THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER

ENERGY AND WATER UTILITIES REGULATORY AUTHORITY (EWURA)

ewura
Energy and Water Utilities Regulatory Authority
ISO 9001: 2015 Certified

ELECTRICITY SUB-SECTOR REGULATORY PERFORMANCE REPORT FOR THE FINANCIAL YEAR 2019/20

MARCH 2021

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER

ENERGY AND WATER UTILITIES REGULATORY AUTHORITY (EWURA)

ewura
Energy and Water Utilities Regulatory Authority
ISO 9001: 2015 Certified

ELECTRICITY SUB-SECTOR REGULATORY PERFORMANCE REPORT FOR THE FINANCIAL YEAR 2019/20

EWURA House, Plot No 3, Block AD, Medeli West
P.O. Box 2857,
Dodoma - Tanzania
Tel.: +255-26-2329002-4
Fax: +255-26-2329005
Website: www.ewura.go.tz
Email address: info@ewura.go.tz

MARCH 2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXES

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 the Electricity Sub-Sector Regulatory Performance Report for the Financial Year 2019/2020.

This report has been prepared to provide information to stakeholders on the performance of the Electricity Sub-Sector. The Board of Directors in collaboration with all stakeholders will continue to oversee the development of the Electricity Sub-Sector based on the applicable Policies and Legislations.

EWURA appreciates the investments in rural electrification by the Government, which has facilitated increase in overall electricity access in the country from 67.8% in year 2016 to 78.4% in year 2020. As a result of this Government efforts, a total of 9,112 villages were connected to electricity as of April 2020, compared to 2,018 villages which were connected as at the end of 2015, an increase of 7,094 villages equivalent to 351.54%.

Also, I wish to take this opportunity to express my sincere appreciation to the Ministry of Energy, the Ministry of Water and other stakeholders for their continued support and cooperation.

I am confident that, this report will provide information to stakeholders that will enable them to understand the performance of the Electricity Sub- Sector during the Financial Year 2019/2020. Last but not least, I would like to thank the Board of Directors, Management and Staff of EWURA for their continued cooperation.

Ahmad Kilima
Deputy Chairman, EWURA Board of Directors
March 2021

FOREWORD

The Electricity Act, Cap 131 and EWURA Act, Cap 414 mandates EWURA to undertake technical and economic regulatory functions in the Electricity sub-sector. Section 30(1) of the Electricity Act, Cap 131 requires the Authority to establish systems and procedures to monitor and measure licensees' performance. In addition, Section 15(4) requires licensees to submit to the Authority, data and information relating to performance of their functions.

Regulatory functions that are implemented by EWURA among others, are to monitor performance in relation to levels of investment, availability, quantity and standard of services; the cost of services; and the efficiency of production and distribution of services.

This report presents performance of regulated activities from 1st July 2019 to 30th June 2020, which aimed to ensure among others, reliability and security of electricity supply, Urban and Rural electrification, efficiency of operations and quality of services provided to electricity consumers and investment in power infrastructure. It also highlights achievements made and challenges faced within the electricity sub- sector.

Achievements made include among others, development of applicable rules; adherence of licensees to applicable regulatory frameworks and; improved provision of services by licensees to electricity consumers. Successful implementation of these activities has taken the electricity sub-sector steps forward as evidenced by increased energy demand, electricity access, connectivity and investment.

I would like to thank the Government, Board of Directors, Management and Staff and other Stakeholders for their continued cooperation.

Eng. Godfrey H. Chibulunje
ACTING DIRECTOR GENERAL
March 2021

ABBREVIATIONS AND ACRONYMS

AHEPO	:	Andoya Hydro Electric Power Limited
CAIDI	:	Customer Average Interruption Duration Index
Cap.	:	Chapter
COD	:	Commercial Operation Date
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
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
SAIDI	:	System Average Interruption Duration Index
SAIFI	:	System Average Interruption Frequency Index
SAIFI-CP	:	System Average Interruption Frequency Index at Connection Point
SPP	:	Small Power Producer
SPPA	:	Standardized Power Purchase Agreement
SPPT	:	Standardized Small Power Projects Tariff
SGR	:	Standard Gauge Railway
TANESCO	:	Tanzania Electric Supply Company Limited
TANWAT	:	Tanganyika Wattle Company Limited
TBS	:	Tanzania Bureau of Standards
TGP	:	Tegeta Gas Power Plant
TPC	:	Tanganyika Planting Company
UGP2	:	Ubungo Gas Power Plant 1
UGP2	:	Ubungo Gas Power Plant 2
ZECO	:	Zanzibar Electricity Corporation Limited

EXECUTIVE SUMMARY

This report presents Regulatory Performance of electricity sub-sector from 1st July 2019 to 30th June 2020, and is made under Section 30(7) that requires EWURA to publish reports on the performance of licensees including, but not limited to, quality, reliability and security of supply, progress of electrification, investment, efficiency of operations and other standard of customer services.

During the reporting period, EWURA developed Electricity (Electrical Installation Services) (Amendment) Rules, 2019, GN. 844/2019 published on 15th November 2019. Moreover, as part of its Regulatory functions, EWURA issued 968 licences of which, five were for electricity generation and 963 electrical installation Personnel. Additionally, 23 mini grid operators with capacity below one megawatt were registered to provide electricity services to areas not connected to the main grid.

As of 30th June 2020, the country's total installed capacity for entities carrying out electricity activities for sale was 1,601.80 MW, of which 1,565.72MW was from main grid and 36.08MW from off-grids. The generation mix in the national grid consisted of natural gas 62.41%, hydropower 37.39% and biomass 0.2%. The country's maximum demand was 1,151.66MW recorded on 27th February 2020, which has increased by 35.08MW (3.14%) from that recorded in 2018/19.

During the period under review, eight licensed entities conducted electricity activities. TANESCO, being a vertically integrated utility, conducted generation, transmission, distribution, supply, and cross border trade. Six entities conducted generation activities. These are Songas Tanzania Limited (189.00MW from natural gas); Mwenga Hydropower Limited (MHL) (4.00MW from hydro); Tanzania Wattle Company (TANWAT) (1.50MW from Biomass); Tanganyika Planting Company Limited (TPC) (9.00MW from bagasse); Andoya Hydro Electric Power Company Limited (AHEPO) (1.00MW from hydro); and Tulila Hydroelectric Power Company Limited (5.00MW, from hydro). Only Mwenga Power Services Limited conducted generation and distribution activities.

During the period, there were 11 licenced entities which generated electricity for own use. These include Lake Cement Limited (15.40MW from coal); Tanga Cement Public Limited Company (11.48MW from diesel); Kilombero Sugar Company Limited (12.55MW from hydro, bagasse and diesel); Kagera Sugar Limited (6.20MW from bagasse and diesel) and Shanta Mine Company Limited (8.20MW from diesel).

Others are Kilombero Plantation (1.692MW from bagasse, hydro and diesel); Geita Gold Mine Limited, (40.00MW from diesel); Tanzania Cigarette Public Company Limited (3.80MW from natural gas); Stamigold Company Limited (7.00MW from diesel); Dangote Cement Limited (45.00MW from natural gas); and ALAF Limited (11.00MW from natural gas).

During the same period, three registered entities generated electricity for sale in bulk to TANESCO. They are Yovi Hydropower Company Limited (0.95kW from hydro); Matembwe Village Company Limited (0.59kW from hydro); and Darakuta Hydropower Development Company Limited (0.32kW from hydro).

There were also seven registered entities which generated and sell electricity to customers. These are Andoya Hydro Electric Power Company Limited (AHEPO), 200.00kW from hydro; Powercorner Tanzania Limited, 220.10kW from solar PV in 9 sites; Jumeme Rural Power Supply Limited, 675.00kW from solar PV in 12 sites and PowerGen Renewable Energy Limited, 347.40kW from solar PV in 17 sites.

Other entities are Watu na Umeme Limited, 48.00kW from solar PV in one site; Ruaha Energy Company Limited, 128.00kW from solar PV in one site; and EON Off-Grid Solution Gmbh, 47.03kW from Solar PV in six sites. Two registered entities generated electricity for own use, namely, Nasra Estate Company Limited, 800.00kW from diesel; and Kiliflora Limited, 230.00kW from hydro. In addition, Unilever Tea Tanzania Limited was designated as eligible customer to purchase power from Mwenga Hydro Limited.

The transmission network comprised of 5,896km out of which, 670km are 400kV lines; 3,011km for 220kV; 1,673km for 132kV and 543km were for 66kV. The distribution networks are owned by licenced entities carrying electricity activities for sale comprised of 139,513.86km of which 139,092.86km were for TANESCO, 421km for Mwenga Power Services Limited. Expansion of the distribution networks have increased by 27.34% for TANESCO and 2% for Mwenga Power Services Limited. The increase has been attributed by support from the Government, TANESCO, EWURA, development partners, private sectors, and Rural Energy Agency (REA), among others. The electricity energy losses for TANESCO were 15.30% of which 5.89% was for transmission system and 9.41% for distribution system. For the case of Mwenga Power Services limited, the distribution loss was 4.73%.

During the period under review, electricity generation projects with a potential capacity of 2,326.70MW namely, Mwalimu Julius Nyerere Hydro Power Project 2,115.00MW, Kinyerezi I Extension Gas Power Project 185.00MW and Rusumo Hydro Power Project 80.00MW and electricity transmission infrastructure projects with a total length of 1,926km were under construction.

During the period under review, the financial performance analysis showed that, gross revenue generation increased by 3%. Songas and Mwenga Hydro performance were better off in terms of profitability while others made loss. However, TANESCO's performance improved through reducing loss by 91%. On average, collection efficiency stood at 91% for three years consecutively. Furthermore, the average unit cost of electricity decreased by 1% which indicated an improvement in operations efficiency.

During the period under review, rural electrification program facilitated increase in overall electricity access in the country from 67.8% in year 2016 to 78.4.% in year 2020. As a result, a total of 9,112 villages were connected to electricity as of April 2020, compared to 2,018 villages which were connected as at the end of 2015, an increase of 7,094 villages equivalent to 351.54%.

Achievements made during the period under review include increased level of compliance of licensees to regulatory frameworks, increased issuance of electrical installation licences by 32.08%; connection of 381,138 new customers; reduced electricity losses; increased electricity accessibility and connectivity to 78.4% and 37.7% respectively.

Challenges faced during the period under review, include low electricity demand growth rate of 3.14% contrary to expected value of 10%-15% as per the Power System Master Plan of 2016; low power reliability caused by inadequately maintained power infrastructure and low private sector participation. To address these challenges, the Authority will continue to collaborate with the Government and other stakeholders to enhance sustainability of electricity supply industry. Moreover, EWURA will continue to enforce compliance to regulatory frameworks and increase awareness programs.

1. INTRODUCTION

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. Electricity plays a 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.

In line with the Tanzania Development Vision 2025 which includes industrialisation agenda among others, EWURA strategic objective is to ensure improved and affordable regulated services including quality, availability and affordability of the electricity supply. 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.

EWURA duties in relation to the electricity sub-sector include protecting consumers 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 consumers; 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 to stakeholders, electricity sub-sector regulatory performance during the financial year 2019/2020, particularly in generation, transmission, distribution, supply and cross border trade in electricity. In addition, the report, presents the overall performance of regulatory activities accomplished, achievements attained, challenges observed and mitigation measures.
The Authority expects that this report will provide useful information and data to stakeholders as far as the electricity sub-sector is concerned.

2. REGULATORY TOOLS

During the period under review, EWURA developed, in accordance with Section 40 of EWURA Act, Cap 414 and Section 45 of the Electricity Act, Cap 131, the Electricity (Electrical Installation Services) (Amendment) Rules, 2019, GN. 844/2019 which was published on 15th November 2019. Apart from the developed rule, the Authority, in performing its duties, continued to use the existing regulatory tools and standards as shown in **Annex 1**.

3. LICENSING AND REGISTRATION

Pursuant to Section 8 of the Electricity Act, Cap 131, 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, Cap 131, gives mandates to the Authority to award licences to entities undertaking or seeking to undertake a licenced activity. However, Section 18 of the Electricity Act, Cap 131, mandates the Authority to exempt any person from application of licence as required by Section 8. Subsequent to this, Rule 36 of the Electricity (Development of Small Power Projects) Rules, 2019, Government Notice No. 462, published on 21st June 2019, and Rule 11(4) of the Electricity (Generation, Transmission and Distribution Activities) Rules, 2019, GN. 287 published on 12th April 2019 exempt Service providers of electricity services with installed capacity below 1 MW from requiring licence. For regulatory oversight, such service providers must be registered by the Authority.

During the period under review, 968 licences were issued out of which, 963 were for electricity installations and five were for electricity generation with a total potential generation capacity of 12.10MW as per **Annex 2.** The total number of licence issued with their respective installed capacity from 2017/18 to 2019/20 is depicted in **Table 1**. Also, a list of all licensed entities in the electricity supply industry is shown in **Annex 3.**

Table 1: Electricity Generation Licence Issued from 2017/18 to 2019/2020

Financial Year	Number of Licence Issued	Capacity (MW)
2019/20	5	12.10
2018/19	8	153.89
2017/18	7	97.30
Total	**20**	**263.29**

Source : *EWURA Licence Data Base*

The performance in Electrical Installations Licences issuance represent an increase of 3.2% as compared to the previous financial year. List of licence issued from financial year 2016/17 up to 2019/20 is shown in **Table 2**. A complete list of electrical installation licensees is accessible through the Authority's website "www.ewura.go.tz".

Table 2: Electrical Installation Licences Issued from 2016/17 - 2019/2020

Financial Year	Total Licences Issued	Male Licensees	Female Licensees
2019/20	963	951	12
2018/19	654	639	15
2017/18	600	590	10
2016/17	634	621	13
Total	**2,851**	**2,801**	**50**

Source : *EWURA Licence Data Base*

The Authority registered 23 mini grids to generate and distribute electricity below 1MW in off-grid areas, with total installed capacity of 902.78kW from solar, and serving 6,657 customers as per **Annex 4**. **Table 3** depicts the number of registered mini grids with their respective installed capacity from financial year 2016/17 to 2019/20**,** and total list of all registered mini grids as of June 2020 is shown in **Annex 5.**

Table 3: Registered off-grid Operators from 2016/17 to 2018/19

Financial Year	Registered Mini Grids	Capacity (kW)
2019/20	23	902.78
2018/19	20	1,390.4
2017/18	4	453.03
2016/17	3	905.60
Total	**50**	**3,651.81**

Source : *EWURA Licence Data Base*

4. REGULATORY APPROVALS

Pursuant to Section 5 of the Electricity Act, Cap 131, EWURA is mandated to approve and enforce tariffs 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 a mandate to approve Power Purchase Agreements (PPAs) and Section 7 of 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

EWURA did not receive any application for approval of Initiation of Procurement of new electricity supply installations. However, as part of its regulatory functions, it continued to monitor implementation of previous approved projects, including those approved in the year ended June 2017 when two power projects were approved, namely;

a) 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.
b) 200-350MW Combined Cycle Gas Power Project to be implemented through PPP at Somanga Fungu in Kilwa District.

