table 8**. The Authority is continuing to monitor utilisation of power plants to ensure that all plants operate to its maximum in accordance with its availability (except for HFO/IDO and GO plants) without disrupting dispatch merit order.

Table 8: Power Plant availability and Utilisation

Plants Name	Plant Availability (%)	Plant Utilization (%)
hydro Power Plants	96.195	51.997
Gas Fired Power Plants	71.408	69.026
Liquid Fuel Power Plant	83.333	66.333

Source: Daily system operation report from TANESCO

5.1.2 Electricity Transmission Performance

In this report, electricity transmission performance is analysed with respect to line length, substations, number of customer, System Average Interruption Frequency Index at Connection point (SAIFI-CP) and Outages. During the period under review, only one licensee (TANESCO) was in operation at 66kV, 132kV, and 220kV.

a) Transmission Infrastructure

As of 30th June 2018, transmission network comprised of 5,646.27km of transmission lines as per **Table 9**. Total length of new transmission lines commissioned during the period under review is 250km as per **Table 10**. Also, the network comprised of 48 grid substations of total capacity 3,533.20MVA as per **Table 11** and one Grid Control Centre (GCC) located at Ubungo in Dar es Salaam city. Additional projects expected to be implemented is as shown in **Annex 9**.

Table 9: Existing Transmission Infrastructure Line Length as of June 2018

Voltage (kV)	**66**	**132**	**220**	**400**	**Total (km)**
Length (km)	543	1,672.57	2,760.7	670	5,646.27

Source: TANESCO Annual Reports

Table 10: Transmission Lines Commissioned in year 2017/2018

Voltage (kV)	From	To	Length (km)
220	Madaba	Songea	140
220	Makambako	Madaba	110
	Total		**250**

Source: PSMP 2016 & TANESCO Annual Reports

Table 11: Transmission Network Substation

Voltage (KV)	Number Of Substations		Capacity (MVA)	
	2016/2017	2017/2018	2016/2017	2017/2018
66	7	7	88.6	88.6
132	25	27	1,324	1,598.9
220	19	19	2,545.8	2,578.3
400	0	0	0	0

Source: TANESCO Annual Reports

b) Customers

At the end of the reporting period, five customers were directly connected to the transmission network as per **Table 12**.

Table 12: Transmission Network Customers

Voltage (KV)	Customer name
220	1. Bulyanhulu Gold Mine
132	2. ZECO
	3. Twiga Cement,
	4. Simba Cement
	5. Rhino Cement

Source: TANESCO Annual Reports

c) Power System Reliability in Transmission Infrastructure

Power system reliability is analysed using System Average Interruption Frequency Index at Connection Point (SAIFI-CP) which is calculated as a ratio of total number of interrupted connection points (due to fault) to total number of connection points in the grid network (in this case 132 connection point). In addition, system reliability at each voltage level is analysed based on outage hours and frequency.

TANESCO being the only licensee in electricity transmission activity has set a Key Performance Indicator (KPI) for SAIFI-CP of less than or equal to 12 per annum. However, during the period under review, SAIFI-CP was 13.67 which is higher than the set target. Therefore, the Authority will continue to monitor implementation of preventive maintenance in order to minimize frequency of trips at Transmission Connection Points to below the target level.

Furthermore, total outage hours during the reporting period were 2,844 of which 377 affected the customers. This means in average the customers were interrupted with power supply (at transmission level) for 31.4 hours per month as per **Table 13**.

Table 13: Transmission line outage hours

Transmission Line Voltage	Planned Outages (Hrs)		Unplanned Outages (Hrs)		Total Outages (Hrs) that affect & not affect customers		Total Outages (Hrs)
	Affecting customer	Not affecting customer	Affecting customer	Not affecting customer	Affecting customer	Not affecting customer	
220kV	60	645	9	272	69	917	986
132kV	49	1,305	101	48	150	1,353	1,503
66kV	131	152	27	45	158	197	355
Total	**240**	**2,102**	**137**	**365**	**377**	**2,467**	**2,844**

Source: TANESCO Annual Reports

In addition, total outage frequency during the reporting period was 670 of which 152 affected the customers. This means on average the customers were interrupted 13 times per month as a result of grid outages as detailed in **Table 14**.

Table 14: Transmission line outage Frequency

Transmission Line Voltage	Planned Outages Frequency (Events)		Unplanned Outages Frequency (Events)		Total Outages Frequency (Events)		Total Outages (Events)
	Affecting customer	Not affecting customer	Affecting customer	Not affecting customer	Affecting customer	Not affecting customer	
220kV	9	71	23	22	32	93	125
132kV	8	89	94	315	102	404	506
66kV	12	11	6	10	18	21	39
Total	**29**	**171**	**123**	**347**	**152**	**518**	**670**

Source: TANESCO Annual Reports

Total grid failure for the period under review was 36.6 hours in 6 events. This indicates an increase of 24.05 hours and one (1) event as compared to the year ended June 2017 which had total grid failure of 12.55 hours in 5 events.

5.1.3 Electricity Distribution Performance

Electricity distribution performance is analysed with respect to infrastructure, number of customer, and outages for three licensees who were operating during the period under review. These are; Tanzania Electricity Supply Company Limited (TANESCO), Mwenga Power Services, and Andoya Hydroelectric Power Company Limited (AHEPO).

a) Distribution Network infrastructure

As of 30th June 2018, the distribution network comprised of 103,663.86km of which 103,289.36km were for TANESCO, 351km for Mwenga Power Services Limited and 23.5 for Andoya Hydro Electric Power Company Limited as per **Table 15**. when compared to previous year which ended on 30th June 2018, TANESCO had a decrease of 36,744.64km equivalent to 26%, this decrease is due to the fact that, TANESCO conducted an audit at the end of year 2018 which resulted in that decrease implying that the data reported in 2016/17 had errors. Mwenga had an increase of 211.00km equivalent to 151% and Andoya had no changes.

Table 15: Distribution Network Line Length

Lisensee	Voltage (kV)	Line Length (km)		Difference (km)	Difference (%)
		2016/17	2017/18		
TANESCO	33	35,895	32,342.31	-3,552.69	-10
	11	6,183	6,477.83	294.83	5
	0.23 and 0.4	97,956	64,469.22	-33,486.78	-34
	Total	**140,034**	**103,289.36**	**-36,744.64**	**-26**
Mwenga Power Services Limited	33	170	241	71.00	42%
	0.23 and 0.4	70	110	40.00	57%
	Total	**140**	**351**	**211.00**	**151%**
Andoya Hydro Electric Power Company Limited	11	10.5	10.5	0.00	0%
	0.23 and 0.4	13	13	0.00	0%
	Total	**23.5**	**23.5**	**0.00**	**0%**

Source: TANESCO, Mwenga & Andoya Annual Reports

b) Customers

As of 30th June 2018, the distribution network for the three licensees comprised of 2,226,817 customers of which 2,223,638 customers were for TANESCO, 2,921 customers for Mwenga Power Services Limited and 258 for Andoya Hydro Electric Power Company Limited as per **Table 16**. When compared to the previous year which ended on 30th June 2018, TANESCO had an increase of 223,748 customers equivalent to 11%, Mwenga an increase of 719 customers equivalent to 33% and Andoya an increase of 28 customers equivalent to 12%.

Table 16: Distribution Licensees Customer

	Number of customer		Difference	
Lisensee	**2016/17**	**2017/18**	**Number**	**%**
TANESCO	1,999,890	2,223,638	223,748	11
Mwenga	2,202	2,921	719	33
Andoya	230	258	28	12
Total	**2,002,322**	**2,226,817**		

Source: TANESCO, Mwenga & Andoya Annual Reports

c) Power System Reliability in Distribution Infrastructure

Power system reliability is supposed to be analysed with respect to System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI), and Customer Average Interruption Duration Index (CAIDI). SAIFI measures average number of supply interruptions per customer per year, SAIDI measures average duration (in minutes) of supply interruptions per customer per year and CAIDI measures average duration of each supply interruptions per customer who experienced the interruption per year.

Tanzania Standard, TZS 1374:2011, Section 7, requires that the annual SAIFI should be less than 3 interruptions per customer per year, the annual SAIDI should be less than 650minutes (10.8 Hours) per customer per year, and the annual CAIDI should be less than 4 minutes (0.1hours) per interruption event per year.

However, due to challenges of getting reliable data including actual number of customers affected by outages caused by lack of boundary energy meters, this report only analyses duration and frequency of outages in general. The Authority will continue to follow up on implementation of projects that will enable utilities to record the actual number of customers affected per each interruption.

Therefore, during the period under review, total outage hours were 28,224.29 hours for TANESCO, 194.68 hours for Mwenga Power Services Limited and 170 for Andoya Hydro Electric Power Company Limited as per **Annex 10** and **Table 17**.