4.2 Power Purchase Agreements

The Authority did not receive any application for approval of Power Purchase Agreement, however, it continued to monitor implementation of previously approved PPAs between power producers and TANESCO as an off taker as shown in **Table 4.**

Table 4: PPA and SPPA for 2018/19 for operating Power Plant

S/N	Name of Power Producer	Capacity (MW)	Source of Energy	Location
1.	Songas Tanzania Limited	189.00	Natural gas	Dar es Salaam
2.	Darakuta Hydropower Development Company Limited	0.32	Hydro	Magugu – Babati
3.	Ruaha Energy Company Limited	0.59	Hydro	Njombe
4.	Matembwe Village Community Company Limited	2.75	Hydro	Njombe
5.	Mwenga Hydro Limited	4.00	Hydro	Mufindi
6.	Tulila Hydro Electric Plant Company Limited	7.50	Hydro	Songea
7.	Andoya Hydro Electric Power Company Limited	1.00	Hydro	Mbinga
8.	Ngombeni Power Limited	1.40	Biomass	Mafia
9.	Tanganyika Planting Company Limited	17.50	Biomass	Moshi
	Total	**224.06**		

Source : *EWURA Data Base*

4.3 Rates and Charges

The Authority approved the Electricity (Standardized Small Power Projects Tariff) Order 2019 with Government Notice No. 464 which was published on 21st June 2019 and came into operation on 1st May 2019. This is important for guiding feed in tariffs to the main and mini grid based on avoided cost for SPPs which entered SPPA with TANESCO before May 2015 and technology specific tariffs (hydro, biomass, solar and wind technology) for SPPs which entered SPPA with TANESCO after May 2015 as per **Annex 6**. Also, the Authority continued to monitor implementation of the existing approved tariff for TANESCO as per **Annex 7**, and Mwenga Hydro Limited as per **Annex 8**.

4.4 Complaints and Dispute Resolutions

The Authority attended to complaints against suppliers of regulated goods or services in relation to any matter connected with the supply, possible supply or proposed supply of goods or services. During the Financial Year 2019/2020, the Authority received 122 complaints and resolved 93 complaints which is equivalent to 76.2% in the electricity sub-sector as per **Table 5**. The nature of complaints disputes included electricity billings, compensation due to fire accident and power disconnection disputes.

Table 5: Status of Electricity Complaints for 2019/2020

Zones	Received	Resolved	In progress
Southern Highlands Zone	17	17	0
Central Zone	9	9	0
Lake Zone	43	30	13
Eastern Zone	33	24	9
North Zone	30	23	7
Total	**122**	**93**	**29**

Source: *EWURA*

The Authority will continue to raise awareness to service providers on the importance of providing satisfactory services 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 regulated services 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. TECHNICAL PERFORMANCE MONITORING

This report highlights technical performance of the electricity supply industry in respect to electricity generation, transmission, distribution, supply and cross-border trading.

5.1 Electricity Generation Performance

Performance in electricity generation is analysed with respect to installed capacity, maximum demand, generation mix, plant availability, plants utilization and energy dispatched as described below: -

Installed Capacity

Installed capacity refers to the total name plate capacity (MW) of all generators connected in the main grid and off grids. As of June 2020, total installed capacity for entities carrying out electricity activities for sale was 1,601.80MW, where 1,565.72MW (97.75%) are connected to the main-grid, and 36.08MW (2.25%) are connected to off-grids. Of the total installed capacity, TANESCO contributes a total of 1,388.97MW (86.71%), IPP (SONGAS) owns 189.00MW (11.80%), and SPP & VSPP owned by private entities owns the remaining 23.83MW (1.49%). For grid connected power, TANESCO has an installed capacity of 1,354.36MW (86.5%), IPP (SONGAS) with 189MW (12.1%), and SPP owned by private entities have 22.36MW (1.4%). Furthermore, in the off-grid, TANESCO owns 34.61MW (95.93%), and SPP Off-Grid have an installed capacity of 1.47 (4.07%) MW. Refer **Annex 9** and **Table 6**.

Table 6: Details of Total Installed Capacity

Description	Capacity	Remarks
Main Grid	1,565.72MW (97.75%)	1,354.36MW (86.5%) - TANESCO
		189MW (12.1%) – IPP (SONGAS)
		22.36MW (1.4%) - SPP owned by private entities.
Off-Grid	36.08MW (2.25%)	34.61 (95.93%) MW-TANESCO
		1.47 (4.07%) MW-SPP Off-Grid
Total	**1,601.80**	1,388.97MW (86.71%) - TANESCO
		189.00MW (11.80%) – IPP (SONGAS)
		23.83MW (1.49%) - SPP & VSPP owned by private entities

Source: *EWURA Licence Data Base & Daily System Operation Reports from TANESCO*

5.1.1 Power Plants Currently Under Development

The Government through TANESCO is currently developing power plants which are at various stages of implementation with a total potential installed capacity of 2,327.70MW. The construction of Julius Nyerere Hydropower Project (JNHPP) is progressing well in time. The commissioning of the JNHPP will facilitate the country to have enough reserve capacity to cater for increasing demand in the country due to industrialization and rural electrification. Furthermore, the excess generation capacity will enable the country to trade across the Eastern African Power Pool (EAPP) and Southern African Power Pool (SAPP). Details of the projects are as per **Table 7**.

Table 7: Power Plant Projects Currently Under Development

Name of Project	Capacity (MW)	Energy Source	Expected COD
Mwalimu Julius Nyerere Hydro Power Project	2,115.00	Hydro	2022
Kinyerezi I Extension Gas Power Project	185.00	Natural Gas	2021
Rusumo Hydro Power Project [1]	26.70	Hydro	2021
Total	**2,326.70**		

***Source** : TANESCO and Rusumo Hydro Power Project*

5.1.2 Maximum Demand

Maximum demand (MD) refers to the highest level of electrical demand recorded during the period under review. During the period under review, the MD reached 1,151.66MW on 27th February 2020 which indicates an increase by 35.08MW (3.14%) compared to the year ended June 2019 which was 1,116.58MW as recorded on 30th November 2018. The increase in MD is attributed to the country's achievement to increase electricity accessibility and connectivity to 78.4% and 37.7% as of June 2020 compared to 67.5% and 32.8% as of June 2017, respectively. Details are in **Table 8.**

Table 8: Maximum Demand (MD) and Date

Description	2018/19	2019/20	Change (MW)	%±
MD (MW)	1,116.58	1,151.66	35.08	3.14%
Date	30th November 2018	27th February 2020		

***Source:** Daily System Operation Reports from TANESCO.*

5.1.3 Electricity Generation Mix

Electricity generation mix refers to a group of different primary energy sources (e.g. hydro, gas, coal, renewables etc.) from which secondary energy (electricity) is produced. During the period under review, generation mix consisted of natural gas (62.41%), hydropower (37.39%), liquid fuel - HFO/IDO/GO (0.00%) and biomass (0.20%) as depicted in **Table 9.** In comparison to the year which ended June 2019, the percentage share of energy resources for power generation mix indicates an overall increase of 16% in hydro, a decrease of 8% in natural gas, a decrease by almost 100% in liquid fuel and no change for biomass. The increase in hydro was contributed by improved hydrology which resulted into increased water reserves in dams for generating electricity.

Table 9: Generation Mix from 2018/19 to 2019/20

Technology	Year 2018/19	Year 2019/20	Change
Natural Gas	67.50%	62.41%	-8%
Hydro	32.30%	37.39%	16%
Liquid Fuel	0.10%	0.00%	-100%
Biomass	0.20%	0.20%	0%
Total	**100%**	**100%**	

***Source:** Daily System Operation Reports from TANESCO.*

5.1.4 Energy Generated and Imports [GWh]

Total energy generated and imported for entities carrying out electricity activities for sale was 7,787.21GWh where 7,602.45GWh (97.63%) was generated from the main-grid, 75.13GWh (0.96%) from off-grid, and 109.63GWh (1.41%) were imported through cross border trade.

During the period under review, out of the total energy generated and imported, TANESCO accounted for 6,243.63GWh (80.18%), IPP (Songas) produced 1,366.71GWh (17.55%), SPPs owned by private entities contributed 67.23GWh (0.86%), and Cross Boarder Imports shared 109.63GWh (1.41%) as depicted in **Table 10** and detailed in **Annex 10**. As compared to the previous financial year the contribution of IPP (Songas) was 1,515.08GWh (19.96%) and SPPs owned by private investors was 64.69GWh (0.85%) which shows the contribution of IPP (Songas) decreased and SPPs was increased.

Table 10: Electricity Generation and Imports (GWh) for 2019/2020

Description	GWh	Remarks
Main Grid	7,602.45GWh (97.63%)	6,171.47GWh (81.18%) - TANESCO
		1,366.71GWh (17.98%) – IPP (Songas)
		64.27GWh (0.84%) - SPP owned by private entities
Off-Grid	75.13GWh (0.96%)	72.17GWh (96.06%) -TANESCO
		2.96GWh (3.94%) - SPP Off-Grid (1.47MW*8760hours*23% SPP capacity factor for solar).
Cross Boarder Imports	109.63GWh (1.41%)	0.00GWh (0.00%) – Kenya
		76.12GWh (69.44%) – Uganda
		33.51GWh (30.56%) – Zambia
Total	**7,787.21GWh**	6,243.63GWh (80.18%) - TANESCO
		1,366.71 GWh (17.55%) – IPP (Songas)
		67.23GWh (0.86%) - SPP & VSPP owned by private entities
		109.63GWh (1.41%) Cross Border Imports

Source: *TANESCO Daily System Operation Reports & Other Licensees Annual Reports*

5.1.5 Availability of Power Plants

Availability of a power plant refers to an 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 when the power system attained its maximum peak (as per the daily operation system reports) has been assumed to be the daily availability of the power plant.

During the year 2019/2020, an average availability of all hydro power generation plants was 82.85%, Gas Fired Power Plants was 76.28%, and Liquid Fuel Power Plant was 86.12% as shown in **Table 11** and detailed in **Annex 11**.

Compared to the previous year, an average availability of power plants has increased by 23.75%, natural gas and liquid fuel power plants has increased by 13.85% and 310% respectively while that of hydro power plants has decreased by 3.66%.

The Authority continues to monitor licensees to ensure that availability improves towards the minimum of 95%.

Table 11: Main Grid Power Plant Availability (%) from 2018/19 to 2019/2020

Plants Name	2018/19	2019/20	Change
Hydro Power Plants	86	82.85	-3.66%
Natural Gas Fired Power Plants	67	76.28	13.85%
Liquid Fuel Power Plants	21	86.12	310.07%
Average	**58**	**81.75**	**23.75%**

Source: *TANESCO's Daily System Operation Reports*

5.1.6 Power Generation Plants 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 financial year 2019/2020, average utilisation of all hydro power generation plants was 68.92%, Gas Fired Power Plants 59.91 %, and Liquid Fuel Power Plant 16.55% as shown in **Annex 11, 12** and **Table 12**.

Comparing to the previous year which ended June 2019, average utilisation of all power plants has increased by 17.24%, hydro power plants has increased by 12.98% while that of natural gas power plants has decreased by 4.9%.

The Authority will continue to monitor utilisation of power plants to ensure that all plants operate to their maximum in accordance with their availability without disrupting dispatch merit order.

Table 12: Main Grid Power Plant Utilisation (%) from 2018/19 to 2019/2020

Plants Name	2018/19	2019/20	Change
Hydro Power Plants	61	68.92	12.98%
Natural Gas Fired Power Plants	63	59.91	-4.90%
Liquid Fuel Power Plants	0	16.55	-
Average	**41.33**	**48.46**	**17.24%**

Source: *TANESCO's Daily System Operation Reports*

5.1.7 Private Sector Participation in Generation Segment

Private entities which participate in electricity generation for sale contributes a total of 211.36MW in the main grid and 1.47MW in off-grid as per **Table 13**.

Table 13: Installed Capacity of Private Entities Generating for Sale

Grid	Installed Capacity (MW)	Entities Contribution
Main-grid	211.36	Songas Tanzania Limited (189.00MW), Mwenga Hydro Limited (4.00MW), Andoya Hydro Electric Power Limited (1.00), Tulila Hydroelectric (5.00MW), Matembwe Village Company Limited (0.59), Yovi Hydropower Company Limited (0.995MW), Darakuta Hydropower Development Company Limited (0.32MW), TPC (9MW), & TANNWAT (1.5MW)
Off-grid	1.47	Powercorner Tanzania Limited, 12 site, Solar PV, 310.10kW; Jumeme Rural Power Supply Limited, 12 sites, solar PV, 675.00kW; PowerGen Renewable Energy Limited, 14 sites, Solar PV, 257.40kW; Watu na Umeme Limited, 1 site, Solar PV, 48kW; Ruaha Energy Company Limited, 1 site, Solar PV, 128kV; and EON Off-Grid Solution Gmbh, 6 sites, 47.03kW
Total	**212.83**	

Source: *EWURA Data Base & TANESCO's Daily System Operation Reports*

5.2 Electricity Transmission Performance

Electricity transmission performance is analysed with respect to line length, substations, number of customers, System Average Interruption Frequency Index at Connection point (SAIFI-CP) and Outages. TANESCO) is the only entity licensed to carry out electricity transmission activities. It operates in voltage levels of 66kV, 132kV, 220kV, and 400kV (energised at 220kV).

5.2.1 Electricity Transmission Infrastructure Network

As of 30th June 2020, transmission network comprised of 5,896km of transmission lines and 58 grid substations with total capacity of 3,779MVA (excluding generation substation which was included in the previous year) as per **Annex 13** and **Table 14.**

Table 14: Electricity Transmission Infrastructure for 2017/18 to 2019/20

Voltage (KV)	Line Length			Number of Substations			Capacity (MVA)		
	2018/19	2019/2020	Change (%)	2018/19	2019/2020	Change (%)	2018/19	2019/2020	Change (%)
66	543	543	-	7	7	-	89	91.6	3.00
132	1,673	1,673	-	27	29	7	1,599	1,674.9	5.00
220	3,011	3,011	-	21	22	5	2,668	2,012.5	-25.00
400	670	670	-	0	0	-	0	0	-
Total	**5,896**	**5,896**	**-**	**55**	**58**	**5**	**4,356**	**3,779**	**-13.00**

Source: *TANESCO Annual Reports*

5.2.2 Transmission Line Projects Currently Under Development

The Government through TANESCO is currently developing electricity transmission lines which are at various stages of implementation and Commercial Operation Dates (COD) with a total potential route length of 1,926km as detailed in **Table 15**.

Table 15: Transmission Line Projects Currently Under Development

Name of Transmission Line	Voltage (kV)	km	COD
Bulyanhulu – Geita	220	55.00	2020
Geita – Nyakanazi	220	144.00	2021
Nyakanazi – Rusumo	220	94.00	2021
Singida – Arusha – Namanga	400	114.00	2021
Dar es salaam (Kinyerezi) – Morogoro (Msamvu) SGR – Lot 1	220	159.00	2020
Morogoro (Msamvu) – Dodoma (Ihumwa) SGR – Lot 2	220	234.00	2021
Dodoma (Ihumwa) – Singida (Makutopola) SGR – Lot 2	220	176.00	2021
Kibada – Dege	132	14.00	2020
Tabora – Kigoma	132	381.00	2021
Tabora – Katavi	132	395.00	2021
Julius Nyerere Hydro Power Project (JNHPP) - Chalinze	400	160.00	2022
Total		**1,926.00**	

Source: *Power System Master Plan 2020 Update & TANESCO*

5.2.3 Customers Connected to Transmission Lines

As of June 2019, five customers were connected to the transmission network as described in **Table 16**.

Table 16:: Customers connected in the Transmission Line Infrastructure Network

Voltage (kV)	Customer Name
220	Bulyanhulu Gold Mine
132	ZECO, Tanganyika Portland Cement, Tanga Cement, and Rhino Cement

Source: *TANESCO*

5.2.4 Power System Reliability in Transmission Infrastructure Network

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 135 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. During the period under review, SAIFI-CP was 6.27 which is within set KPI as per **Annex 13** and **Table 17**.

Table 17: Reliability Indices for Transmission Line

SAIFI-CP	Year 2018/19	Year 2019/20	±%
Standard SAIFI-CP (set target)	12.00	12.00	**0.00**
Recorded SAIFI-CP	14.62	6.27	**-57.11**

Source: *TANESCO Annual Report*

Total outage hours were 1,228.81 as per **Annex 13** and **Table 18**. This is a decrease of 44.54% as compared to the previous year. However, there is an increase of 18% in outages hours for the 220kV transmission line network.

Table 18: Transmission Line Outage Hours

Voltage(kV)	Outage	2018/19	2019/20	±%
220	Planned	558	868.87	56.00
	Unplanned	191	17.19	-91.00
	Total	**749**	**886.06**	**18.00**
132	Planned	911	248.61	-73.00
	Unplanned	112	30.37	-73.00
	Total	**1,023**	**278.98**	**-73.00**
66	Planned	181	63.24	-65.00
	Unplanned	252	0.53	-100.00
	Total	**433**	**63.77**	**-85.00**
Total		**2,205**	**1,228.81**	**-44.54**

Source: *TANESCO Annual Reports*

In addition, total outage frequency during the reporting period was 342 as shown in **Table 19**. This is a decrease of 31.05% as compared to the previous year which ended in June 2019.

Table 19: Transmission Line Outage Frequency

Voltage(kV)	Outage	2018/19	2019/20	±%
220	Planned	110	112	1.82
	Unplanned	148	65	-56.08
	Total	**258**	**177**	**-31.40**
132	Planned	87	41	-52.87
	Unplanned	113	108	-4.42
	Total	**200**	**149**	**-25.50**
66	Planned	16	11	-31.25
	Unplanned	22	5	-77.27
	Total	**38**	**16**	**-57.89**
Total		**496**	**342**	**-31.05**

Source: *TANESCO Annual Reports*

Furthermore, the total grid failure occurred once for a duration of 3.42 hours. This indicates a decrease of 72.57% in hours and 75% in events as compared to the previous year which ended June 2019 as per **Table 20**. The grid failures have been decreasing.

Table 20: Total Grid Failure from year 2017/18 to 2019/20

Description	2018/19	2019/2020	±%
Hours	12.47	3.42	-72.57
Event	4	1	-75.00

Source: *TANESCO Annual Reports*

Total grid failure has been decreasing gradually for the period of three years from 2017/18 to 2019/2020.

5.3 Electricity Distribution Performance

In this report, electricity distribution performance is analysed with respect to infrastructure, number of customers, reliability indices, as well as outage hours and frequencies. Reliability indices analysis includes; System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI), and Customer Average Interruption Duration Index (CAIDI). During the period under review, two entities had licence, and seven entities were registered to carry out electricity distribution activities as per **Table 21**.

Table 21: Entities Licensed and Registered to Carry Out Electricity Distribution Activities in 2019/2020

Description	Name of Entity
Licensed Entities (Above/equal 1MW)	1. TANESCO
	2. Mwenga Power Services Limited, 1 site, hydro
Registered Entities (Bellow 1MW)	1. Andoya Hydro Electric Power Company Limited (AHEPO), 1 site, hydro, 200kW
	2. Powercorner Tanzania Limited, 12 site, Solar PV, 310.10kW
	3. Jumeme Rural Power Supply Limited, 12 sites, solar PV, 675.00kW
	4. PowerGen Renewable Energy Limited, 14 sites, Solar PV, 257.40kW
	5. Watu na Umeme Limited, 1 site, Solar PV, 48kW
	6. Ruaha Energy Company Limited, 1 site, Solar PV, 128kV
	7. EON Off-Grid Solution Gmbh, 6 sites, 47.03kW

Source: *EWURA Data Base*

5.3.1 Electricity Distribution Infrastructure Network

As of 30th June 2020, the distribution network from licensed entities carrying out electricity distribution activities, totalled 139,513.86km. Out of these, TANESCO owned 139,092.86 km, while 421 km are owned by Mwenga Power Services Limited as depicted in **Table 22**. When compared to the year ended on 30th June 2019, there is an increase of distribution networks of 27.34% for TANESCO and 2% for Mwenga. The expansion of distribution network for TANESCO has been significantly contributed by the rural electrification initiatives by Rural Energy Agency (REA), among others.

Table 22: Electricity Distribution Network Infrastructure Length for Licensed Entities in 2018/19-2019/20

Licensee	Voltage (kV)	2018/19	2019/20	±%
TANESCO	33	33,817.6	43,891.60	29.79
	11	6,588.4	11,044.40	67.63
	0.23 and 0.4	68,819.60	84,156.85	22.28
	Total	**109,225.60**	**139,092.86**	**27.34**
Mwenga	33	264	277	5.00
	0.23 and 0.4	150	160	7.00
	Total	**414**	**421**	2.00
Grand Total		**109,639.60**	**139,513.86**	**27.00**

Source: *TANESCO and MWENGA*

There were also **447.71km** from entities registered to carry out electricity distribution activities below one megawatt, where 24.8km belongs to Andoya, 152km owned by Powercorner, 46.2km by E. ON, 104.07km by Jumeme, 112.9km by PowerGen, 7.75km for Watu na Umeme as per **Table 23**. When compared to the year ended on 30th June 2019, there is an overall increase of 0.24%.

Table 23: Electricity Distribution Infrastructure Line Length for Registered Entities

Licensee	Voltage (kV)	2018/19 Length(km)	2019/20 Length (km)	Difference Length (km)	±%
Andoya	11	10.5	10.5	0	0.00
	0.23 and 0.4	13.24	14.3	1.06	8.00
	Total	**23.74**	**24.8**	1.06	4.00
Powercorner Tanzania Limited	0.23 and 0.4	152	152	0	0.00
EON Off-Grid Solution Gmbh	0.23 and 0.4	46.2	46.2	0	0.00
Jumeme Rural Power Supply Limited	11	18.91	18.91	0	0.00
	0.23 and 0.4	85.16	85.16	0	0.00
	Total	**104.7**	**104.7**	0	0.00
PowerGen Renewable Energy Limited	0.23 and 0.4	112.9	112.9	0	0.00
Watu na Umeme Limited	0.23 and 0.4	7.75	7.75	0	0.00
Grand Total	**11**	**29.41**	**29.41**	**0**	**0.00**
	0.23 and 0.4	**417.25**	**418.31**	**1.06**	**0.25**
	Overall Total	**446.66**	**447.72**	**1.06**	**0.24**

Source : *EWURA Data Base & Licensees*

5.3.2 Rural Electrification

During the period under review, the Government continued with rural electrification programme, which enabled electrification of 7,094 villages making the total electrified villages to be 9,112 as of April, 2020, compared to 2,018 villages as at the end of 2015. This increase is equivalent to 351.54%. This resulted into increase in overall electricity access in the country from 67.8% in year 2016 to 78.4% in year 2020. These achievements have also been contributed by the Government initiative to connect the rural customers at a reduced rate of TZS: 27,000. (Budget speech for the Ministry of Energy FY 2020/2021).

5.3.3 Customers

As of 30th June 2020, licensed entities carrying out electricity distribution activities, comprised a total of 2,869,151customers, of which 2,864,560 were for TANESCO and 4,591 for Mwenga Power Services Limited as per **Annex 13** and **Table 24**.

Comparing to the year ended on 30th June 2019, TANESCO had an increase of 380,358 (**15.31%**) customers, while Mwenga an increase of **635** (**16.05%**). The increase of electricity access and connectivity has been significantly contributed by the rural electrification initiatives by Rural Energy Agency (REA).

During the period under review, conducive environment for investments through mini-grid facilitated increased electricity access to 99.6 percent in urban and 69.8 percent in rural areas. In addition, household connectivity has increased to 73.2 percent in urban and 24.5 percent in rural areas.

Table 24: Electricity Distribution Licensees' Customer for 2018/19 and 2019/20

Lisensee	Description	2018/19	2019/20	Difference	±%
TANESCO	Domestic Use (D1)	768,291	924,074	155,783	20.28
	General Use (T1)	1,712,180	1,936,490	224,310	13.10
	Low Voltage Supply (T2)	2,970	3,165	195	6.57
	High Voltage Supply (T3)	759	829	70	9.22
	Zanzibar (T5) *	1	1	0	0.00
	Kahama Gold Mine (T8)	1	1	0	0.00
	Total	**2,484,202**	**2,864,560**	**380,358**	**15.31**
Mwenga	Domestic (D1)	2612	2666	54	2.00
	General Use (T1)	1344	1925	581	43.00
	Total	**3,956**	**4,591**	**635**	**16.05**
Grand Total		**2,492,599**	**2,869,151**	**376,552**	**15.11**

Source: *TANESCO and Mwenga Annual Reports*

There were **11,199** customers from entities with mini-grids registered to carry out electricity distribution activities below one Megawatt as per **Table 25**. This indicates an overall decrease of -0.05% as compared to 2018/19.

Table 25: Customers of Registered Mini-Grids for 2018/19 and 2019/20

Lisensee	Description	2018/19	2019/20	±%
Andoya	General Use (T1)	256	250	-2.34
Powercorner Tanzania Limited	General Use	3,011	3,011	0.00
Jumeme Rural Power Supply Limited	General Use	4,874	4,874	0.00
PowerGen Renewable Energy Limited	General Use	2,177	2,177	0.00
Watu na Umeme Limited	General Use	256	256	0.00
EON Off-Grid Solution Gmbh	General Use	476	476	0.00
Total		**11,193**	**11,199**	**-0.05**

Source : *EWURA Data Base & Licensees*

5.3.4 Power System Reliability in Distribution Infrastructure

Power system reliability is 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 650 minutes (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 analyses duration and frequency of outages in general. It also analyses the reliability indices with assumption that number of affected customers are equal for both planned and unplanned outages for TANESCO.

Therefore, during the period under review, total outage hours were 1,255.54 for TANESCO, and 333.99 for Mwenge, a decrease of 11% and an increase of 28% respectively as per **Table 26**. Details of TANESCO data are as per **Annex 14**.

For mini-grids entities operating below one 1MW, only Andoya Hydro Electric Power Company Limited recorded outage hours of 155 which indicates an increase of 150.7%. The Authority will continue to monitor other entities to ensure that they record their performance data.

Table 26: Electricity Distribution Outage Hours for 2017/18 and 2019/20

Licensee	Outages Hours	2017/18	2018/19	2019/2020	Difference	±%
TANESCO	Planned	19,344	677.97	674.61	-3.36	-0.50
	Unplanned	14,217	732.8	580.93	-151.87	-20.72
	Total	**33,561**	**1,410.77**	**1,255.54**	**-155.23**	**-11.00**
Mwenga	Planned	49.28	221.7	96.37	-125.33	-130.00
	Unplanned	145.4	19.02	237.62	218.6	92.00
	Total	**194.68**	**240.72**	**333.99**	**93.27**	**28.00**
Andoya	Planned	36	2.37	20	17.63	744.00
	Unplanned	134	1.93	135	133.07	6895.00
	Total	**170**	**4.3**	**155**	**150.7**	**3505.00**

Source: *TANESCO, Mwenga and Andoya Annual Reports*

The total outage frequency was, **1,088** for TANESCO, **247** for Mwenga Power Services Limited and **35** for Andoya Hydro Electric Power Company Limited. This indicates a decrease of 37.51% for TANESCO, 78.94 for Mwenga, and 72% for Andoya as per **Table 27**.

Table 27: Electricity Distribution Outage Frequency for 2018/19 and 2019/20

Licensee	Outages	2018/19	2019/20	Difference	±%
TANESCO	Planned	853	653	-200	-23.45
	Unplanned	888	435	-453	-51.01
	Total	**1,741**	**1,088**	**-653**	**-37.51**
Mwenga	Planned	32	88	56	175.00
	Unplanned	1,141	159	-982	-86.06
	Total	**1,173**	**247**	**-926**	**-78.94**
Andoya	Planned	11	**25**	14	127.00
	Unplanned	116	**10**	-106	-91.00
	Total	**127**	35	**-92**	**-72.00**

Source: *TANESCO, Mwenga and Andoya Annual Reports*

For the period under review, reliability indexes were as per **Table 28**. All Licensees operated above the required standard except for Andoya.

Table 28: Power Reliability Indexes for 2019/20

Licensee	Index	Standard index	Recorded index	Difference	±%
TANESCO	SAIFI (Frequency per customer)	3	218	215	7167
	SAIDI (Hours per Customer)	10.8	176	165.2	1530
	CAIDI (hours per interruptions)	0.1	1.24	1.14	1140
Mwenga	SAIFI (Frequency per customer)	3	35.93	32.93	1098
	SAIDI (Hours per Customer)	10.8	26.17	15.37	142
	CAIDI (hours per interruptions)	0.1	1	0.9	900
Andoya	SAIFI (Frequency per customer)	3	1.024	-1.976	-66
	SAIDI (Hours per Customer)	10.8	1.1	-9.7	-90
	CAIDI (hours per interruptions)	0.1	1.074	0.974	974

Source: *Licensee data*

5.3.5 New Connections to Power Supply

According to TANESCO's Customer Service Charter, a customer must be connected within 30 working days if the customer is within 30 meters from supply line, 60 working days if within 30-100 meters, 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 100% and Andoya Hydro Electric Power Company Limited 100% as shown in **Table 29.** Details of customers for TANESCO are as per **Annex 14**. Comparing to year ending 30th June 2018, there is an improvement on all licensees' in connection of customers. The Authority will continue to monitor to ensure that all applications are connected within the required time.

Table 29: Electricity Distribution Customer Connection

Licensee	Target	Connections	% Achievement	Applications	Connections	% Achievement
TANESCO	290,000	380,358	106.33	413,307	380,358	92.03
Mwenga	NA	NA	NA	800	780	98.00
Andoya	NA	NA	NA	0	0	NA
NB: 1. NA= Not Applicable 2. TANESCO Connections included connections done by REA.						

Source: *TANESCO, RPDL, AHEPO Annual Reports*

5.4 Electricity Energy Losses

Analysis of energy losses was performed for three utilities which were in operation during the period under review. These were TANESCO, Mwenga Power Services Limited, and Andoya Hydroelectric Power Company Limited.

In accordance with the 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. The ESI-RSR sets the trajectory for loss reduction in the tune of 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 targets do not allocate the portion for distribution segment.

During the period under review, TANESCO had a total energy loss of 15.30% which is within the desired total losses in the electricity supply industry as per ESI-RSR. Out of total loss, 5.89% is for transmission and 9.41% for distribution as per **Annex 13**, **Table 30** and **31**.

Mwenga Power Services Limited had a distribution loss of 4.73% which is higher than that of 2019 when the losses were 4.24%. Andoya had a distribution loss of 5.44% which is less than the previous year where the losses were 5.75% as per **Table 31.**

The Government through TANESCO has taken initiatives to reduce losses in the power system. The initiatives undertaken include replacement of post-paid energy meters to prepaid meters to its customers, rehabilitation of the generation power plants including Hale and Nyumba ya Mungu, construction and rehabilitation of substations in Dar es Salaam, Kilimanjaro, Arusha and Dodoma. Rehabilitations were also carried out in Iringa, Singida, Shinyanga and Geita regions.

Power distribution infrastructure throughout the country was also rehabilitated, awareness program conducted to discourage energy theft, as well as investing in ongoing electricity infrastructure projects, including those for generation and transmission as already described in respective sections.

Mwenga Power Services Limited had increased losses due to expansion of the power distribution networks to its customers at Kihansi area. Expansion of networks involves increased number of transformers which contributes to increment of technical losses. In case of Andoya Hydroelectric Power Company Limited had reduction of energy losses due to adherence of proper maintenance of the power infrastructure.