Table 17: Electricity Distribution Outage Hours for year 2017/18

Licensee	**Planned**	**Unplanned**	**Total**
TANESCO	19,344	14,217	33,561
Mwenga	49.28	145.4	194.68
Andoya	36	134	170

Source: TANESCO, Mwenga and Andoya Annual Reports

The total outage frequency was, 29,094 for TANESCO, 201 for Mwenga Power Services Limited and 13 for Andoya Hydro Electric Power Company Limited as per **Table 18**.

Table 18: Electricity Distribution Outage Frequency for year 2017/18

Licensee	**2017/18 - Outage Frequency**		
	Planned	**Unplanned**	**Total**
TANESCO	-	-	29,094
Mwenga	21	180	201
Andoya	8	5	13

Source: TANESCO, Mwenga and Andoya Annual Reports

d) New Connections to Power Supply

According to the TANESCOs' Customer Service Charter, a customer must be connected within the duration specified in the charter. The specified duration is 30 working days if the customer is within 30m from supply line, 60 working days if within 30-100m, and 90 working days for new networks or high voltage line extension. The same has been used to all other licensees for analysis purposes.

During the reporting period, TANESCO achieved 72.2% of connections, Mwenga Power Services Limited 97.8% and Andoya Hydro Electric Power Company Limited 36.6% as per **Table 19**. Comparing to previous year ending 30th June 2018, there is an improvement on all licensees in connection of customers. The Authority will continue working to ensure that all applications are connected within the required time.

Table 19: Electricity Distribution Customer Connection

Licensee	2016/17				2017/18			
	Applications	Connections	%	Pending 2016/17	Applications	Total applications	Connections	%
TANESCO	325,164	221,554	68%	103,610	169,662	273,272	197,543	72.2%
Mwenga	387	380	98%	7	722	729	713	97.8%
Andoya	64	20	31%	44	38	82	30	36.6%

Source: TANESCO, RPDL, AHEPO Annual Reports

5.1.4 Electricity Energy Losses

Energy losses performance is analysed for three utilities which were in operation during the period. These are; Tanzania Electricity Supply Company Limited (TANESCO), Mwenga Power Services Limited, and Andoya Hydroelectric Power Company Limited (AHEPO).

In accordance with the Electricity Supply Industry Reform Strategy and Roadmap-ESI-RSR, 2014 Section 6.2 to 6.4, the desired total losses in the electricity supply industry is supposed to be 12% by 2025 as follows, 18% - 16% from July 2015 to June 2018, 16%-14% from July 2018 to June 2021, and 14%-12% from July 2021 to June 2025. However, the desired percentage targets do not allocate the portion for distribution segment.

During the period under review, TANESCO had a total energy loss of 14.72 of which 5.89 is for transmission and 8.83 for distribution which indicates a need for more reduction to reach the target of 14% by year 2021. Mwenga had a distribution loss of 3.69 and Andoya 7.412 as per **Table 20 and 21.** The relatively lower distribution losses for Mwenga and Andoya are attributed to their relatively smaller in size and better maintained networks.

Table 20: Electricity Transmission Losses

Licensee	Energy Received In Grid Transmission System (Gwh)	Energy Received For Distribution (Gwh)	Losses (Gwh)	Losses (%)
TANESCO	6,742.405	6,341.677	397.164	5.89

Source: TANESCO Daily Operation Reports

Table 21: Electricity Distribution Losses

Licensee	Energy Distributed To Customers (Gwh)	Energy Sales To Customer (Gwh)	Losses (Gwh)	Losses (%)
TANESCO	6,642.67	6,341.677	586.28	8.83
Mwenga	19.18	18.473	0.707	3.69
Andoya	2.995	2.773	0.222	7.412

Source: TANESCO, Mwenga and Andoya Annual Reports

Note: Total Energy distributed to customers by TANESCO was 6,642.67GWh of which 6,341.87 (95.47%) was from main grid power plants, 198.41GWh (2.99%) was from off grid (mini grid) power plants and 102.39GWh (1.54%) was from cross border import.

5.2 Financial Performance

This section highlights briefly the financial performance of TANESCO, a national vertically integrated utility carrying out generation, transmission and distribution activities. Andoya Hydroelectric Power Company Limited, a utility carrying out generation and distribution activities, Mwenga Power Services Limited, a utility carrying out distribution activities only and three licenced electricity generation utilities namely Songas, Mwenga Hydro Power Limited and Tulila Hydroelectric. Songas generates electricity and sells to TANESCO under a long term PPA whilst Mwenga and Tulila generate electricity and sell to TANESCO under SPPAs.

It should be noted that financial reporting period of the utilities differs, some report their financial performance using the fiscal year and others use the calendar year. Thus, the financial performance analysis of the utilities under review presented in this section is based on either the draft financial statements of FY 2017/18 or audited financial statements of the year 2017 and other data obtained from the utilities. For utilities that use a calendar year, the analysis covers the period of 2015, 2016 and 2017 which is in this report, these periods are referred to be 2015/16, 2016/17 and 2017/18, respectively. Moreover, for vertically bundled utilities including TANESCO and Andoya, the financial reports of the said utilities show the performance of the whole utility and not for each segment. Thus, the analysis of such utilities cover all segments.

5.2.1 Revenue Generation

During the FY 2017/18, electricity sales continued to be the main source of income for all utilities contributing an average of 86% to the total revenue. Revenue generated by each utility is as presented in **Figure 2** and detailed in **Annex 11**. All utilities reported increases in total revenue with the exception of Mwenga Hydro which reported a 4% decrease in revenue with a continuous revenue decline since FY 2015/16.

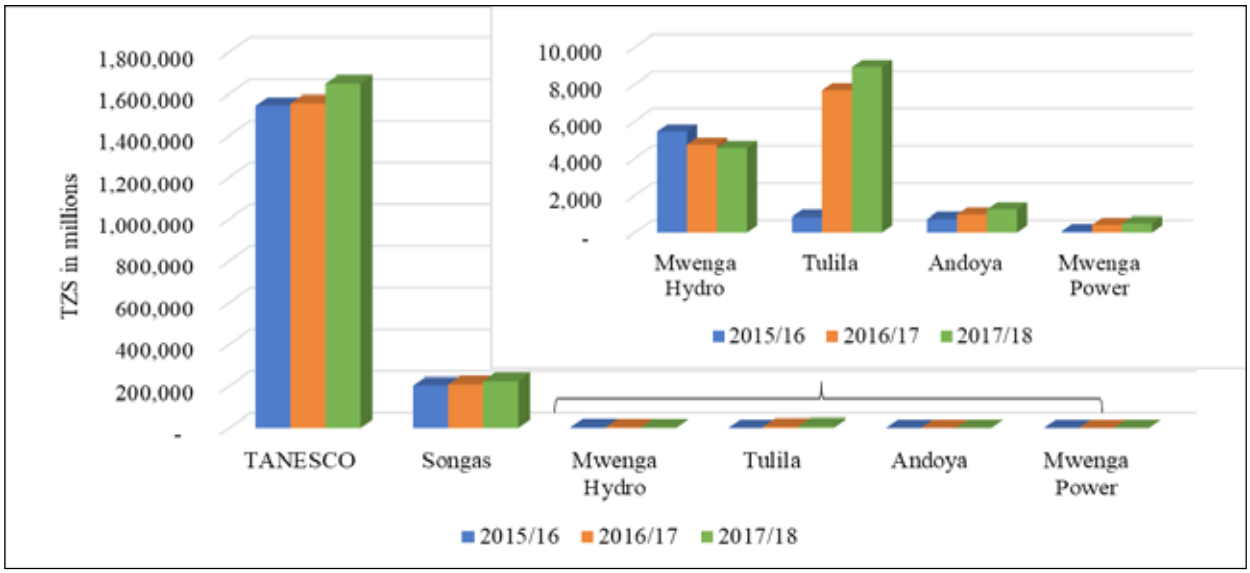

Figure 2: Total Revenue by Utility

Source: Licensee's Audited Financial Reports

Being a national utility, TANESCO generates most of the revenue in the electricity sub-sector mainly from sales made to general use customers (T1) and High Voltage supply customers that account for an average of 49% and 32% of the TANESCO total electricity sales revenue respectively, as depicted in **Figure 3**.