Table 30: Electricity Transmission Losses in the Main Grid- TANESCO

Description	2018/19	2019/2020
Energy Received in Transmission System (GWh)	7,413.95	7,531.11
Energy Received for Distribution (GWh)	6,975.21	7,085.79
Losses (GWh)	435.55	442.92
Losses (%)	**5.87**	**5.89**

Source: *TANESCO Operation Reports*

Table 31: Electricity Distribution Losses

Licensee	Year	Energy Distributed (GWh)	Energy Sales (GWh)	Losses (GWh)	Losses (%)
TANESCO	2019/20	7,257.64	6,574.70	682.94	9.41
	2018/19	7,314.14	6,557.13	757.01	10.35
	2017/18	6,939.34	6,118.42	820.92	11.83
Mwenga	2019/20	20.680	19.701	0.979	4.73
	2018/19	15.86	15.182	0.673	4.24
	2017/18	19.18	18.473	0.707	3.69
Andoya	2019/20	2.792	2.640	0.156	5.44
	2018/19	2.742	2.584	0.1576	5.75
	2017/18	2.995	2.773	0.222	7.412

Source: *TANESCO, Mwenga and Andoya Annual Reports*

Note: Total Energy distributed to customers by TANESCO was 7,257.64GWh of which 7085.79GWh (97.63%) was from main grid power plants, 62.22GWh (0.86%) was from off grid (mini grid) power plants and 109.63GWh (1.51%) was from cross border import.

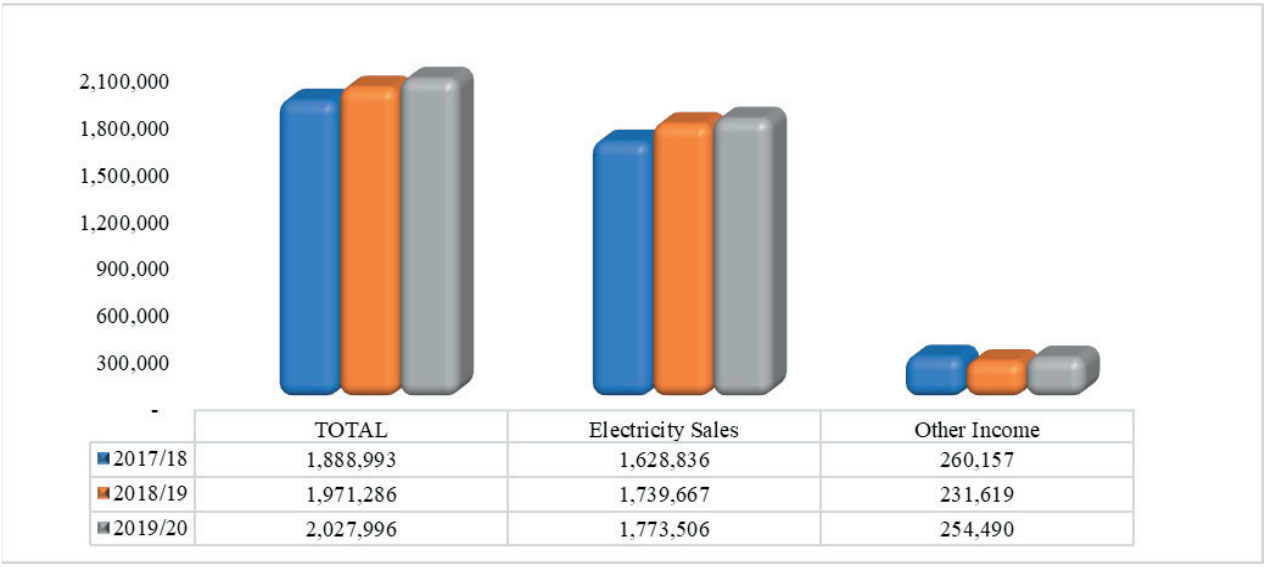
6. FINANCIAL PERFORMANCE

This section briefly describes the financial performance of six utilities from 2017/18 to 2019/20. These utilities are 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 electricity generation utilities of Songas, Mwenga Hydro Power Limited and Tulila Hydroelectric. Further, Songas generates electricity for bulk sale to TANESCO under a long term PPA, whereas Mwenga Hydro and Tulila generate electricity and sell to TANESCO under SPPAs.

Moreover, Songas, Tulila and Andoya report financial performance based on calendar year and others use the fiscal year, hence, for calendar year 2017 to 2019 referred as 2017/18 to 2019/20, respectively. Thus, the financial performance analysis either based on the draft financial statements of 2019/20 or audited financial statements of the year 2019 and other data obtained from the utilities. Furthermore, since TANESCO and Andoya are vertically bundled, the financial reports show the performance of the utility as a whole and not for separate segment.

6.1 Revenue Generation

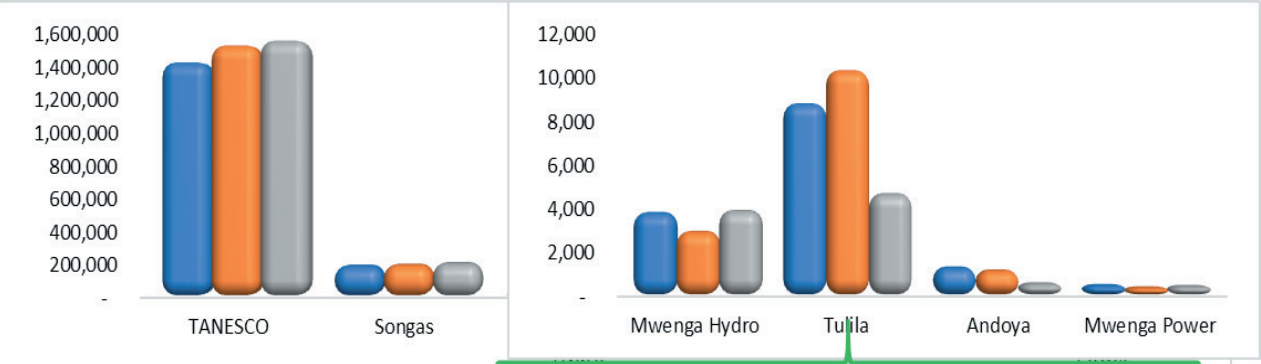
In 2019/20, gross revenue increased by 3% compared to an increase of 4% recorded in 2018/19. The revenue from sale of electricity increased by 2% and other revenue increased by 10%. In addition to that, 87% of revenue were generated from sale of electricity and 13% from other sources. *Figure 1* shows the three-year trend of revenues from sale of electricity and other income and detailed in **Annex 15**.



	TOTAL	Electricity Sales	Other Income
2017/18	1,888,993	1,628,836	260,157
2018/19	1,971,286	1,739,667	231,619
2019/20	2,027,996	1,773,506	254,490

Figure 1: Total Revenue by Source (TZS in million)

During 2019/20, revenue generated from sale of electricity increased by 33% for Mwenga Hydro, 20% for Mwenga Power, 5% for Songas and 2% for TANESCO. Tulila and Andoya recorded significant drop of 55% and 53%, respectively. Revenue generated by each utility presented in ***Figure 2***.



	TANESCO	Songas	Mwenga Hydro	Tulila	Andoya	Mwenga Power
2017/18	1,430,849	183,645	3,799	8,834	1,262	448
2018/19	1,535,255	189,669	2,921	10,362	1,123	338
2019/20	1,564,353	199,657	3,894	4,670	527	406

Figure 2: Total Revenue by Utility

Being a public utility, TANESCO generates most of its revenue from sales of electricity. Sales made to general use customers (T1) and High voltage supply customers account for an average of 50% and 32% of the total electricity sales revenue respectively.
During 2019/20, TANESCO recorded the general increase in sales of electricity by 1%. However, the increase was associated with the increase in consumption from general usage (1%) and Zanzibar Electricity Corporation (16%). Consumption from domestic low usage increased by 1% while the low and high voltage supply dropped by 3% and 1% respectively. Figure 3 shows three years TANESCO revenue by customer category.

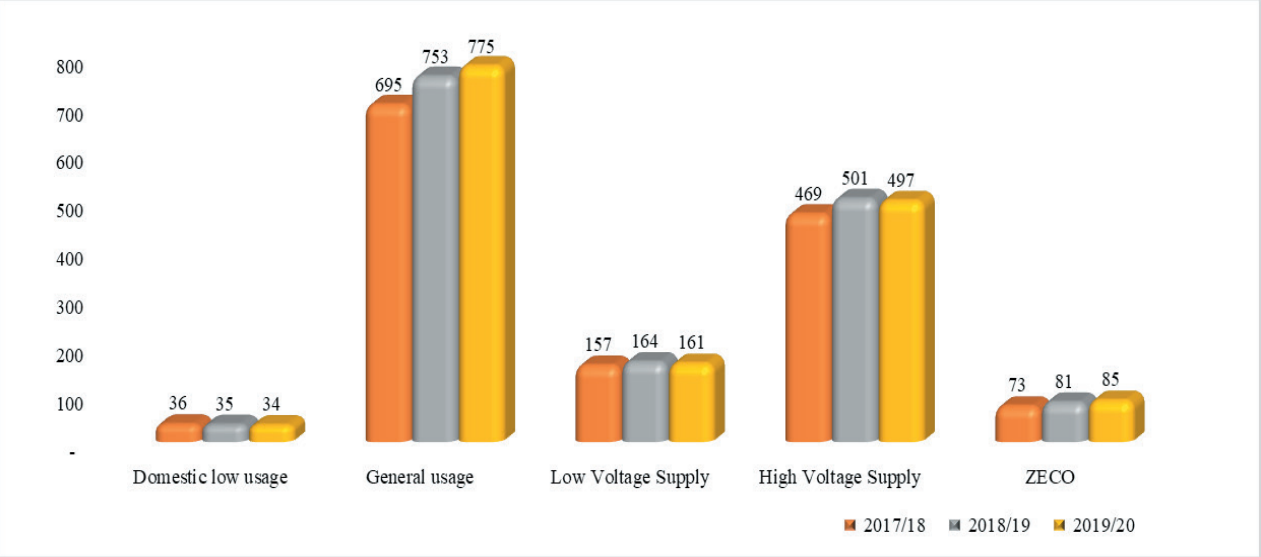


Figure 3: TANESCO Revenue by Customer Category (TZS Billions)

Furthermore, out of 29 TANESCO regions, 64.00% of its revenue from electricity generated from seven regions, whereas 36.00% is from 22 regions. The highest contributions are from Kinondoni North (18.00%), Ilala (13.00%), and Temeke (9.00%) while the lowest contributions are from Rukwa (0.45%), Simiyu (0.41%) and Katavi (0.26%). *Figure 4* below shows Contribution of each TANESCO region to the total revenue and detailed in **Annex 16**.

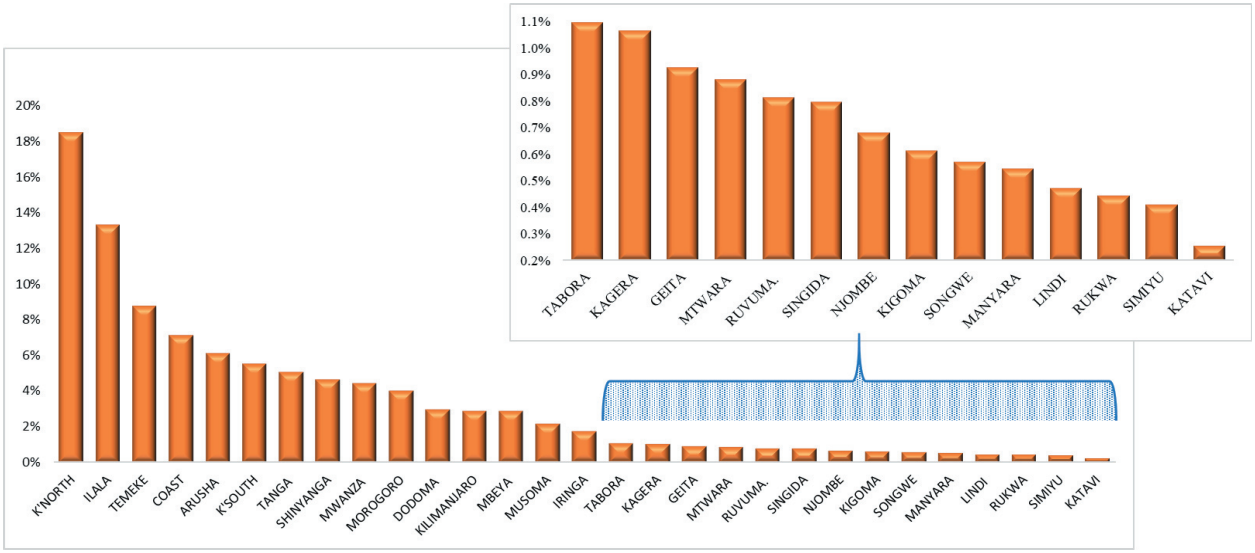
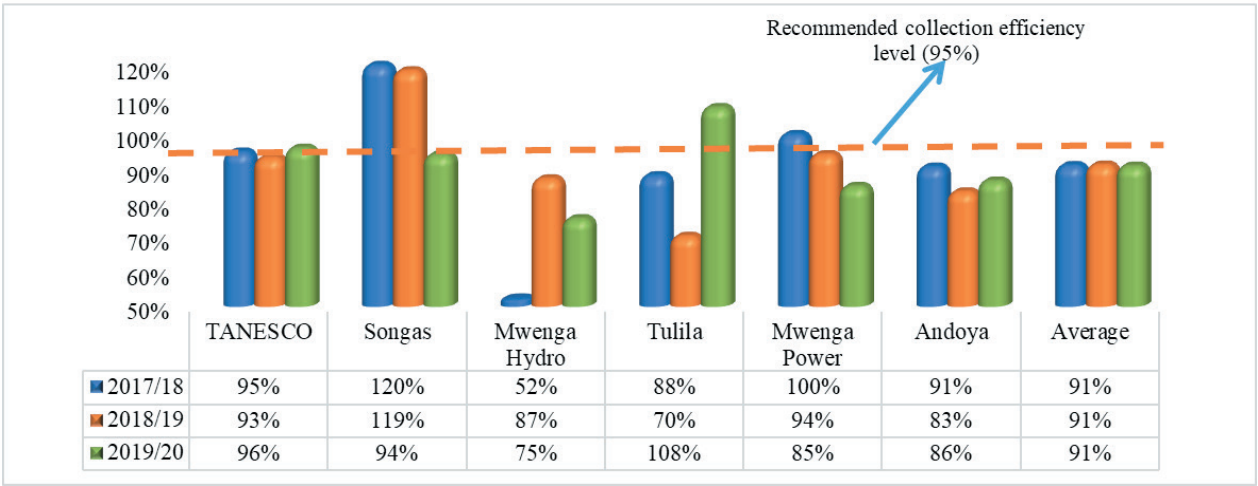


Figure 4: Contribution of each TANESCO region to the total revenue

6.2 Collection Efficiency

Collection efficiency measures the ability of a utility to collect from its customers the amount billed for services rendered. As shown in Figure 5, in 2019/20, collection efficiency of TANESCO, Tulila and Andoya improved compared to 2018/19 while that of Songas, Mwenga Hydro and Mwenga Power decreased. The collection efficiency reported include arrears from previous financial years.

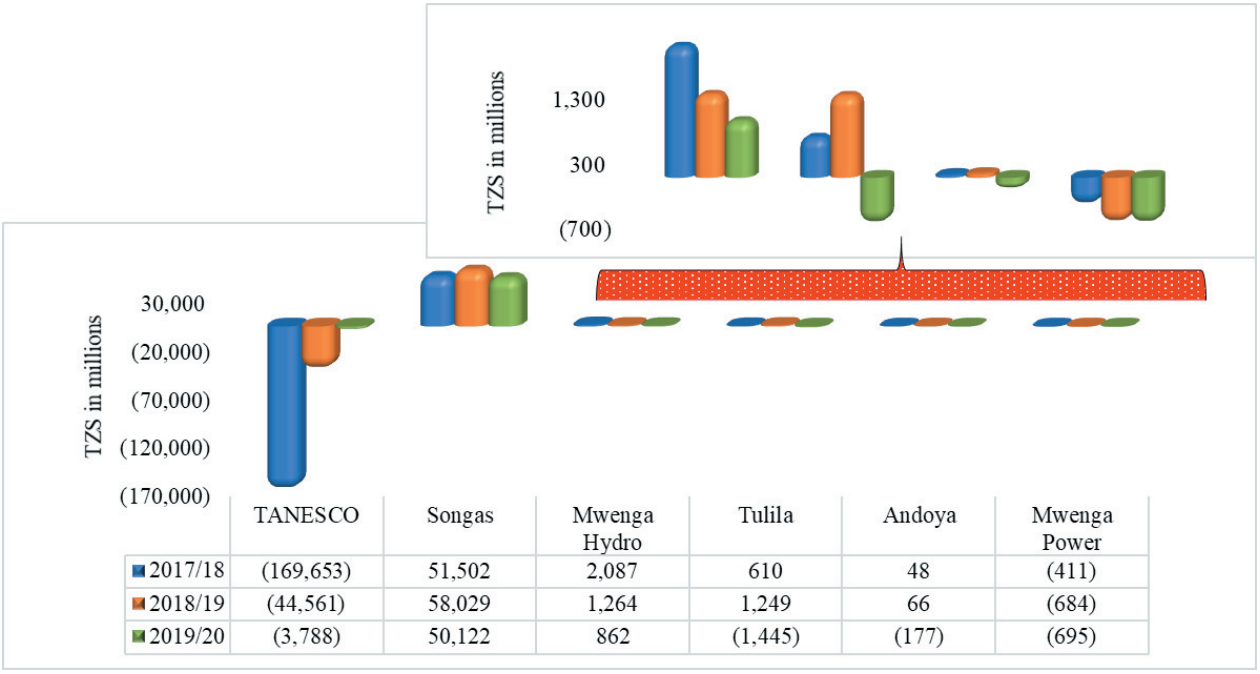


	TANESCO	Songas	Mwenga Hydro	Tulila	Mwenga Power	Andoya	Average
2017/18	95%	120%	52%	88%	100%	91%	91%
2018/19	93%	119%	87%	70%	94%	83%	91%
2019/20	96%	94%	75%	108%	85%	86%	91%

Figure 5: Collection efficiency by Utility

6.3 Profitability

During the period under review, profitability of utilities increased by 192% compared to a drop of 113% as recorded in the previous financial year. The main reason for the increase is due to improved performance of TANESCO that reduced the level of loss by 91%. Despite the increase in overall level of profit, performance of five utilities dropped: Andoya (370%), Tulila (216%), Mwenga Hydro (32%), Songas (14%) and Mwenga Power (2%). *Figure 6* below shows profitability level by utilities.

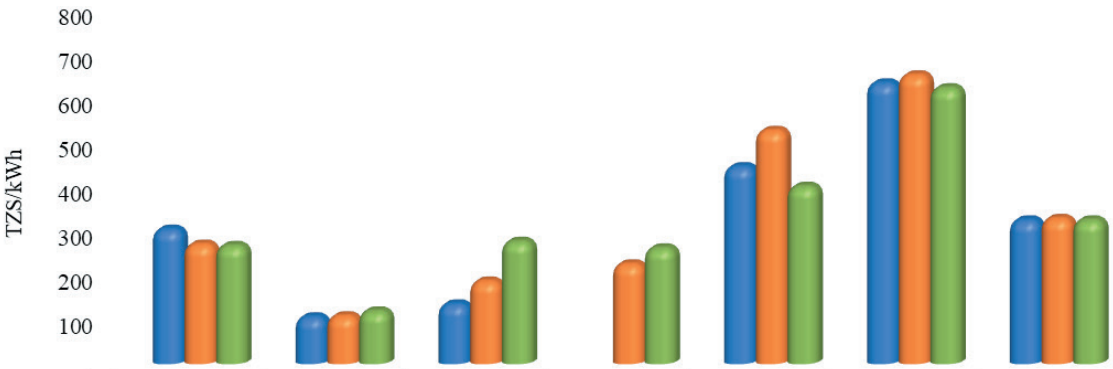


	TANESCO	Songas	Mwenga Hydro	Tulila	Andoya	Mwenga Power
2017/18	(169,653)	51,502	2,087	610	48	(411)
2018/19	(44,561)	58,029	1,264	1,249	66	(684)
2019/20	(3,788)	50,122	862	(1,445)	(177)	(695)

Figure 6: Profitability of Utility

6.4 Cost per Unit Sold

In 2019/20, the average unit cost of electricity decreased by 1% compared to an increase of 1% recorded in 2018/19. The decrease is associated with the decrease in unit cost of Andoya (24%), Mwenga Power (4%) and TANESCO (1%). The unit cost for Mwenga Hydro, Tulila and Songas increased by 48%, 16% and 10% respectively. Furthermore, compared to other utilities, Mwenga power recorded the highest cost per unit sold of TZS 663/kWh while Songas recorded the lowest unit cost of TZS 119/kWh. Figure 7 indicates trend of unit costs for three FYs.



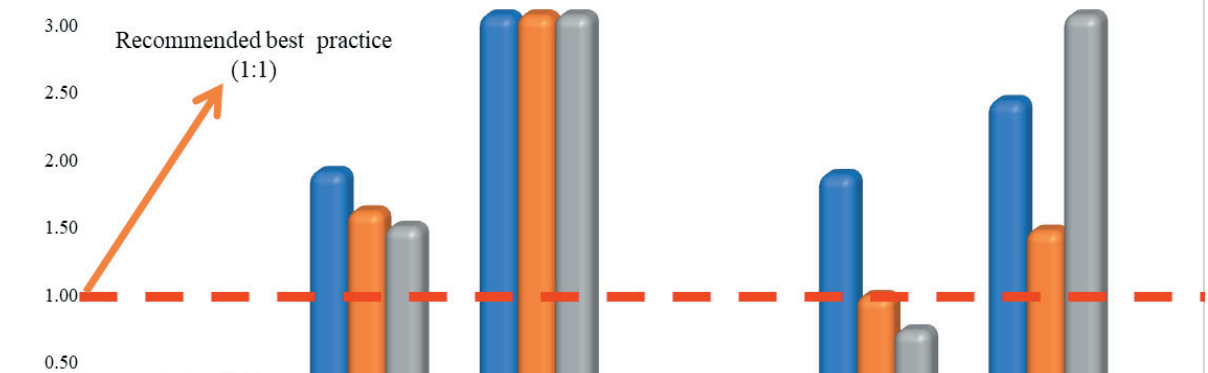
	TANESCO	Songas	Mwenga Hydro	Tulila	Andoya	Mwenga Power	Average
2017/18	303.42	105.54	134.62		444.56	633.72	324.37
2018/19	269.57	107.80	186.28	224.97	526.41	651.76	327.80
2019/20	266.60	118.85	276.01	261.08	400.35	622.67	324.26

Figure 7: Total cost per unit sold

6.5 Current Ratio Analysis

The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or those due within one year. A good current ratio ranges from 1:1 to 1:2, which means that the business has two times more current assets than liabilities to cover its debts. A current ratio below 1:1 means that the company does not have enough liquid assets to cover its short-term liabilities.

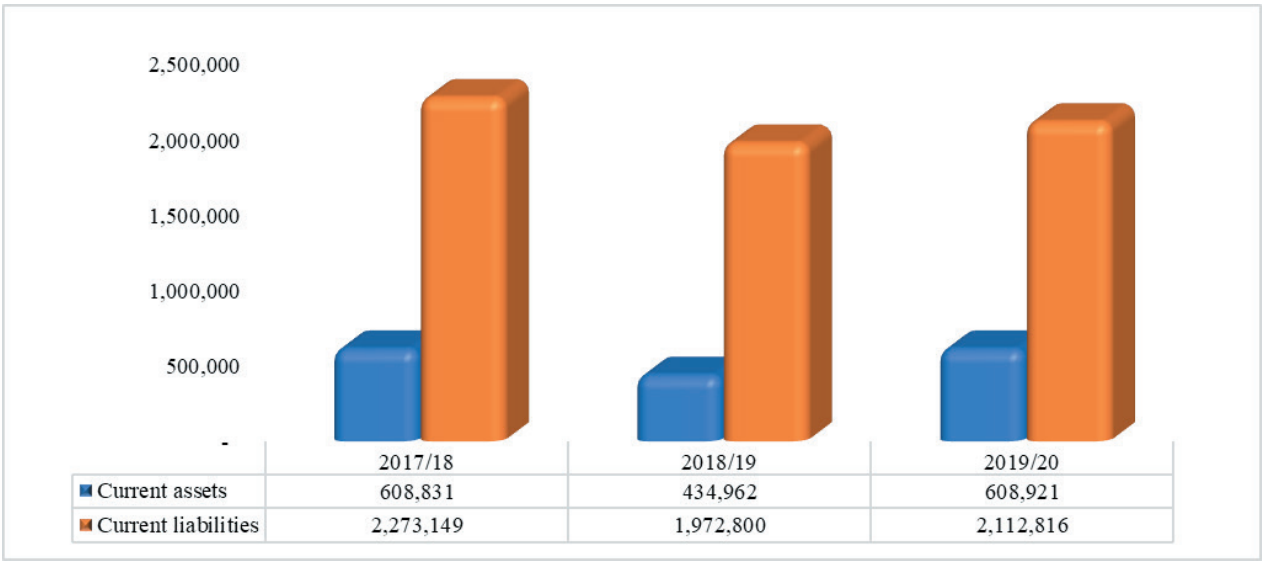
During the period under review, Songas, Tulila and Andoya recorded current ratio of more than 1:1 which implied that the utilities were in a better position to meet short term obligations. However, the excessive ratio recorded by Andoya (1:23) and Tulila (1:7) indicated that there were poor utilization of current assets as far as working capital management is concerned. Further, the analysis showed that, Mwenga Power and TANESCO were unable to pay short term obligation on time. *Figure 8* shows current ratios trend from 2017/18 to 2019/20 by utilities.



	TANESCO	SONGAS	TULILA	Mwenga Power	Mwenga Hydro	ANDOYA
2017/18	0.27	1.84	5.93	0.04	1.82	2.36
2018/19	0.22	1.55	12.13	0.04	0.92	1.41
2019/20	0.29	1.43	6.92	0.04	0.67	22.88

Figure 8: Current ratio by utilities

In 2019/20, current ratio for TANESCO was 1:0.3 which implies low ability to meet short term obligation when they fall due. In other words, TANESCO was able to meet short term obligation by less than 30%. However, in 2018/19, the situation worsened where the current ratio of 1:0.2 was recorded. *Figure 9* shows three years trend of TANESCO's short term obligation against its current assets.

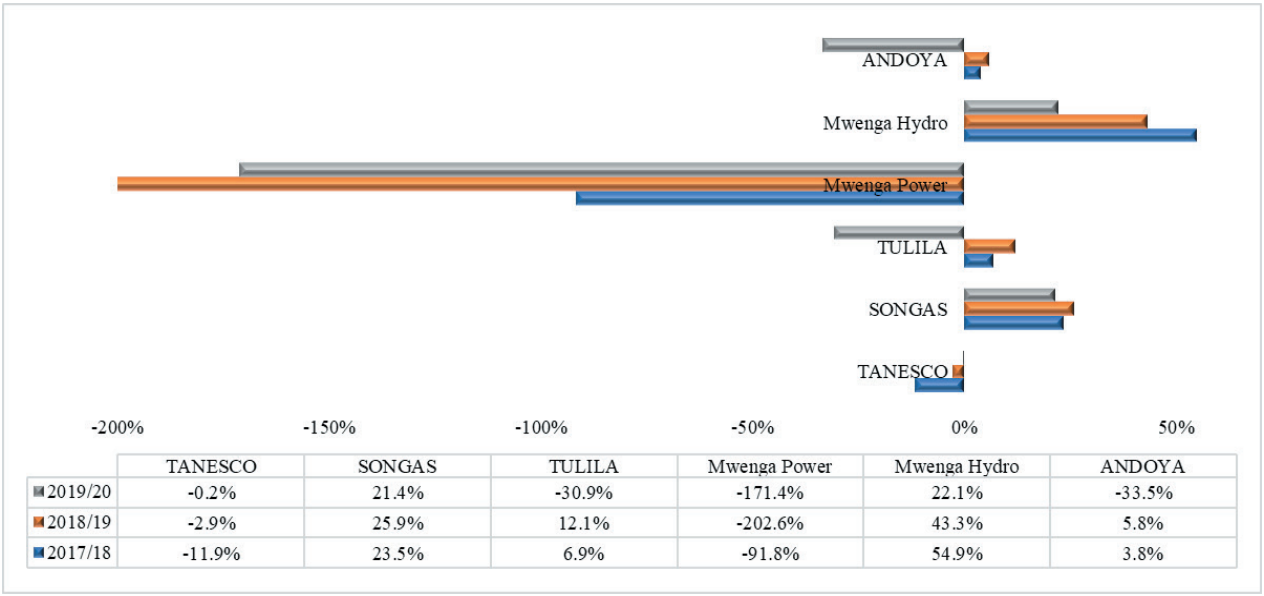


	2017/18	2018/19	2019/20
Current assets	608,831	434,962	608,921
Current liabilities	2,273,149	1,972,800	2,112,816

Figure 9: TANESCO's short term obligation against its current assets. (TZS in million)

6.6 Net Profit Margin Analysis

Net profit margin indicates how much net income a company makes with total sales achieved. A good margin as a general rule of thumb considers 10% net profit margin as average, a 20% margin as good and a 5% margin is low. During the year under review, good margin was achieved by Songas (21%) and Mwenga Hydro (22%) while other utilities' margins were negative. ***Figure 10*** shows three years trend of net profit margin by utilities.



	TANESCO	SONGAS	TULILA	Mwenga Power	Mwenga Hydro	ANDOYA
2019/20	-0.2%	21.4%	-30.9%	-171.4%	22.1%	-33.5%
2018/19	-2.9%	25.9%	12.1%	-202.6%	43.3%	5.8%
2017/18	-11.9%	23.5%	6.9%	-91.8%	54.9%	3.8%

Figure 10: Net Profit Margin by utilities

7. ACHIEVEMENTS AND CHALLENGES

7.1 Achievements

The achievements made in the electricity sub-sector during the reporting period include the following:

a) Increased issuance of electrical installation licences by 32.08%;
b) Issuance of five provisional generation licences with a potential to increase generation capacity by 12.10MW when commissioned;
c) Distribution network expansion increased by 27.34% and new connections of 376,552 customers to electricity.
d) Rural electrification program facilitated increase in overall electricity access in the country from 67.8% in year 2016 to 78.4% in year 2020.
e) Increase in electricity connectivity in rural areas where 9,112 villages were connected to electricity as of April 2020 compared to 2,018 villages in 2015 which is an increase of 7,094 villages equivalent to 351.54%.
f) Electricity Distribution Outage Frequency has decreased by 37.51 percent; and
g) Increased awareness, which has led to increased demand of the regulatory intervention in matters regarding licensing, consumer complaints resolution and electricity accident investigation.