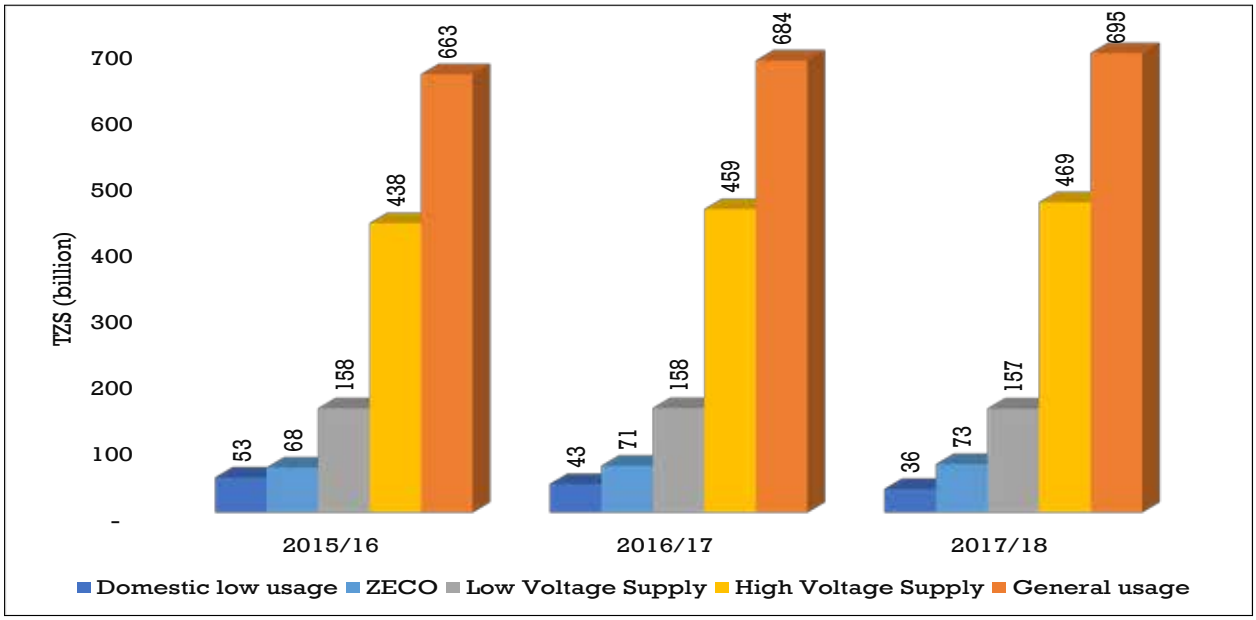

Figure 3: TANESCO Revenue by Customer Category

Source: TANESCO Audited Financial Reports

5.2.2 Collection Efficiency

Collection efficiency measures the ability of a utility to collect from its customers the amount billed for services rendered. All of Mwenga Power customers are connected with prepaid meters and hence a reported collection efficiency of 100%. As shown in **Figure 4**, the collection efficiency of all other utilities improved in FY 2017/18 with the exception of Mwenga Hydro which continued to worsen during the year. The high collection efficiency reported by TANESCO and Songas is the inclusion in the current year, collections of arrears from previous financial years.

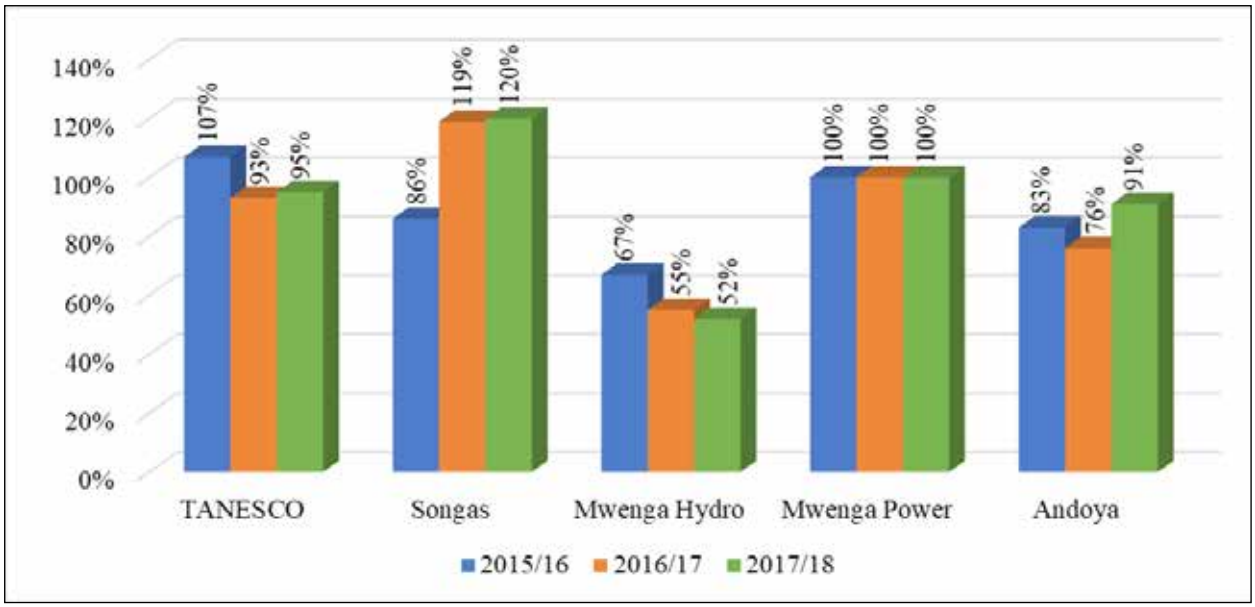

Figure 4: Collection Efficiency by Utility

Source: Licensee's Audited Financial Reports

5.2.3 Profitability

As shown in **Figure 5**, electricity generation utilities i.e Songas, Mwenga Hydro and Tulila earned profits during the period under review. In addition, Andoya, a utility that carries out generation and distribution activities, also generated a profit of TZS 48 million in FY 2017/18 after making losses for the preceding two years. TANESCO and Mwenga Power, utilities that carry out larger distribution activities made substantial losses in FY 2017/18 when compared to FY 2016/17 which may be attributable to the increase in operational and capital-related costs.

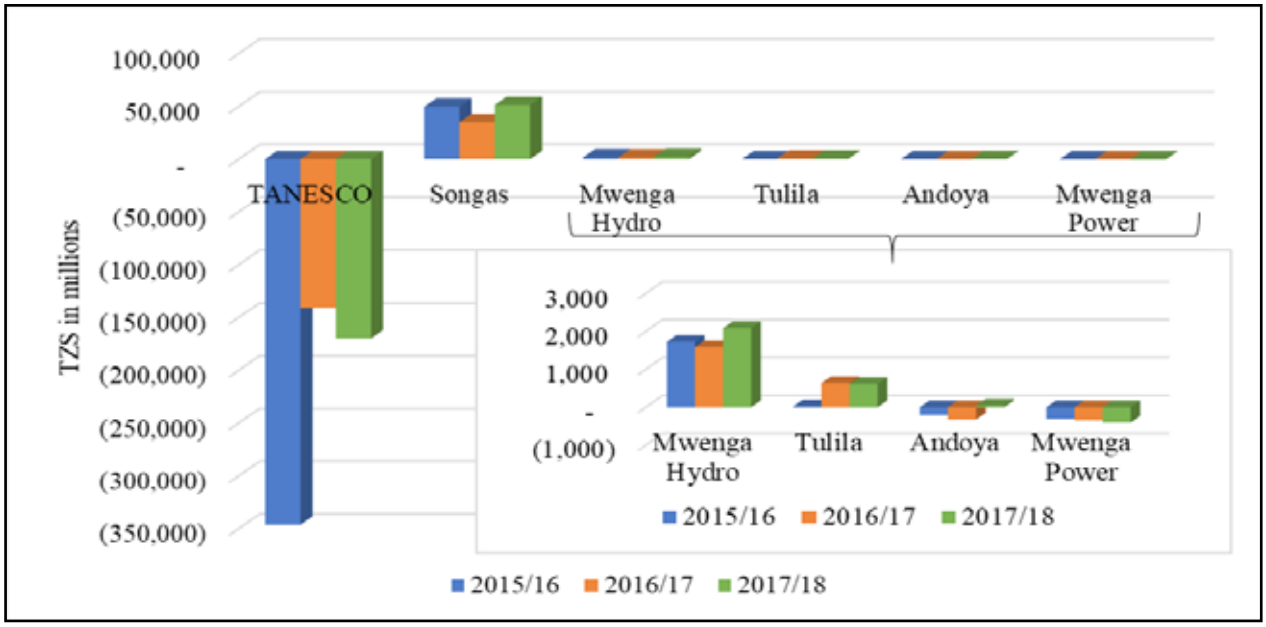

Figure 5: Profitability of Utilities

Source: Licensee's Audited Financial Reports

5.2.4 Total Cost per Unit Sold

Utilities that provide distribution services have reported high cost per unit sold while those generating electricity only have lower unit cost. Based on the applicable tariffs for TANESCO and Mwenga Power, **Figure 6** indicates that the two utilities cannot cover their costs of providing electricity services.

The cost per unit sold for TANESCO improved slightly in FY 2016/17 to a reported cost of TZS 280.19/kWh due to the expiry of emergency power purchase agreement with Aggreko Power. However, due to an increase in power generation from thermal power plants, TANESCO's cost per unit sold increased to TZS 303.42/kWh.

The cost per unit sold by Mwenga Power has assumed a decreasing trend on yearly basis mainly due to an increase in customer base and units sold. Nonetheless, the unit cost per unit sold is higher than other utilities.

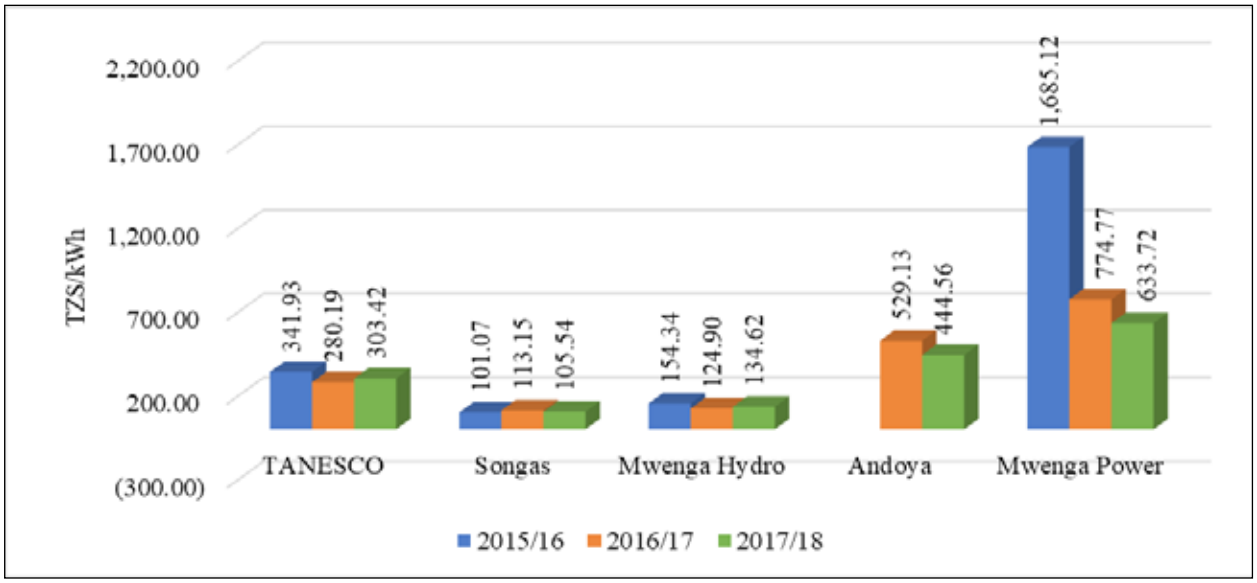

Figure 6: Total Cost per Unit Sold

Source: EWURA Analysis

6. ACHIEVEMENTS AND CHALLENGES

6.1 Achievements

The achievements made by the sector during the reporting period include the following:

a) Increased level of awareness to electrical installation licensees due to the awareness programs, inspections and meetings with stakeholders conducted by the Authority which resulted into increase in number of people applying for electricity installation licences;

b) 600 (six hundred) electrical installation licences were issued to personnel who carries out electrical installation activities in order to ensures safety practices in the electrical installation services to customers;

c) Seven generation licences with a potential generation capacity of 114.9MW when commissioned were issued;

d) Regulatory tools for regulation of transmission and distribution network operations (Grid and Distribution Code), storage of excess energy by the customer to DNO on credit for solar and wind technology (Net Metering), development of Small Power Projects as well as Procurement of Power Projects and Approval of Power Purchase Agreements were published;

e) Network expansion and connection of 198,286 new customers to electricity has increased connectivity and accessibility of electricity in the country.

f) Network reliability and losses have continued to improve as a result of continuous monitoring and inspection of electricity infrastructures.

g) Increased awareness which has led to increased demand of the regulatory intervention

to matters regarding licensing, consumer complaints resolution and electricity accident investigation;

6.2 Challenges and Way Forward

During the reporting period, the electricity sector faced a number of challenges including the following:

a) **Low demand growth** - Despite that the generation installed capacity has increased by 7.13% from previous year, demand did not increase accordingly. It was established that energy generated increased only by 0.4% and maximum demand decreased from 1051MW to 1045.7MW. To address this, the Authority in collaboration with other stakeholders will continue to take measures to stimulate demand growth including network expansion, increasing connectivity, and awareness in the use of electricity.

b) **Electricity supply Reliability** - Despite of the ongoing efforts to increase reliability, the electricity sector has a challenge to establish and meet the set target as per Tanzania Standard, TZS 1374:2011, Section 7, which requires SAIFI to be less than 3 interruptions per customer per year, SAIDI be less than 650minutes (10.8 Hours) per customer per year, and CAIDI be less than 4 minutes (0.1hours) per interruption event per year. To address this, the Authority will intensify monitoring and inspection activities as well as insuring that licensees install all required boundary meters.

c) **Low Private Sector Participation** - Private sector investments in the electricity sub sector continued to be low. To address this, the Authority in collaboration with other stakeholders will continue regular review of the existing regulatory tools and development of new ones when deemed necessary.

7. CONCLUSION

During the year under review, the sector registered some milestone towards achievement of the national goals and targets. The sector achieved growth in some areas such as increase in generation by 7.13%, increase in length of transmission lines, increase in customer connection and slight increase in energy generated. This growth indicates that the sector is moving towards the right direction in achieving the set national goals and targets.

Despite the noted achievements, the sector has some areas some of which has been discussed in section 6.2 above that need to be improved. The authority will continue to be a key player by ensuring the sector is continuously growing as required.

ANNEXES

i) Annex 1: Regulatory Tools and Standards

- **Annex 1(a): Regulatory Tools**

  - ✓ EWURA Act, 2001;
  - ✓ The Electricity Act, 2008;
  - ✓ National Energy Policy, 2015;
  - ✓ The Electricity (General) Regulations GN 63;
  - ✓ The Electricity (Electrical Installation Services) Rules, 2015. GN. 404/2015;
  - ✓ The Electricity (Development of Small Power Projects) Rules, 2016. GN. 217/2016;
  - ✓ Model Power Purchase Agreements for seven technologies (i.e. Hydro, Natural Gas, Oil, Coal, Geothermal, Solar and Wind);
  - ✓ The Electricity (Initiation of Procurement of Power Projects) Rules, 2014. GN. 110/2014;
  - ✓ The Electricity (Licensing Fees) Rules, 2012. GN. 11/2013;
  - ✓ The Electricity (Transmission Services) Rules, 2011. GN. 320/2012;
  - ✓ The Electricity (Distribution Services) Rules, 2011. GN. 322/2012;
  - ✓ The Electricity (Generation Services) Rules, 2011. GN. 321/2012;
  - ✓ The Energy and Water Utilities Regulatory Authority (Fees and Levies Collection Procedure) Rules, 2010. GN. 193/2010;
  - ✓ Guidelines for Tariff Application, 2009;
  - ✓ Manual for Inspection of Electricity Infrastructure;
  - ✓ Guidelines for SPP Grid Interconnections, 2011; Tanzania Grid Code, 2014.
  - ✓ The Electricity (Electrical Installation Services) Rules, 2015;
  - ✓ Electricity System Operations Cooperation (Establishment Order), 2016;
  - ✓ Electricity (System Operations Services) Rules, 2016;
  - ✓ Electricity (Market Operation Services) Rules, 2016;
  - ✓ Electricity (Tariff Setting) Rules, 2016;
  - ✓ Small Power Producers Tariff Order; and
  - ✓ Standardized Power Purchase Agreement.

- **Annex 1(b): Standards**

  - ✓ TZS 1373:2011 – Power Quality - Quality of supply;
  - ✓ TZS 1374:2011 – Power Quality - Quality of service and reliability;
  - ✓ TZS 1375:2011 – Electromagnetic Compatibility (EMC) – Limits for voltage change, voltage fluctuation and flickers in public low voltage supply system for equipment with rated current ≤ 16A per phase and not subject to conditional connection;
  - ✓ TZS 1376:2011 – Electromagnetic Compatibility (EMC) – Limits for voltage change, voltage fluctuation and flickers in public low voltage supply system for equipment with rated current ≤ 75A per phase and subject to conditional connection;
  - ✓ TZS 1377:2011 Electromagnetic compatibility (EMC) – Limits for harmonic current emissions for equipment with input current ≤ 16 A per phase;
  - ✓ TZS 1378:2011 Electromagnetic compatibility (EMC) – Limits for harmonic current emissions for equipment with input current > 16 A per phase;
  - ✓ TZS 1379:2011 Electromagnetic compatibility (EMC) – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems;
  - ✓ TZS1380:2011 Electromagnetic compatibility (EMC) – Compatibility levels for low frequency conducted disturbances and signalling in public medium voltage power supply systems;
  - ✓ TZS 1381:2011 Electromagnetic compatibility (EMC) – Compatibility levels in industrial plant for low-frequency conducted disturbances; and
  - ✓ TZS1382:2011 Electromagnetic compatibility (EMC) – Power quality measurement methods.