7.2 Challenges and Way Forward

During the reporting period, the electricity sub- sector faced a number of challenges which include the following:

a) Low demand growth - demand growth rate of 3.14% which is in contrary with expected value of 10%-15% as per the Power System Master Plan of 2016. The Authority will continue to promote investments which will facilitate energy demand growth;

b) Power Reliability-Low power reliability caused by inadequately maintained power infrastructure as compared to the Power quality – Quality of service and reliability standard TZS 1374:2011 established by Tanzania Bureau of Standard. The Authority will continue to enforce compliance and monitoring inspection to facilitate improvement in the power reliability; and

c) Low Private Sector Participation - Private sector investments in the electricity sub sector continued to be inadequate. 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.

8. CONCLUSION

During the year under review, electricity sub-sector registered milestones towards achievement of the national goals and targets. The sub-sector achieved growth in some areas such as increased electricity accessibility and connectivity to 78.40% and 37.70% respectively country wide and increased energy generated by 2.60% from 7,590.59GWh to 7,787.21GWh. It is noted that the demand growth was only 3.14%, contrary to projections in the Power System Master Plan 2016. Despite the aforementioned shortfalls, the small growth achieved indicates that the sub-sector is moving towards the right direction in achieving the set national goals and targets.

Annex 1: Regulatory Tools and Standards

(a) Regulatory Tools

- EWURA Act, 2001;
- The Electricity Act, 2008;
- National Energy Policy, 2015;
- The Electricity (General) Regulations GN 63;
- Model Power Purchase Agreements for seven technologies (i.e. Hydro, Natural Gas, Oil, Coal, Geothermal, Solar and Wind);
- The Electricity (Licensing Fees) Rules, 2012. GN. 11/2013;
- 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.
- Electricity System Operations Cooperation (Establishment Order), 2016;
- Electricity (System Operations Services) Rules, 2016;
- Electricity (Market Operation Services) Rules, 2016;
- Electricity (Tariff Setting) Rules, 2016;
- Standardized Power Purchase Agreement;
- The Electricity (Grid and Distribution Codes) Rules, 2017, GN. 451;
- The Electricity (Net Metering) Rules, 2017, GN. 441/2017;
- The Electricity (Procurement of Power Projects and Approval of Power Purchase Agreement) Rules 2019, GN. 453;
- The Electricity (Development of Small Power Projects) Rules, 2019, GN. 462;
- The Electricity (Supply Services) Rules 2019, GN. 387;
- The Electricity (Electrical Installation Services) Rules, 2019, GN 382;
- The Electricity (Generation, Transmission and Distribution Activities) Rules, 2019, GN. 462; and
- The Electricity (Standardized Small Power Projects Tariff) Order 2019, GN. 464.

(b) Standards

(i). TZS 1373:2011 – Power Quality - Quality of supply;
(ii). TZS 1374:2011 – Power Quality - Quality of service and reliability;
(iii). 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;
(iv). 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;
(v). TZS 1377:2011 Electromagnetic compatibility (EMC) – Limits for harmonic current emissions for equipment with input current ≤ 16 A per phase;
(vi). TZS 1378:2011 Electromagnetic compatibility (EMC) – Limits for harmonic current emissions for equipment with input current > 16 A per phase;

(vii). TZS 1379:2011 Electromagnetic compatibility (EMC) – Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems;
(viii). TZS1380:2011 Electromagnetic compatibility (EMC) – Compatibility levels for low frequency conducted disturbances and signaling in public medium voltage power supply systems;
(ix). TZS 1381:2011 Electromagnetic compatibility (EMC) – Compatibility levels in industrial plant for low-frequency conducted disturbances; and
(x). TZS1382:2011 Electromagnetic compatibility (EMC) – Power quality measurement methods.

Annex 2: Electricity Generation Licence Issued for Year 2019/20

S/N	Name	Project Area	Capacity (MW)	Type of Licence	Duration (Years)	Licence No.	Date of issue	Date of Expiry	Source
1.	Mwenga Hydro Limited	Mafinga	2.5	Generation (Provisional Licence)	3	PEGL-2019-003	26/Nov/19	25/Nov/22	Hydro
2.	Jacana Resources Tanzania Ltd	Dar es Salaam	2.7	Generation (Provisional Licence)	3	PEGL-2020-001	30/Jan/20	29/Jan/23	Diesel
3.	Luponde Hydro Limited	Njombe	1.06	Generation (Operational Licence)	15	EGL-2020-001	30/Jun/20	29/Jun/35	Hydro
4.	Madope Hydro Company Limited	Ludewa	1.84	Generation (Operational Licence)	15	EGL-2020-002	30/Jun/20	29/Jun/35	Hydro
5.	ALAF Limited	Dar es Salaam	4.00	Generation Own Use (Standby)	5	BEGL-2020-001	30/Jan/20	29/Jan/25	Natural Gas
Total Generation Capacity			**12.10**						

Annex 3: Total List of Licences Issued as of June 2020

S/N	Licensee	Project Area	Energy Source	Capacity (MW)	Duration	Licence No.	Date of Issue	Date of Expiry
(a) Electricity Generation Licence – Sale								
1.	Songas	Ubungo	Natural Gas	189	33 Years	issued by MoE	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	Biomass	20	13 Years	EGL-2012-006	18/Jun/12	17/Jun/25
4.	Tanganyika Wattle Company Ltd	Njombe	Biomass	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.	Luponde Hydro Limited	Njombe	Hydro	1.06	15	EGL-2020-001	30/Jun/20	29/Jun/35
10.	Madope Hydro Company Limited	Ludewa	Hydro	1.84	15	EGL-2020-002	30/Jun/20	29/Jun/35

(b) Electricity Generation – Own Use								
1.	Ashanti Goldfields T Ltd	Geita	Diesel	31.00	25	P/G 1134	3/Dec/99	2/Dec/24
2.	Shanta Mine Co. Ltd	Chunya	Diesel	4.20	15	BEGL-2013-001	6/Sep/13	5/Sep/28
3.	Mufindi Paper Mills	Mufindi	Biomass	10.415	5	BEGL-2013-002	18/Nov/13	17/Nov/18
4.	Lake Cement Limited	Kimbiji Village, Temeke	Coal	15.40	15	BEGL-2016-001	29/Mar/16	28/Mar/31
5.	Tanga Cement Public Limited Company	Tanga	Diesel	11.48	15	SEGL-2016-001	4/Oct/16	3/Oct/31
6.	Kilombero Sugar Company Limited	Kidatu - Morogoro	Biomass	12.552	15	BEGL-2017-001	18/Apr/17	17/Apr/32
7.	Kagera Sugar Limited	Misenyi - Kagera	Biomass	6.20	15	BEGL-2017-002	18/Apr/17	17/Apr/32
8.	Shanta Mine Co. Ltd	Songwe	Diesel	8.20	15	BEGL-2018-001	2/Feb/18	1/Feb/33
9.	Kilombero Plantations Limited	Morogoro	Biomass	1.692	15	EGL-2018-001	30/Aug/18	29/Aug/33
10.	Geita Gold Mining Limited	Geita	Diesel	40.00	25	BEGL-2018-002	3/Dec/99	2/Dec/24
11.	Tanzania Cigarette Public Limited Company	Dar es Salaam	Natural Gas	3.8	5	BEGL-2019-001	22/Mar/19	21/Mar/24
12.	Stamigold Company Limited	Biharamulo	Diesel	7.00	15	BEGL-2019-002	22/Mar/19	21/Mar/34
13.	Dangote Cement Limited	Mtwara	Natural Gas	45.00	5	BEGL-2019-003	30/Apr/19	29/Apr/24
14.	ALAF Limited	Dar es Salaam	Natural Gas	4.00	5	BEGL-2020-001	30/Jan/20	29/Jan/25

(c) Electricity Distribution, Supply, Transmission and Cross Border Trade								
1.	TANESCO	Mainland Tanzania	Supply	-	20	ESL-2013-001	1/Mar/13	28/Feb/33
2.	TANESCO	Mainland Tanzania	Transmission and Cross Border Trade	-	20	ETSOC - 2013-001	1/Mar/13	28/Feb/33
3.	TANESCO	Mainland Tanzania	EDCBTL	-	20	PEL-2013-002	1/Mar/13	28/Feb/33
4.	Mwenga Power System Limited	Mufindi	Distribution	4	15	EDL-2013-005	30/Apr/13	29/Apr/28
(d) Provision Electricity Generation Licences								
1.	Luponde Hydro Limited	Njombe	Hydro	2.90	3	PEGL-2017-001	1/Mar/17	29/Feb/20
2.	Suma Hydro Limited	Rungwe	Hydro	1.50	3	PEGL-2017-002	1/Mar/17	29/Feb/20
3.	CEFA Registered Trustees	Njombe	Hydro	6.00	3	PEGL-2017-003	1/Mar/17	29/Feb/20
4.	Ludewa Capacity Building Association	Ludewa	Hydro	10.00	3	PEGL-2017-005	29/Aug/17	28/Aug/20
5.	Dangote Cement Limited	Mtwara	Natural Gas	60	3	PEGL-2017-006	3/Nov/17	2/Nov/20
6.	Mkonge Energy Systems Co. Ltd	Tanga - Mandera	Biomass	9.00	3	PEGL-2017-007	15/Dec/17	14/Dec/20
7.	Mkonge Energy Systems Co. Ltd	Tanga - Ngombezi 1	Biomass	2	3	PEGL-2017-008	15/Dec/17	14/Dec/20
8.	Ninety-Two Limited	Ngorongoro	Hydro	1.90	3	PEGL-2018-001	2/Feb/18	1/Feb/21
9.	Kagera Sugar Limited	Kagera	Bagasse	23.80	3	PEGL-2018-002	1/Mar/18	28/Feb/21
10.	Mwenga Hydro Limited	Mufindi	Wind	2.4	3	PEGL-2018-003	29/Nov/18	28/Nov/21
11.	ALAF Limited	Dar es Salaam	Natural Gas	4.0	3	PEGL-2018-004	21/Dec/18	20/Dec/21
12.	Dangote Industries Ltd	Mtwara	Natural Gas	50	3	PEGL-2019-001	27/Mar/19	26/Mar/21
13.	Mwenga Hydro Limited	Mafinga	Hydro	2.5	3	PEGL-2019-003	26/Nov/19	25/Nov/22
14.	Jacana Resources Tanzania Ltd	Dar es Salaam	Diesel	2.7	3	PEGL-2020-001	30/Jan/20	29/Jan/23

Annex 4: Registered off-Grid Entities for Year 2019/20

No.	Project Area	Capacity (KW)	Duration (Years)	Registration No.	Date of Issue	Date of Expiry	Customer Serviced
A.	**Power Gen Renewable Energy Limited (generating and distributing using solar, located in the off-grid & sales to customers)**						
1.	Itabagumba Village, Buchosa District	30.32	10	No. CRG – 2019 - 010	1/Jul/19	30/Jun/29	220
2.	Busenge Village, Buchosa District	28.68	10	No. CRG – 2019 - 011	1/Jul/2019	30/Jun/29	180
3.	Kanyala Village, Buchosa District	30.32	10	No. CRG – 2019 - 012	1/Jul/19	30/Jun/29	251
4.	Iglansoni Village, Buchosa District	23.96	10	No. CRG – 2019 - 013	1/Jul/19	30/Jun/29	200
	Sub-Total	**113.28**					**851**
B.	**PowerCorner T Limited (generating and distributing using solar, located in the off-grid & sales to customers)**						
5.	Mwenge Village, Sikonge District	28	10	No. CRG – 2019 - 014	1/Jul/2019	30/Jun/29	317
6.	Mgambo Village, Sikonge District	20	10	No. CRG – 2019 - 015	1/Jul/19	30/Jun/29	163
7.	Kegei Village, Nachingwea District	16	10	No. CRG – 2019 - 016	18/Dec/19	17/Dec/29	172
8.	Matekwe Village, Nachingwea District	12	10	No. CRG – 2019 - 017	18/Dec/19	17/Dec/29	134
9.	Lukumbule Village, Nachingwea District	40.5	10	No. CRG – 2019 - 018	18/Dec/19	17/Dec/29	209
10.	Kagerankanda Village, Kasulu District	44	10	No. CRG – 2019 - 019	18/Dec19	17/Dec/29	397
11.	Kalya Village, Uvinza District	28	10	No. CRG – 2019 - 020	18/Dec19	17/Dec/29	264
12.	Hololа Village, Nanyumbu District	16	10	No. CRG – 2019 - 021	27/Dec/19	26/Dec/29	122

No.	Project Area	Capacity (KW)	Duration (Years)	Registration No.	Date of Issue	Date of Expiry	Customer Serviced
	Sub-Total	**204.5**					**1,778**
C.	**Jumeme Rural Power Supply Ltd (generating and distributing using solar, located in the off-grid & sales to customers)**						
1.	Kibumba Village, Muleba District	10	10	No. CRG – 2020 - 001	14/May/20	13/May/30	70
2.	Kasenyi Village, Muleba District	20	10	No. CRG – 2020 - 002	14/May/20	13/May/30	348
3.	Nabweko Village, Ukerewe District	100	10	No. CRG – 2020 - 003	14/May/20	13/May/30	378
4.	Kebere Village, Muleba District	35	10	No. CRG – 2020 - 004	14/May/20	13/May/30	256
5.	Goziba Village, Muleba District	45	10	No. CRG – 2020 - 005	14/May/20	13/May/30	338
6.	Lukuba Village, Musoma District	10	10	No. CRG – 2020 - 006	14/May/20	13/May/30	153
7.	Kanoni Village, Buchosa District	100	10	No. CRG – 2020 - 007	14/May/20	13/May/30	675
8.	Bunyozi Village, Muleba District	45	10	No. CRG – 2020 - 008	14/May/20	13/May/30	378
9.	Mahaiga Village, Muleba District	20	10	No. CRG – 2020 - 009	14/May/20	13/May/30	199
10.	Bukiko Village, Ukerewe District	100	10	No. CRG – 2020 - 010	14/May/20	13/May/30	692
11.	Chifule Village, Ukerewe District	100	10	No. CRD – 2020 - 011	14/May/20	13/May/30	541
	Sub-Total	**585**					**4,028**
	Total	**902.78**					**6,657**