ii) Annex 2: Service Providers Licences

A Electricity Generation Licences – Sale

S/N	Licencee	Project Area	Energy Source	Capacity (MW)	Duration	Licence No.	Date of Issue	Date of Expiry
1	Songas	Ubungo	Natural Gas	189	33 Years	issued before EWURA establishment	11/Oct/01	10/Oct/34
2	TANESCO	Mainland TZ	Hydro, Natural Gas, HFO & Diesel	-	20 Years	EGL-2013-001	1/Mar/13	28/Feb/33
3	TPC Ltd	Moshi	Biomas	20	13 Years	EGL-2012-006	18/Jun/12	17/Jun/25
4	Tanganyika Wattle Company Ltd	Njombe	Biomas	2.75	13 Years	EGL-2012-005	18/Jun/12	17/Jun/25
5	Mwenga Hydro Ltd	Mufindi	Hydro	3.36	15 Years	EGL-2013-001	1/Mar/13	28/Feb/28
6	Tulila Hydro Electric Plant Co. Ltd	Songea	Hydro	7.5	20 Years	EGL-2016-001	3/Aug/16	2/Aug/30
7	Andoya Hydro Electric Power Co. Ltd	Mbinga	Hydro	1	15 Years	EGL-2016-002	22/Aug/16	21/Aug/31
8	Ngombeni Power Limited	Mafia	Biomass	1.4	15 Years	EGL-2016-003	7/Sep/16	6/Sep/31
9	Jinan Diesel Engine Company Limited	Mtwara	Diesel	60	6 Months	EGL-2016-004	29/Dec/16	28/Jun/17

B Electricity Generation Licences – Own Use

S/N	Licensee	Project Area	Energy Source	Capacity (MW)	Duration	Licence No.	Date of Issue	Date of Expiry
1	Ashanti Goldfields T Ltd	Geita	Diesel	31.00	25 Years	P/G 1134	3/Dec/99	2/Dec/24
2	Shanta Mine Co. Ltd	Chunya	Diesel	4.20	15 Years	BEGL-2013-001	6/Sep/13	5/Sep/28
3	Mufindi Paper Mills	Mufindi	Biomass	10.415	5 Years	BEGL-2013-002	18/Nov/13	17/Nov/18
4	Lake Cement Limited	Kimbiji Village, Temeke	Coal	15.40	15 years	BEGL-2016-001	29/Mar/16	28/Mar/31
5	Tanga Cement Public Limited Company	Tanga	Diesel	11.48	15 Years	SEGL-2016-001	4/Oct/16	3/Oct/31
6	Kilombero Sugar Company Limited	Kidatu - Morogoro	Biomass	12.552	15 years	BEGL-2017-001	18/Apr/17	17/Apr/32
7	Kagera Sugar Limited	Missenyi - Kagera	Biomass	6.20	15 Years	BEGL-2017-002	18/Apr/17	17/Apr/32
8	Shanta Mine Co. Ltd	Songwe	Diesel	8.20	15 years	BEGL-2018-001	2/Feb/18	1/Feb/33
9	Kilombero Plantations Limited	Morogoro	Biomass	1.692	15 years	EGL-2018-001	30/Aug/18	29/Aug/33
10	Geita Gold Mining Limited	Geita	Diesel	40.00	25 years	BEGL-2018-002	3/Dec/99	2/Dec/24

C. Electricity Distribution, Supply, Transmission and Cross Border Trade

S/N	Licensee	Project Area	Capacity (MW)	Type of licence	Duration	Licence No.	Date of Issue	Date of Expiry
1	TANESCO	Mainland Tanzania	-	Supply	20 years	ESL-2013-001	1/Mar/13	28/Feb/33
2	TANESCO	Mainland Tanzania	-	Transmission and Cross Border Trade	20 Years	ETSOC - 2013-001	1/Mar/13	28/Feb/33
3	TANESCO	Mainland Tanzania	-	EDCBTL	20 Years	PEL-2013-002	1/Mar/13	28/Feb/33
4	Mwenga Hydro Ltd (Transferred to Mwenga Power Services Ltd)	Mufindi	4	Distribution	15 Years	EDL-2013-005	30/Apr/13	29/Apr/28

D. Electricity Licences – Exemption

S/N	Name of Exempted Applicant	Project Area	Capacity (MW)	Type of Exemption	Duration	Exemption Number	Date of Issue	Date of Expiry
1	Ji'nan Diesel Engine Company Limited	Mtwara	60	Generation	N/A	EWURA/41/96/Vol. III/12	10/Nov/17	N/A

E. Provisional Electricity Licences

S/N	Licensee	Project Area	Capacity (MW)	Type of Licence	Duration	Licence No.	Date of Issue	Date of Expiry
1	Tangulf Express Ltd	Songea - Ruvuma	10.00	Generation (extension for provisional licence)	3 years	PEGL-2015-007	21/Nov/15	20/Nov/18
2	Tanzania Masigira Power Limited	Songea/Ludewa	71.78	Generation (Provisional Licence)	3 years	PEGL-2016-001	10/Feb/16	9/Feb/19
3	Fondazione Acra	Ludewa	1.70	Generation (Provisional Licence)	3 years	PEGL-2016-003	1/Jun/16	31/May/19
4	Fondazione Acra	Ludewa		Distribution (Provisional Licence)	3 years	PEDL-2016-001	1/Jun/16	31/May/19
5	Ludewa Clean Energy Limited	Ludewa	4.20	Generation (Provisional Licence)	3 years	PEGL-2016-002	1/Jun/16	31/May/19
6	Dangote Industries Ltd	Mtwara	75.00	Generation (Provisional Licence)	3 years	PEGL-2016-004	27/Mar/16	26/Mar/19
7	A-One Products and Bottlers Ltd	Dar es Salaam	7.80	Generation (Provisional Licence)	3 years	PEGL-2016-005	22/Aug/16	21/Aug/19
8	Royal Soap & Detergent Industries Limited	Dar es Salaam	1.33	Generation (Provisional Licence)	3 years	PEGL-2016-006	22/Aug/16	21/Aug/19
9	Tanga Cement Public Limited Company	Tanga	4.20	Generation (Provisional Licence)	3 years	PEGL-2016-007	4/Oct/16	3/Oct/19
10	Shanta Mining Co. Limited	Songwe	7.50	Generation (provisional licence)	3 years	PEGL-2016-008	7/Dec/16	6/Dec/19

11	Luponde Hydro Limited	Njombe	2.90	Generation (Provisional Licence)	3 years	PEGL-2017-001	1/Mar/17	29/Feb/20
12	Suma Hydro Limited	Rungwe	1.50	Generation (Provisional Licence)	3 years	PEGL-2017-002	1/Mar/17	29/Feb/20
13	CEFA Registered Trustees	Njombe	6.00	Generation (provisional licence)	3 years	PEGL-2017-003	1/Mar/17	29/Feb/20
14	East Coast Oils and Fats ltd	Dar es Salaam	11.70	Generation (Provisional Licence)	1 year	PEGL-2017-004	28/May/17	27/May/18
15	Ludewa Capacity Building Association	Ludewa	10.00	Generation (provisional licence)	3 years	PEGL-2017-005	29/Aug/17	28/Aug/20
16	Dangote Cement Limited	Mtwara	60.00	Generation (provisional licence)	3 years	PEGL-2017-006	3/Nov/17	2/Nov/20
17	Mkonge Energy Systems Co. Ltd	Tanga - Mandera	9.00	Generation (provisional licence)	3 years	PEGL-2017-007	15/Dec/17	14/Dec/20
18	Mkonge Energy Systems Co. Ltd	Tanga - Ngombezi 1	2.00	Generation (Provisional Licence)	3 year	PEGL-2017-008	15/Dec/17	14/Dec/20
19	Ninety Two Limited	Ngorongoro	1.90	Generation (provisional licence)	3 years	PEGL-2018-001	2/Feb/18	1/Feb/21
20	Kagera Sugar Limited	Kagera	23.80	Generation (provisional licence)	3 years	PEGL-2018-002	1/Mar/18	28/Feb/21

iii) Annex 3: Registered Very Small Power Producers

No.	Operator	Project Area	Capacity (KW)	Type of activity	Duration	Registration No.	Date of Issue	Date of Expiry
1	Darakuta Hydropower Development Co. Limited - 41/72	Magugu – Babati	320	Generation	10 years		3/Jul/13	2/Jul/23
2	Jumeme Rural Power Supply Ltd - 41/108	Bwisya - Ukara Island	90	Generation and Distribution	10 years		8/Apr/16	7/Apr/26
3	Power Corner Tanzania Limited - 41/149	Orkejuloongishu Village in Ketumbeine Ward, Longido District	15.6	Generation	10 years	CRG – 2016 – 001	6/Oct/16	5/Oct/26
4	Power Corner Tanzania Limited - 41/149	Orkejuloongishu Village in Ketumbeine Ward, Longido District	15.6	Distribution	10 years	CRD – 2016 – 001	19/Oct/16	18/Oct/26
5	Nasra Estates Co. Limited	Dar es Salaam	800	Generation (Own Use)		EWURA/40/1/3/108	20/Mar/17	

No.	Operator	Project Area	Capacity (KW)	Type of activity	Duration	Registration No.	Date of Issue	Date of Expiry
6	E.ON Off Grid Solution Gmbh	Ololosokwan Village, Ngorongoro District	6	Generation	10 years	CRG – 2017 – 001	21/Nov/17	20/Nov/27
7	E.ON Off Grid Solution Gmbh	Ololosokwan Village, Ngorongoro District	6	Distribution	10 years	CRD – 2017 – 001	21/Nov/17	20/Nov/27
8	E.ON Off Grid Solution Gmbh	Soitsambu Village, Ngorongoro District	6	Generation	10 years	CRG – 2017 – 002	21/Nov/17	20/Nov/7
9	E.ON Off Grid Solution Gmbh	Soitsambu Village, Ngorongoro District	6	Distribution	10 years	CRD – 2017 – 002	21/Nov/17	20/Nov/27
10	E.ON Off Grid Solution Gmbh	Digodigo Village, Ngorongoro District	6	Generation	10 years	CRG – 2017 – 003	11/21/17	11/20/27
11	E.ON Off Grid Solution Gmbh	Digodigo Village, Ngorongoro District	6	Distribution	10 years	CRD – 2017 – 003	21/Nov/17	20/Nov/27
12	E.ON Off Grid Solution Gmbh	Malambo Village, Ngorongoro District	13.14	Generation	10 years	CRG – 2017 – 004	21/Nov/17	11/20/27
13	E.ON Off Grid Solution Gmbh	Malambo Village, Ngorongoro District	13.14	Distribution	10 years	CRD – 2017 – 004	21/Nov/17	20/Nov/27
14	E.ON Off Grid Solution Gmbh	Itaswi Village, Chemba District	6.39	Generation	10 years	CRG – 2017 – 005	19/Dec/17	18/Dec/27
15	E.ON Off Grid Solution Gmbh	Itaswi Village, Chemba District	6.39	Distribution	10 years	CRD – 2017 – 005	19/Dec/17	18/Dec/27
16	E.ON Off Grid Solution Gmbh	Kwa Mtoro Village, Kondoa District	9.5	Generation	10 years	CRG – 2017 – 006	19/Dec/17	18/Dec/27
17	E.ON Off Grid Solution Gmbh	Kwa Mtoro Village, Kondoa District	9.5	Distribution	10 years	CRD – 2017 – 006	19/Dec/17	18/Dec/27
18	Ruaha Energy Co. Ltd	Zombo Village, Kilosa District	128	Generation	10 years	CRG – 2017 – 007	19/Dec/17	18/Dec/27
19	Ruaha Energy Co. Ltd	Zombo Ward, Kilosa District	128	Distribution	10 years	CRD – 2017 – 007	19/Dec/17	18/Dec/27
20	Kiliflora Limited	Arusha	230	Generation	10 years	CRG – 2018 – 002	9/Apr/18	8/Apr/28
21	Watu na Umeme Limited	Korogwe District	48	Generation	10 years	CRG – 2018 – 001	23/Apr/18	22/Apr/28
22	Watu na Umeme Limited	Korogwe District	48	Distribution	10 years	CRD – 2018 – 001	23/Apr/18	22/Apr/28
23	Power Corner Tanzania Limited	Nakopi village, Nanyumbu District	30	Generation	10 years	CRG – 2018 – 003	31/Oct/18	30/Oct/28
24	Power Corner Tanzania Limited	Nakopi village, Nanyumbu District	30	Distribution	10 years	CRD – 2018 – 003	31/Oct/18	30/Oct/28
25	Power Corner Tanzania Limited	Barikiwa village, Liwale District	30	Generation	10 years	CRG – 2018 – 004	31/Oct/18	30/Oct/28
26	Power Corner Tanzania Limited	Barikiwa village, Liwale District	30	Distribution	10 years	CRD – 2018 – 004	31/Oct/18	30/Oct/28
27	Power Corner Tanzania Limited	Mbaya village, Liwale District	30	Generation	10 years	CRG – 2018 – 005	31/Oct/18	30/Oct/28
28	Power Corner Tanzania Limited	Mbaya village, Liwale District	30	Distribution	10 years	CRD – 2018 – 005	31/Oct/18	30/Oct/28
	Total		**2,097.26**					

iv) Annex 4: Standardized Small Power Projects Tariff

a) Tariffs for Main Grid Connection under the First Generation SPP Framework

Description		2016 Tariff (TZS/kWh)	2017 Approved Tariff (TZS/kWh)	Percentage Change
Standardized Small Power Purchase Tariff		190.46	203.11	6.64%
Seasonally adjusted Standardized SPPT Payable in	Dry season	228.58	243.73	6.64%
	Wet season	171.42	182.80	6.64%

b) Tariffs for Mini Grid Connection under the First Generation SPP Framework

Description	2016 Tariff (TZS/kWh)	2017 Approved Tariff (TZS/kWh)	Percentage Change
Standardized SPP Tariff	477.16	499.25	4.84%

c) Hydro and Biomass Tariffs for Main Grid and Mini Grid Connection under the Second Generation SPP Framework

Minihydro Power Plant		Biomass Power Plant	
Size	Approved Tariff (US$/kWh)	Size	Approved Tariff (US$/kWh)
100kW	0.155		
150kW	0.146	200kW	0.179
200kW	0.141	300kW	0.169
250kW	0.140	400kW	0.161
500kW	0.134	500kW	0.157
750kW	0.129	750kW	0.149
1MW	0.123	1MW	0.147
2MW	0.115	2MW	0.138
3MW	0.108	3MW	0.128
4MW	0.102	4MW	0.126
5MW	0.098	5MW	0.123
6MW	0.095	6MW	0.120
7MW	0.091	7MW	0.118
8MW	0.088	8MW	0.115
9MW	0.084	9MW	0.114
10MW	0.081	10MW	0.112

d) Solar and Wind Tariffs for Main Grid and Mini Grid Connection under the Second Generation SPP Framework

Description	Approved Tariff (US$/kWh)
Standardized Small Power Purchase Tariff for Solar and Wind projects of up to 1MW connected to the Main Grid	0.165
Standardized Small Power Purchase Tariff for Solar and Wind projects of up to 1MW connected to the Mini Grid	0.181

v) Annex 5: TANESCO Tariff and Charges

a) Approved TANESCO Tariff

Customer Category	Component	Unit	Current Tariff	Proposed Tariff 2016	Approved Tariff 2018	%Change
D1	Service Charge	TZS/Month			-	
	Energy Charge (0-75kWh)	TZS/kWh	100	100	100	0.0%
	Above 75 kWh	TZs/kWh	350	350	350	0.0%
T1	Service Charge	TZS/Month	5.520	-	-	-100.0%
	Energy Charge	TZS/kWh	298	295	292	-2.0%
	Maximum Demand Charge	TZS/kVA/Month	-	-	-	
T2	Service Charge	TZS/Month	14,233	14,233	14,233	
	Energy Charge	TZS/kWh	200	198	198	-2.3%
	Maximum Demand Charge	TZS/kVA/Month	15,004	15,004	15,004	
T3 - MV	Service Charge	TZS/Month	16,769	16,769	16,769	
	Energy Charge	TZS/kWh	159	157	157	-1.5%
	Maximum Demand Charge	TZS/kVA/Month	13,200	13,200	13,200	
T3 - HV	Service Charge	TZS/Month			-	
	Energy Charge	TZS/kWh	156	154	154	-2.4%
	Maximum Demand Charge	TZS/kVA/Month	16,550	16,550	16,550	

Key

D1: Low Usage Tariff for Domestic customers who on average consume less than 75 kWh per month. Any unit exceeding 75 kWh is charged a higher rate of TZS 350 per kWh. Under this category, powe is supplied at a low voltage, single phase (230V).

T1: General Usage Tariff for customers including residential, small commercial and light industrial use, public lighting and billboards. Power is supplied at low voltage single phase (230V) as well as three phase (400V)

T2: Applicable to general use customers where power is metered at 400V and average consumption is more than 7,500 kWh per meter reading perion and demand does not exceed 500 kVA per meter reading period.

T3 - MV: Applicable customers connected to medium voltage.