Source : EWURA Licence Data Base

Annex 5: Total List of Registered Entities Selling Electricity as of June 2020

No.	Project Area Mini Grid	Generation Capacity (KW)	Registration No.	Duration (Years)	Date of Issue	Date of Expiry	Customer served	Line Length (km)	
								0.23/0.4kV	11/33kV
A.	**Darakuta Hydropower Development Co. Limited (generating using hydro, located in the main-grid & sales to TANESCO)**								
1.	Magugu – Babati District, Manyara Region	450	NA	10	3/Jul/13	2/Jul/23	1	NA	NA
B.	**Yovi Hydropower Company Limited (generating using hydro, located in the main-grid & sales to TANESCO)**								
1.	Msolwa - Kilosa District, Morogoro Region	995	CRG - 2019 - 009	10	16-Apr-19	15-Apr-29	1	NA	NA
C.	**PowerCorner Tanzania Limited (generating and distributing using solar, located in the off-grid & sales to customers)**								
1.	Orkejuloongishu Village, Ketumbeine Ward, Longido District,	15.6	CRG-2016-001 & CRD-2016-001	10	06-Oct-16	05-Oct-26	81	2	0
2.	Mbaya Village, Liwale District	30	CRG-2018-005 & CRD-2018-005	10	31-Oct-18	30-Oct-28	270	13.3	0
3.	Nakopi Village, Nanyumbu District	30	CRG-2018-006 & CRD-2018-006	10	31-Oct-18	30-Oct-28	251	9.8	0
4.	Barikiwa Village, Liwale District	30	CRG-2018-007 & CRD-2018-007	10	31-Oct-18	30-Oct-28	267	16.5	0
5.	Mwenge Village, Sikonge District	28	CRG-2019-014 & CRD-2019-014	10	01-Jul-19	30-Jun-29	360	16.9	0
6.	Mgambo Village, Sikonge District	20	CRG-2019-015 & CRD-2019-015	10	01-Jul-19	30-Jun-29	220	9.7	0
7.	Kegei Village, Nachingwea District	16	CRG-2019-016 & CRD-2019-016	10	18-Dec-19	17-Dec-29	252	12.8	0
8.	Matekwe Village, Nachingwea District	12	CRG-2019-017 & CRD-2019-017	10	18-Dec-19	17-Dec-29	156	9.8	0
9.	Lukumbule Village, Nachingwea District	40.5	CRG-2019-018 & CRD-2019-018	10	18-Dec-19	17-Dec-29	263	16.3	0
10.	Kagerankanda Village, Kasulu District	44	CRG-2019-019 & CRD-2019-019	10	18-Dec-19	17-Dec-29	443	17.6	0
11.	Kalya Village, Uvinza District	28	CRG-2019-020 & CRD-2019-020	10	18-Dec-19	17-Dec-29	317	19.7	0
12.	Holola Village, Nanyumbu District	16	CRG-2019-021 & CRD-2019-021	10	27-Dec-19	26-Dec-29	131	7.6	0
	Sub-Total	**310.10**					**3,011**	**152**	**0**
D.	**E. ON Off Grid Solution Gmbh (generating and distributing using solar, located in the off-grid & sales to customers)**								

No.	Project Area Mini Grid	Generation Capacity (KW)	Registration No.	Duration (Years)	Date of Issue	Date of Expiry	Customer served	Line Length (km)	
								0.23/0.4kV	11/33kV
1.	Ololosokwan Village, Ngorongoro District, Arusha	6	CRG-2017-001 & CRD-2017-001	10	21-Nov-17	20-Nov-27	94	4.5	0
2.	Soitsambu Village, Ngorongoro District, Arusha	6	CRG-2017-002 & CRD-2017-002	10	21-Nov-17	20-Nov-27	67	4	0
3.	Digodigo Village, Ngorongoro District	6	CRG-2017-003 & CRD-2017-003	10	11/21/2017	11/20/2027	72	6.2	0
4.	Malambo Village, Ngorongoro District, Arusha Region	13.14	CRG-2017-004 & CRD-2017-004	10	21-Nov-17	11/20/2027	92	8.5	0
5.	Itaswi Village, Chemba District, Dodoma Region	6.39	CRG-2017-005 & CRD-2017-005	10	19-Dec-17	18-Dec-27	64	11	0
6.	Kwa Mtoro Village, Kondoa District, Dodoma Region	9.5	CRG-2017-006 &. CRD–2017-006	10	19-Dec-17	18-Dec-27	87	12	0
	Sub-Total	**47.03**					**476**	**46.2**	**0**
E.	**Ruaha Energy Co. Ltd (generating and distributing using solar, located in the off-grid & sales to customers)**								
1.	Zombo Village, Kilosa District	128	CRG–2017–007 & CRD-2017-007	10	19-Dec-17	18-Dec-27	147		
	Sub-Total	**128**					**147**		
F.	**Watu na Umeme Limited (generating and distributing using solar, located in the off-grid & sales to customers)**								
1.	Korogwe District, Tanga Region	48	CRG-2018-001No. CRD-2018-001	10	23-Apr-18	22-Apr-28	256	7.75	0
	Sub-Total	**48**					**256**	**7.75**	**0**
G.	**Power Gen Renewable Energy Limited (generating and distributing using solar, located in the off-grid & sales to customers)**								

No.	Project Area Mini Grid	Generation Capacity (KW)	Registration No.	Duration (Years)	Date of Issue	Date of Expiry	Customer served	Line Length (km)	
								0.23/0.4kV	11/33kV
1.	London Village, Manyoni District, Singida Region.	16	CRG-2018-003 & CRD-2018-003	10	20-Aug-18	19-Aug-28	210	13	0
2.	Ighombwe Village, Ikungi District, Singida Region.	3	CRG-2018-004 & CRD-2018-004	10	20-Aug-18	19-Aug-28	50	7.1	0
3.	Bugalama Village, Ngara District, Kagera Region.	3.18	CRG-2019-001 & CRD-2019-001	10	11-Jan-19	10-Jan-29	52	2.4	0
4.	Murusagamba Village, Ngara District, Kagera Region.	17.16	CRG-2019-002 & CRD-2019-002	10	11-Jan-19	10-Jan-29	177	8.8	0
5.	Kalenge Village, Biharamulo District, Kagera Region.	16.18	CRG-2019-003 & CRD-2019-003	10	11-Jan-19	10-Jan-29	178	11.4	0
6.	Nyantakara Village, Biharamulo District, Kagera Region.	17.18	CRG-2019-004 & CRD-2019-004	10	11-Jan-19	10-Jan-29	95	7	0
7.	Mavota Village, Biharamulo District, Kagera Region.	17.18	CRG-2019-005 & CRD-2019-005	10	11-Jan-19	10-Jan-29	134	8.1	0
8.	Nemba Village, Biharamulo District, Kagera Region.	23.52	CRG-2019-006 & CRD-2019-006	10	11-Jan-19	10-Jan-29	182		0
9.	Leshata Village, Gairo District, Morogoro Region.	15.36	CRG-2019-007 & CRD-2019-007	10	28-Mar-19	27-Mar-29	145	7.5	0
10.	Kitaita & Songambele Village, Gairo District, Morogoro Region.	15.36	CRG-2019-008 & CRD-2019-008	10	28-Mar-19	27-Mar-29	103	3.9	0
11.	Itanagunda Village, Ziragula Island, Buchosa District, Mwanza Region	30.32	CRG-2019-010 & CRD-2019-010	10	1-Jul-19	30-Jun-29	218	9.3	0
12.	Busenge Village, Yozu Island, Buchosa District, Mwanza Region	28.68	CRG-2019-011 & CRD-2019-011	10	1-Jul-19	30-Jun-29	181	10.1	0
13.	Kanyara Village, Kasalazi island, Buchosa District, Mwanza Region	28.68	CRG-2019-012 & CRD-2019-012	10	1-Jul-19	30-Jun-29	251	12.2	0
14.	Iglansoni Village, Ikungi District, Mwanza Region	23.96	CRG-2019-013 & CRD-2019-013	10	01-Jul-19	30-Jun-29	201	12.1	0
	Sub-Total	**255.76**					**2,177**	**112.9**	**0**

No.	Project Area Mini Grid	Generation Capacity (KW)	Registration No.	Duration (Years)	Date of Issue	Date of Expiry	Customer served	Line Length (km)	
								0.23/0.4kV	11/33kV
H.	**Jumeme Rural Power Supply Ltd (generating and distributing using solar, located in the off-grid & sales to customers)**								
1.	Bwisya - Ukara Island	90	NA	10	08-Apr-16	07-Apr-26	555	16.1	5.8
2.	Kibumba/Chembuzi Village, Muleba District	10	No. CRG – 2020 - 001	10	14-May-20	13-May-30	70	1.57	0
3.	Kasenyi Village, Muleba District	20	No. CRG – 2020 - 002	10	14-May-20	13-May-30	334	3.02	0
4.	Nabweko/Sambi Village, Irungwaukerewe District	100	No. CRG – 2020 - 003	10	14-May-20	13-May-30	557	3.3	0
5.	Kerebe Village, Muleba District	35	No. CRG – 2020 - 004	10	14-May-20	13-May-30	279	2.5	0
6.	Goziba Village, Muleba District	45	No. CRG – 2020 - 005	10	14-May-20	13-May-30	379	3.64	0
7.	Lukuba/Etaro Village, Musoma District, Mara Region.	10	No. CRG – 2020 - 006	10	14-May-20	13-May-30	155	4.73	0
8.	Kanoni/Busimbi/Kisaba Village, Buchosa District, Mwanzan Region.	100	No. CRG – 2020 - 007	10	14-May-20	13-May-30	666	2.5	0
9.	Bunyozi/Ilamba Village, Mazinga Island, Muleba District, Kagera Region.	45	No. CRG – 2020 - 008	10	14-May-20	13-May-30	417	7	0
10.	Mahaiga Village, Muleba District	20	No. CRG – 2020 - 009	10	14-May-20	13-May-30	210	1.42	0
11.	Bukiko/kome Village, Ukerewe District, Mwanza Region.	100	No. CRG – 2020 - 010	10	14-May-20	13-May-30	708	20.84	7.61
12.	Chifule/Bukungu Village, Ukerewe District, Mwanza Region.	100	No. CRD – 2020 - 011	10	14-May-20	13-May-30	544	18.54	5.5
	Sub-Total	**675.00**					**4,874**	**85.16**	**18.91**
	Total	**2,780.89**					**10,943**	**404**	**18.91**

SUMMARY		
A. Generation Capacity	**kW**	**Description**
1. Total VSPP (kW)_Hydro + Solar	2,780.89	All registered Entities
2. Total_VSPP_solar_Main Grid	0	No registered Entity in this category
3. Total_VSPP_Solar_Off Grid	1466.29	PowerCorner (310kW) +EON (47.03KW) + Ruaha Energy (128KW) + Watu na Umeme (48KW) + Powergen (257.76kW) + Jumeme (675kW).
4. Total_VSPP_Hydro_Main Grid	1315	Darakuta (320kW) +Yovi (995kW)
5. Total_VSPP_Hydro_Off Grid	0	No registered Entity in this category
6. Total_VSPP_Main-Grid	1315	Darakuta (320kW) +Yovi (995kW)
7. Total_VSPP off-Grid	1466.29	PowerCorner (310kW) +EON (47.03KW) + Ruaha Energy (128KW) + Watu na Umeme (48KW) + Powergen (257.76kW) + Jumeme (675kW).
B. Customer	**No.**	
8. Total VSPP (kW)_Hydro + Solar	10,943	All registered Entities
9. Total_VSPP_solar_Main Grid	0	No registered Entity in this category
10. Total_VSPP_Solar_Off Grid	1466.29	PowerCorner (3,011) +EON (**476**) + Ruaha Energy (147) + Watu na Umeme (256) + Powergen (2,177) + Jumeme (4,874).
11. Total_VSPP_Hydro_Main Grid	2	Darakuta (1) +Yovi (1) – all sale to TANESCO
12. Total_VSPP_Hydro_Off Grid	0	No registered Entity in this category
13. Total_VSPP_Main-Grid	2	Darakuta (1) +Yovi (1) – all sale to TANESCO
14. Total_VSPP off-Grid	10,941	PowerCorner (3,011) +EON (476) + Ruaha Energy (147) + Watu na Umeme (256) + Powergen (2,177) + Jumeme (4,874).
C. Infrastructure Line length	**KM**	
15. Total VSPP (kW)_Hydro + Solar	422.91	All registered Entities
16. Total_VSPP_solar_Main Grid	0	No registered Entity in this category
17. Total_VSPP_Solar_Off Grid	422.91	PowerCorner (152) +EON (**46.2**) + Ruaha Energy (NA) + Watu na Umeme (7.75) + Powergen (112.9) + Jumeme (104.07).
18. Total_VSPP_Hydro_Main Grid	0	Darakuta (0) +Yovi (0) – all are doing generation activities only. No distribution activities.
19. Total_VSPP_Hydro_Off Grid	0	No registered Entity in this category
20. Total_VSPP_Main-Grid	0	Darakuta (0) +Yovi (0) – all are doing generation activities only. No distribution activities.
21. Total_VSPP off-Grid	422.91	PowerCorner (152) +EON (46.2) + Ruaha Energy (NA) + Watu na Umeme (7.75) + Powergen (112.9) + Jumeme (104.07).

Annex 6: The Electricity Standardized Small Power Projects Tariff

Note: *It was published on 21st June 2019, GN 464*

a) Tariff for SPPs Selling Electricity to the Grid Based on Specific Technology

Capacity	Minihydro	Wind	Solar	Biomass	Bagasse
	USc²/kWh	USc/kWh	USc/kWh	USc/kWh	USc/kWh
0.1 - 0.5MW	10.65	10.82	10.54	10.15	9.71
0.51 - 1 MW	9.90	9.95	9.84	9.34	9.09
1.01 - 5MW	8.95	9.42	9.24	8.64	8.56
5.01 - 10MW	7.83	8.88	8.34	7.60	7.55

b) Tariffs for Main Grid Connection under the First Generation SPP Framework (Avoided Cost)

Description		Approved Tariff effective 1st May 2019 (TZS/ kWh)
Standardized Small Power Purchase Tariff		203.11
Seasonally adjusted Standardized SPPT	Dry season	243.73
Payable in	Wet season	182.80

Annex 7: Tanzania Electric Supply Company Limited (TANESCO) Tariff

Note: *It commence on 1st April 2016*

a) Approved TANESCO Tariff

Customer Category	Component	Unit	Approved Tariff
D1	Service charge	TZS/Month	0
	Energy charge (0-75kWh)	TZS/kWh	100
	Energy charge above 75kWh	TZS/kWh	350
T1	Service charge /month	TZS/Month	0
	Energy charge	TZS/kWh	292
	Maximum Demand charge	TZS/kVA/Month	0
T2	Service charge	TZS/Month	14,233
	Energy charge	TZS/kWh	195
	Maximum Demand Charge	TZS/kVA/Month	15,004
T3-MV	Service charge	TZS/Month	16,769
	Energy charge	TZS/kWh	157
	Maximum Demand Charge	TZS/kVA/Month	13,200
T3-HV	Service charge	TZS/Month	0
	Energy charge	TZS/kWh	152
	Maximum Demand Charge	TZS/kVA/Month	16,550

Key
D1: Low usage Tariff for Domestic Customers who on avarage consume les than 75kWh per month. Any unit exceeding 75kWh is charged a high rate of Ths 350 per kWh. Under this category, power is supplied at a low voltage single phase (230V).
T1:General Usage Tariff for customers including residential, small comercial and light industrial use, Public lighting and billboards. Power is suplied 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 cunsumption is more than 7,500kWh per meter reading period and demand does not exceed 500kVA per meter reading period.
T3-MV:Applicable customers connected to Medium Voltage
T3-HV:Applicable customers connected to High Voltage including ZECO, Bulyanhulu and Twiga cement.

b) Approved TANESCO Charges

i. Single Phase Charges

Service line	Aproved Connection Charge (TZS)	
	Urban rate (VAT exclusive)	Rural rate (VAT exclusive)
Within 30 Meters	272,000	150,000
Within 70 Meters (one pole)	436,964	286,220
Within 120 Meters (two poles)	590,398	385,300

ii. Three Phase Charges for Urban and Rural Area

Service line	Meter Type	Aproved Connection Charge (TZS)	
		Urban rate (VAT exclusive)	Rural rate (VAT exclusive)
Within 30 Meters (Cable 16mm^2)	LUKU	772,893	72,893
Within 30 Meters (Cable 16mm^2)	AMR		
Within 30 Meters (Cable 35mm^2)	LUKU		
Within 30 Meters (Cable 35mm^2)	AMR		
Within 70 Meters (one pole)	LUKU	1,058,801	1,058,801
Within 70 Meters (one pole)	AMR		
Within 120 Meters (two poles)	LUKU	1,389,115	1,389,115
Within 120 Meters (two poles)	AMR		

iii. Service line application fee

Tariff category	Approved Fee (TZS)
All customers	Nil

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

Customer category	Description	Approved Charges TZS (VAT exclusive)
D1&T1	LUKU (Single Phase	60,000
	LUKU (Three Phase)	200,000
	AMR (Three Phase)	300,000
T2	CT – Operated Meters	1,200,000
T3	CT/CV- Operated Meters	1,200,000

v. Testing and Inspection of Installation Fee

Customer category	Approved charges in TZS (VAT exclusive)
D1	20,000
T1	20,000
T2	30,000
T3	50,000

vi. Temporary power supply charges

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

vii. Energy Deposit for Post Paid Meters

Customer category	Approved Charges in TZS (VAT exclusive)
D1	30,000
T1	30,000
T1	150,000
T2	200,000
T3	500,000