T3 - HV: Applicable to customers connected to High Voltage including ZECO, Bulyanhulu and Tanga Cement.

b) Approved TANESCO Charges

i. Single Phase Charges

Service Line	Requested Connection Charges (TZS)		Approved Connection Charges (TZS)	
	Urban Rate TZS (VAT exclusive)	Rural Rate TZS (VAT exclusive)	Urban Rate TZS (VAT exclusive)	Rural Rate TZS (VAT exclusive)
Within 30 Meters	272,000	150,000	272,000	150,000
Within 70 Meters (one pole)	436,964	286,220	436,964	286,220
Within 120 Meters (two pole)	590.398	385,300	590,398	385,300

ii. Three Phase Charges for Urban and Rural Area

Service Line	Meter Type	Requested Connection Charges (TZS)		Approved Connection Charges (TZS)	
		Urban Rate TZS (VAT exclusive)	Rural Rate TZS (VAT exclusive)	Urban Rate TZS (VAT exclusive)	Rural Rate TZS (VAT exclusive)
Within 30 Meters (cable 16mm²)	**LUKU**	772,893	772,893	772,893	772,893
Within 30 Meters (cable 16mm²)	**AMR**				
Within 30 Meters (cable 35 mm²)	**LUKU**				
Within 30 Meters (cable 35 mm²)	**AMR**				
Within 30 Meters (one pole)	**LUKU**	1,058,801	1,058,801	1,058,801	1,058,801
Within 30 Meters (one pole)	**AMR**				
Within 120 Meters (two pole)	**LUKU**	1,389,115	1,389,115	1,389,115	1,389,115
Within 120 Meters (twopole)	**AMR**				

iii. Service line application fee

Tariff Category	Current Fee TZS	Proposed Fee TZS	Approved Fee TZS
All Customers	5,000	-	-

iv. Charges for Installation of Meter in Case of Damage Due To Meter Tempering/ Broken

Customer Category	Description	Requested Charges TZS (VAT exclusive)	Approved Charged TZS (VAT exclusive)
D1 & T1	LUKU (Single Phase)	60,000	60,000
	LUKU (Three Phase)	200,000	200,000
	AMR (Three Phase)	300,000	300,000
T2	CT - Operated Meters	1,200,000	1,200,000
T3	CT/VT Operated Meters	1.200,000	1.200,000

v. Testing and Inspection of Installation Fee

Customer Category	Requested Charges in TZS (VAT exclusive)	Approved Charges in TZS (VAT exclusive)
D1	20,000	20,000
T1	20,000	20,000
T2	30,000	30,000
T3	50,000	50,000

vi. Temporary power supply charges

Customer Category	Description	Requested Charges TZS (VAT exclusive)	Approved Charged TZS (VAT exclusive)
T2	Connection Fee	Full Cost plus 10%	Full Cost plus 10%
T3		Full Cost plus 10%	Full Cost plus 10%
T2	Meter Deposit	200,000	200,000
T4		500,000	500,000

vii. Energy Deposit for Post Paid Meters

Customer Category	Description	Requested Charges TZS (VAT exclusive)	Approved Charged TZS (VAT exclusive)
D1	Single Phase	30,000	30,000
T1	Single Phase	30,000	30,000
T1	Three Phase	150,000	150,000
T2	Three Phase	200,000	200,000
T3	Three Phase	500,000	500,000

vi) Annex 6: Mwenga Hydro Limited Tariff

a) Approved Tariffs

Customer Category		Component	Approved Rates
D1		Basic Charge	0.00
	Domestic Low Usage	Energy Charge (0-50kWh/ Month)	60.00
	High Cost Unit Penalty – High Usage	Energy Charge (50+ kWh/ Month	273.04
T1	All other customers inclusive of domestic users averaging more than 50 kWh/Month	Energy Charge (inclusive of average fixed monthly service fee component)	234.04

b) Approved Service Line Charges

Description	Approved Connection Charges After the First 2600 Connections (TZS)	Approved Connection Charges for the First 2600 connections (subsidised) (TZS)
Application fees	5,000	5,000
New Service Line Charges		
(a) Overhead service line - single phase (30m)		
D1 with LUKU meter	385,682	180,000
T1 with LUKU meter	385,682	180,000
(b) Overhead service line - three phase (30m)		
T1 with LUKU meter (16mm2 cable)	772,893	380,000
T1 with LUKU meter (36mm2 cable)	913,202	450,000
(c) Single phase 70m route		
Single phase 70m route length - including 1 pole (LUKU)	1,145,664	850,000
(d) Three phase 70m route		
Three phase 70m route length - including 1 pole (LUKU)	1,799,062	1,300,000

vii) Annex 7: Grid and Off-Grid Installed Capacity

PART I	MAIN GRID POWER PLANT	No. of Units	Technology	Installed Capacity (MW)
	Main Grid Power Plant Owned by TANESCO			
	Hydro			
	1. KIDATU	4	Hydro	204
	2. KIHANSI	3	Hydro	180
	3. MTERA	2	Hydro	80
	4. NEW PANGANI FALLS	2	Hydro	68
	5. HALE	2	Hydro	21
	6. NYUMBA YA MUNGU	2	Hydro	8
	7. UWEMBA	3	Hydro	0.84
	Sub-Total Hydro			***561.84***
	Natural Gas			
	1. UBUNGO I	12	Gas	102
	2. TEGETA	5	Gas	45
	3. UBUNGO II	3	Gas	129
	4. KINYEREZI I	4	Gas	150
	5. KINYEREZI II	6	Gas	167.82
	6. MTWARA	9	Gas	18
	7. SOMANGA	3	Gas	7.5
	Sub-Total Natural Gas			***619.32***
	HFO/GO			
	1. ZUZU	3	HFO	7.40
	2. NYAKATO	10	HFO	63
	3. BIHARAMULO	5	GO	4.14
	Sub-Total HFO/GO			**74.54**
	Sub-Total Main Grid Power Plant Owned by TANESCO			***1255.7***
	Main Grid Power Plant owned by Independent Power Producer (IPP)			
	1. SONGAS	6	Gas	189
	Sub-Total Main Grid Power Plant owned by IPP			***189.00***
	Main Grid Small Power Project (SPP) Power Plant			
	1. TANWAT	1	Biomass	1.5
	2. TPC	1	Biomass	9
	3. MWENGA	1	Hydro	4
	4. IYOVI	1	Hydro	0.95
	5. DARAKUTA	1	Hydro	0.32
	6. MATEMBWE	1	Hydro	0.59
	Sub-Total Main Grid SPP			***16.36***
	Total Main Grid (Hydro, Natural Gas, HFO/GO & SPP)			***1461.06***
PART II	**OFF-GRID POWER PLANT**			
	Off-Grid Power Plant owned by TANESCO			
	1. KIGOMA		GO	6.25
	2. SONGEA		GO	8.212
	3. MPANDA		GO	5.676
	4. MBINGA		GO	2

	5. NGARA		GO	2.5
	6. MAFIA		GO	2.18
	7. TUNDURU		GO	2.068
	8. LUDEWA		GO	1.27
	9. LIWALE		GO	0.848
	10. SUMBAWANGA		GO	5
	11. KASULU		GO	2.5
	12. KIBONDO		GO	2.5
	13. LOLIONDO		GO	5
	14. NAMTUMBO		GO	0.34
	15. INYONGA		GO	0.476
	16. MADABA		GO	0.476
	17. BUKOBA		GO	2.56
	Sub-Total Off-Grid Power Plant owned by TANESCO			**49.86**
	SPP Off-Grid Power Plant			
	1. ANDOYA	1	Hydro	0.5
	2. TULILA	2	Hydro	5
	3. Jumeme Rural Power Supply Ltd - 41/108	-	Solar	0.09
	4. Power Corner Tanzania Limited - 41/149	-	Solar	0.02
	5. Power Corner Tanzania Limited - 41/149	-	Solar	0.02
	6. Nasra Estates Co. Limited	-	Solar	0.80
	7. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	8. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	9. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	10. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	11. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	12. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	13. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	14. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	15. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	16. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	17. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	18. E.ON Off Grid Solution Gmbh	-	Solar	0.01
	19. Ruaha Energy Co. Ltd	-	Solar	0.13
	20. Ruaha Energy Co. Ltd	-	Solar	0.13
	21. Kiliflora Limited	-	Solar	0.23
	22. Watu na Umeme Limited	-	Solar	0.05
	23. Watu na Umeme Limited	-	Solar	0.05
	24. Power Corner Tanzania Limited	-	Solar	0.03
	25. Power Corner Tanzania Limited	-	Solar	0.03
	26. Power Corner Tanzania Limited	-	Solar	0.03
	27. Power Corner Tanzania Limited	-	Solar	0.03
	28. Power Corner Tanzania Limited	-	Solar	0.03
	29. Power Corner Tanzania Limited	-	Solar	0.03
	Sub-Total SPP Off-Grid Power Plant			**7.28**
	Total Off-Grid Power Plant			**57.14**
	NATIONAL SYSTEM TOTAL (Main Grid and Off-Grid)			**1,518.2**

viii) Annex 8: Power Generation Plant Operation Performance Data

A. HYDRO POWER PLANTS									
Power Plant	**Total Installed Capacity (MW)**	**Total Available Capacity (MW)**	**Total Utilized Capacity (MW)**	**Plant Availability (%)**	**Plant Utilization (%)**	**Plant Load Factor (%)**	**Total Energy Dispatched (MWh)**	**Auxiliary Use (MWh)**	**Generation Cost Per Unit (TZS/ kWh)**
KIDATU	204	198	94.00	85.60	0.58	47.60	817,668	4,470	3.53
MTERA	80	80	80.00	99.70	98.80	34.80	238,541	2,533	19.23
KIHANSI	180	180	3.53	95.17	0.43	52.00	810,200	2,910	7.84
NEW PANGANI	68	68	248.37	99.00	65.92	41.20	215,997	1,114	10.60
HALE	21	11	47.27	98.50	60.17	25.47	46,872	400	27.43
NYUMBA YA MUNGU	8	8	26.37	99.20	80.08	38.07	26,545	122	22.71
AVARAGE (Availability & utilisation				***96.195***	***50.996667***				
B. GAS FIRED POWER PLANTS									
UBUNGO 1 GAS P/PLANT	102.50	63.20	76.00	62.90	75.00	52.80	478,733.00	9,968.00	85.45
TEGETA GAS P/PLANT	43.50	23.50		35.00	18.50	44.00	180,733.00	0.47	198.00
UBUNGO 2 GAS P/PLANT	129.00	119.97	119.97	92.88	85.36	83.94	947,802.49	3,513.43	118.47
KINYEREZI 1 GAS P/PLANT	150.00	150.00	150.00	76.00	97.00	73.00	965,420.25	2,257.57	122.44
KINYEREZI 2 GAS P/PLANT	240.00	160.00	160.00	69.90	90.90	59.30	402,952.70	2,883.20	144.63
MTWARA	17.75	15.38	16.01	81.28	74.45	51.66	77,776.09	2,491.00	245.32
NGARA	2.50	2.50	1.46	100.00	58.00	15.00	4,098.89	180.69	562.00
SOMANGA	7.50	4.00	4.00	53.30	53.00	15.00	12,764.82	877.69	130.00
AVARAGE (Availability & utilisation				***71.4075***	***69.02625***				

C. LIQUID FUEL PLANTS									
BUKOBA	2.56	2.20	2.20	86.00	86.00	2.00	312.26	13.46	780.00
INYONGA	0.48	0.42	0.21	88.00	43.00	54.00	300.99	38.53	1,424.00
KASULU	2.50	2.50	2.28	100.00	91.00	48.00	8,054.53	248.65	572.00
KIBONDO	2.50	2.50	1.50	100.00	60.00	46.00	4,890.99	140.20	609.00
KIGOMA	11.81	6.25	5.43	53.00	46.00	29.00	27,485.20	657.83	636.00
LIWALE	0.85	0.60	0.60	71.00	71.00	55.00	2,767.32	149.73	730.00
LOLIONDO	5.00	2.50	0.35	50.00	7.00	5.00	1,168.79	174.93	1,006.00
LUDEWA	1.45	1.27	0.51	88.00	35.00	15.00	1,452.92	8.09	751.00
MADABA	0.48	0.48	0.06	100.00	13.00	44.00	536.62	70.61	2,444.00
MAFIA	2.18	1.20	1.40	55.00	64.00	13.00	4,833.10	172.94	939.00
MBINGA	2.00	2.00	1.90	100.00	95.00	3.00	4,597.98	102.56	628.00
MPANDA	2.50	2.50	2.40	100.00	96.00	24.00	10,875.14	381.64	566.00
NAMTUMBO	0.34	0.34	0.34	100.00	1,000.00	8.00	1,180.77	69.30	789.00
NGARA	2.50	2.50	1.46	100.00	58.00	15.00	4,098.89	180.69	562.00
SONGEA	7.67	6.30	6.30	82.00	82.00	24.00	8,901.00	386.49	584.00
SUMBAWANGA	5.00	5.00	5.03	100.00	100.00	2.00	2,657.00	41.66	601.00
TUNDURU	2.60	1.70	1.35	67.00	52.00	33.00	5,929.28	805.25	706.00
BIHARAMULO									
DODOMA (ZUZU) P/PLANT									
NYAKATO 60MW P/PLANT	63.00	60.00	60.00	60.00	95.00	10.00	130,998.05	3,538.27	439.00
AVARAGE (Availability & utilisation				***83.3333***	***66.3333***				

ix) Annex 9: Future Planned Transmission Projects

Voltage (kV)	From	To	Planned Length (km)
220	Wind Project	Singida	10
400	Kin-Som SwS1	Kin-Som SwS2	53
400	Kin-Som SwS2	Kin-Som SwS3	53
400	Kin-Som SwS3	Somanga Fungu P/S	53
400	Kinyerezi	Kin-Som SwS1	53
400	Kisada	Iringa	106
400	Kisada	Madaba	243
400	Muchuchuma	Madaba	15
220	Geita	Nyakanazi	130
220	Madaba	Songea	171
220	Makambako	Madaba	162
220	Nyakanazi	Rusumo Falls P/S	97
220	Rusumo Falls	Kyaka	150
220	Shinyanga	Geita	240
	Total		**1536.0**

x) Annex 10: Electricity Distribution Outage Data - TANESCO

Description	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	total
Outage time - 33 kV in hrs	1,258	970	981	2,783	2,995	1,579	2,118	1,876	2,026	2,055	1,929	1,254	21,823
Planned Outage - 33kV in hrs	722	501	505	1,447	2,066	877	1,126	1,224	876	822	881	694	11,741
UnPlanned Outage - 33kV in hrs	537	469	487	1,337	810	601	1,109	900	1,039	1,011	1,044	556	9,898
Total Number of Outages 33kV	1,254	1,101	1,486	2,193	2,075	1,907	2,115	2,161	2,410	1,948	1,640	1,429	21,719
Total Number of customers affected	764,798	768,109	756,444	974,004	909,199	861,123	774,618	682,539	718,416	767,441	845,194	711,687	9,533,575
Outage time - 11 kV in hrs	680	664	549	1,753	1,991	1,125	1,094	994	926	782	814	604	11,978
Planned Outage - 11kV in hrs	411	405	294	1,192	1,730	700	510	685	529	329	440	377	7,603

UnPlanned Outage - 11kV in hrs	269	259	281	561	267	380	646	322	322	420	370	224	4,319
Total Number of Outages 11kV	432	427	411	835	854	662	825	630	694	583	515	508	7,375
Total number of feeders	536	536	536	536	536	536	536	536	536	536	536	536	6,432
Total Number of customers affected	467,094	489,805	551,035	730,262	769,698	642,276	576,218	555,590	575,782	622,509	636,718	611,530	7,228,514

xi) Annex 11: Total Revenue (TZS in millions)

Utility	Electricity Sales			Other Income			TOTAL			Contribution of Electricity Sales to Total Revenue		
	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18
TANESCO	1,379,740	1,414,772	1,430,849	163,230	139,657	218,102	1,542,970	1,554,429	1,648,951	89%	91%	87%
Songas	161,505	172,553	183,645	41,893	36,709	41,121	203,398	209,262	224,766	79%	82%	82%
Mwenga Hydro	4,215	3,683	3,799	1,232	1,080	775	5,447	4,762	4,573	77%	77%	83%
Tulila	759	7,579	8,834	104	104	104	862	7,682	8,937	88%	99%	99%
Andoya	539	975	1,262	202	-	-	741	975	1,262	73%	100%	100%
Mwenga Power	87	344	448	0	86	55	87	430	503	100%	80%	89%
TOTAL	**1,546,846**	**1,599,905**	**1,628,836**	**206,661**	**177,636**	**260,157**	**1,753,507**	**1,777,541**	**1,888,993**	**88%**	**90%**	**86%**

Percentage Change

	Electricity Sales			Other Income			TOTAL		
	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18
TANESCO		3%	1%		-14%	56%		1%	6%
Songas		7%	6%		-12%	12%		3%	7%
Mwenga Hydro		-13%	3%		-12%	-28%		-13%	-4%
Tulila		899%	17%		0%	0%		791%	16%
Andoya		81%	29%		-100%			32%	29%
Mwenga Power		293%	30%		785809%	-36%		392%	17%
TOTAL		**3%**	**2%**		**-14%**	**46%**		**1%**	**6%**

xii) Annex 12: TANESCO Sales per Customer Category

Customer Category	Sales (TZS Billions)			Sales (MWh)		
	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18
Domestic low usage	53	43	36	324	325	309
General usage	663	684	695	2,078	2,379	2,418
Low Voltage Supply	158	158	157	599	622	601
High Voltage Supply	438	459	469	2,187	2,349	2,282
ZECO	68	71	73	361	383	396
TOTAL	**1,380**	**1,415**	**1,431**	**5,549**	**6,059**	**6,005**

Percentage Contribution

	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18
Domestic low usage	4%	3%	2%	6%	5%	5%
General usage	48%	48%	49%	37%	39%	40%
Low Voltage Supply	11%	11%	11%	11%	10%	10%
High Voltage Supply	32%	32%	33%	39%	39%	38%
ZECO	5%	5%	5%	7%	6%	7%