Annex 8: 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 (subsidized) (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

Annex 9: Grid and Off-Grid Installed Capacity by Power Plant

Part I: Main Grid Power Plants	No. of Units	Energy Source	Installed Capacity (MW)
(a) Power Plant Owned by TANESCO			
1. Kidatu	4	Hydro	204.00
2. Kihansi	3	Hydro	180.00
3. Mtera	2	Hydro	80.00
4. New Pangani Falls	2	Hydro	68.00
5. Hale	2	Hydro	21.00
6. Nyumba ya Mungu	2	Hydro	8.00
7. Uwemba	3	Hydro	0.84
Sub-Total Hydro			***561.84***
1. Ubungo I	12	Natural Gas	102.00
2. Tegeta	5	Natural Gas	45.00
3. Ubungo II	3	Natural Gas	129.00
4. Kinyerezi I	4	Natural Gas	150.00
5. Kinyerezi II	6	Natural Gas	248.22
6. Mtwara	9	Natural Gas	22.00
7. Somanga	3	Natural Gas	7.50
Sub-Total Natural Gas			***703.72***
1. Zuzu	3	HFO	7.40
2. Nyakato	10	HFO	63.00
3. Biharamulo	5	GO	4.14
4. Songea	6	GO	7.67
5. Namtumbo	1	GO	0.34
6. Ludewa	3	GO	1.27
7. Mbinga	2	GO	2.00
8. Madaba	1	GO	0.48
9. Ngara	2	GO	2.50
Sub-Total HFO/GO			**88.80**
Sub-Total Main Grid Power Plant Owned by TANESCO			***1354.36***
(b) Power Plant owned by Independent Power Producer (IPP)			
1. Songas	6	Natural Gas	189
Sub-Total Main Grid Power Plant owned by IPP			***189***
(c) Small Power Producers (SPP) owned by Private Entity			
1. TANWAT	1	Biomass	1.50
2. TPC	1	Biomass	9.00
3. Mwenga Hydro Limited	1	Hydro	4.00
4. Andoya	1	Hydro	1.00
5. Tulila	2	Hydro	5.00
6. Yovi	1	Hydro	0.95
7. Darakuta	1	Hydro	0.45
8. Matembwe	1	Hydro	0.59
Sub-Total Main Grid Small Power Producers (SPP)			***22.49***
Total Main Grid Installed Capacity			***1565.72***

Part II: Off-Grid Power Plant			
(a) Off-Grid Power Plant owned by TANESCO			
1. Kigoma	7	GO	8.25
2. Mpanda	5	GO	5.406
3. Mafia	4	GO	3.00
4. Sumbawanga	4	GO	5.00
5. Kasulu	2	GO	3.38
6. Kibondo	2	GO	2.50
7. Loliondo	4	GO	3.75
8. Inyonga	1	GO	0.76
9. Bukoba	4	GO	2.56
Sub-Total Off-Grid Power Plant owned by TANESCO			**34.606**
(b) Sub-*Total Off-Grid Power Plant owned by Private Entities - Refer Annex 5*			**1.47**
Total Off-Grid Installed Capacity			**38.546**
National System Total (Main Grid and Off-Grid)			**1,601.80**

Source: Daily Operation Report from TANESCO and EWURA Licensee Data Base

Annex 10: Grid and Off-Grid Installed Capacity by Licensee

Licensee Name & Description	Energy Source	Installed Capacity (MW)
Part 1: TANESCO		
(a) Main Grid		
1. Kidatu	Hydro	204.00
2. Kihansi	Hydro	180.00
3. Mtera	Hydro	80.00
4. New Pangani Falls	Hydro	68.00
5. Hale	Hydro	21.00
6. Nyumba ya Mungu	Hydro	8.00
7. Uwemba	Hydro	0.84
Sub-Total Hydro		***561.84***
1. Ubungo I	Natural Gas	102.00
2. Tegeta	Natural Gas	45.00
3. Ubungo II	Natural Gas	129.00
4. Kinyerezi I	Natural Gas	150.00
5. Kinyerezi II	Natural Gas	248.22
6. Mtwara	Natural Gas	22.00
7. Somanga	Natural Gas	7.50
Sub-Total Natural Gas		***703.72***
1. Zuzu	HFO	7.40
2. Nyakato	HFO	63.00
3. Biharamulo	GO	4.14
4. Songea	GO	7.67
5. Namtumbo	GO	0.34
6. Ludewa	GO	1.27
7. Mbinga	GO	2.00
8. Madaba	GO	0.48
9. Ngara	GO	2.50
Sub-Total HFO/GO		**88.80**
Sub-Total Main Grid Power Plant Owned by TANESCO		***1354.36***
(b) Off Grid		
1. Kigoma	GO	8.25
2. Mpanda	GO	5.406
3. Mafia	GO	3.00
4. Sumbawanga	GO	5.00
5. Kasulu	GO	3.38
6. Kibondo	GO	2.50
7. Loliondo	GO	3.75
8. Inyonga	GO	0.76
9. Bukoba	GO	2.56
Sub-Total Off-Grid Power Plant owned by TANESCO		**34.606**
Total TANESCO (Main Grid + Off-Grid)		**1388.966**
% Contribution to total Installed Capacity		**86.58%**

Part II: Main Grid Power Plant owned by Independent Power Producer (IPP)		
1. SONGAS	Gas	189.00
Sub-Total Main Grid Power Plant owned by IPP		***189.00***
% Contribution to total Installed Capacity		**11.78%**
Part III: Main Grid SPP owned by Private Entity		
1. TANWAT	Biomass	1.50
2. TPC	Biomass	9.00
3. Mwenga Hydro Limited	Hydro	4.00
4. Andoya	Hydro	1.00
5. Tulila	Hydro	5.00
6. Yovi	Hydro	0.95
7. Darakuta	Hydro	0.45
8. Matembwe	Hydro	0.59
Sub-Total Main Grid SPP		***22.49***
SPP Off-Grid Power Plant -Refer Annex 5		**1.47**
Total Installed Capacity of Main Grid and Off-Grid SPP		**26.43**
% Contribution to total Installed Capacity		**1.65%**
National System Total (Main Grid and Off-Grid)		**1,601.80**

Source: Daily Operation Report from TANESCO and EWURA Licensee Data Base

Annex 11: Grid Generation Power Plants Operation Performance Data

Plants Name	Installed Capacity (MW)	Average Available Capacity (MW)	Average Power Generated (MW)	Plant Availability (%)	Plant Utilization (%)
Kidatu	204	188.79	111.94	92.54	59.29
Kihansi	180	178.60	104.54	99.22	58.53
Mtera	80	76.47	44.32	95.58	57.96
N/P Falls	68	60.29	44.33	88.66	73.53
Hale	21	5.12	4.72	24.39	92.18
Nyumba ya Mungu	8	7.73	5.57	96.67	72.04
Import from Songas	189	180.96	156.39	95.75	86.42
UGP1	102	65.23	54.23	63.96	83.13
TGP	45	29.63	20.29	65.83	68.50
UGP2	129	118.85	104.88	92.13	88.24
Kinyerezi I	150	133.58	55.62	89.06	41.64
Kinyerezi II	248.22	188.01	139.89	75.74	74.41
Mtwara	22	21.83	0.19	99.23	0.88
Somanga	7.5	2.14	0.77	28.57	36.05
TANESCO Diesel	7.4	7.20	0.001	97.23	0.01
Nyakato	63	33.35	0.002	52.94	0.01

Annex 12: Off Grid Generation Power Plants Operation Performance Data

Plants Name	Installed Capacity (KW)	Average Available Capacity (KW)	Average Power Generated (KW)	Plant Availability (%)	Plant Utilization (%)
Kigoma	8250	6250.00	3636.13	75.76	58.18
Mpanda	5406	3617.74	1771.18	66.92	48.96
Mafia	2180.0	1550.00	777.95	71.10	50.19
Tunduru	2996	1800.00	425.97	60.08	23.66
Sumbawanga	5000	5000.00	19.48	100.00	0.39
Kasulu	2500	2500.00	1196.48	100.00	47.86
Kibondo	2500	2500.00	688.80	100.00	27.55
Loliondo	3750	2187.50	199.19	58.33	9.11
Inyonga	760	505.00	189.20	66.45	37.47
Bukoba	2560	2200.00	1.61	85.94	0.07

Annex 13: Electricity Transmission Data – TANESCO

Item	2019/20			
Line Voltage (kV)	**66**	**132**	**220**	**400**
Route Length (km)	543.00	1,672.60	3,010.70	670.00
Number of Customers Connected (Number)	-	4	1	-
Number of Transmission ubstation (Number)	7	29	22	-
Capacity of Transmission Substation (MVA)	91.6	1674.9	2012.5	-
Planned Outages (Hours)	63.24	248.61	868.87	-
Planned Outages frequency (Number)	11	41	112	-
Unplanned Outages (Hours)	0.53	30.37	17.19	-
Unplanned Outages frequency (Number)	5	108	65	-
Energy received in Transmission System (MWh)				7,531,114.80
Total Energy Received at P/S for Distribution (MWh)				7,085,793.50
Transmission System Losses (MWh)				**442,916.20**
· Hale-Tanga-Kilimanjaro-Arusha				63,861.21
· Kidatu-Morogoro-Ubungo-Hale				91,016.48
· Kidatu-Iringa-Mufindi-Mbeya				84,341.73
· Iringa-Kihansi-Kidatu				57,739.67
· Iringa-Mtera-Mwanza-Musoma-Tabora				97,165.76
· Singida-Njiro				48,791.34
Total Auxilliary use (MWh)				2,405.16
Unserved Energy (MWh)				73,190.13
Cross boarder Energy Import (MWh)				109,633.78
Cross boarder Energy Export (MWh)				-
Grid Maximum Demand (MW)				1,151.66
Total grid failure (Hours)				3.42
Total grid failure (Frequency)				1
SAIFI-CP				6.27

Annex 14: Electricity Distribution Data – TANESCO

1. Customers by Tariff

Tariff Category	No. of Customers		% Change
	2018/19	2019/20	
Domestic Use (D1)	768,291	924,074	*20.28%*
General Use (T1)	1,712,180	1,936,490	*13.10%*
Low Voltage Supply (T2)	2,970	3,165	*6.57%*
High Voltage Supply (T3)	759	829	*9.22%*
Zanzibar (T5)*	1	1	*n/a*
Kahama Gold Mine (T8)	1	1	*n/a*
Total	**2,484,202**	**2,864,560**	***15.31%***

2. Distribution Route Length

Voltage Level	km
Route length 33kV line	43,891.60
Route length 11kV line	11,044.40
Route length LV lines	84,156.85
Total	**139,092.86**

3. Outages

Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Outage time - 33 kV in hrs	1,225.81	1,183.98	1,393.10	2,117.98	2,128.63	2,224.04	1,908.90	1,829.57	2,529.82	2,482.49	1,627.52	1,473.86	**22,125.70**
• Planned Outage - 33kV in hrs	663.24	582.39	776.37	1,012.11	926.00	789.16	730.82	929.39	1,069.64	930.16	876.47	736.93	**10,022.68**
• Un Planned Outage - 33kV in hrs	562.57	601.59	616.73	1,105.87	1,202.63	1,434.88	1,178.09	900.18	1,460.18	1,552.33	751.05	736.93	**12,103.02**
Total Nos of Outage - 33kV (frequency)	1,433	1,513	1,453	2,316	2,100	2,462	2,604	2,319	2,914	2,557	2,040	1,848	**25,558.49**
Total number of customers affected by 33kV	893,097	1,049,269	1,017,596	1,082,759	1,108,027	1,115,261	998,520	931,842	1,109,148	1,105,439	1,078,839	1,001,972	**12,491,769**
Outage time - 11 kV in hrs	591.36	530.12	890.99	934.93	1,155.93	903.23	705.94	805.65	1,132.20	627.66	422.52	840.53	**9,541.06**
• Planned Outage - 11kV in hrs	286.53	230.96	543.31	347.06	517.64	418.40	337.19	457.41	652.90	255.31	250.56	446.75	**4,744.02**
• Un Planned Outage - 11kV in hrs	304.82	299.16	347.68	587.88	638.30	484.83	368.75	348.24	479.30	372.35	171.96	393.78	**4,797.05**
Total Nos of Outage - 11kV (frequency)	393	437	381	585	559	568	502	493	712	533	485	344	**5,993.03**
Total number of customers affected by 11kV	450,297	568,593	576,216	612,227	6,937,762	5,526,621	481,517	438,215	476,413	471,433	440,512	433,758	**17,413,564**
Total Customer Base	**2,515,584**	**2,552,065**	**2,588,675**	**2,628,196**	**2,668,563**	**2,700,682**	**2,728,162**	**2,752,013**	**2,778,021**	**2,802,113**	**2,833,640**	**2,864,559**	**2,864,559**

Calculations - Average for 29 Regions	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Outage time - 33 kV in hrs	42.27	40.83	48.04	73.03	73.40	76.69	65.82	63.09	87.24	85.60	56.12	50.82	**762.96**
• Planned Outage - 33kV in hrs	22.87	20.08	26.77	34.90	31.93	27.21	25.20	32.05	36.88	32.07	30.22	25.41	**345.61**
• Un Planned Outage - 33kV in hrs	19.40	20.74	21.27	38.13	41.47	49.48	40.62	31.04	50.35	53.53	25.90	25.41	**417.35**
Total Nos of Outage - 33kV (frequency)	49.40	52.18	50.10	79.87	72.41	84.90	89.79	79.95	100.48	88.16	70.34	63.73	**881.33**
Total number of customers affected by 33kV	30,796	36,182	35,090	37,337	38,208	38,457	34,432	32,132	38,246	38,119	37,201	34,551	**430,751**
Outage time - 11 kV in hrs	30.27	26.24	49.46	44.21	57.71	45.57	35.97	43.55	61.56	30.45	23.21	44.39	**492.59**
• Planned Outage - 11kV in hrs	20.39	18.28	30.72	32.24	39.86	31.15	24.34	27.78	39.04	21.64	14.57	28.98	**329.00**
• Un Planned Outage - 11kV in hrs	9.88	7.96	18.73	11.97	17.85	14.43	11.63	15.77	22.51	8.80	8.64	15.41	**163.59**
Total Nos of Outage - 11kV (frequency)	13.56	15.07	13.14	20.18	19.28	19.60	17.31	17.00	24.55	18.39	16.72	11.86	**206.66**
Total number of customers affected by 11kV	15,527	19,607	19,870	21,111	239,233	190,573	16,604	15,111	16,428	16,256	15,190	14,957	**600,468**
Customer Base	2,515,584	2,552,065	2,588,675	2,628,196	2,668,563	2,700,682	2,728,162	2,752,013	2,778,021	2,802,113	2,833,640	2,864,559	**2,864,559**

SAIDI	**0.704**	**0.780**	**1.031**	**1.393**	**6.224**	**4.308**	**1.050**	**0.976**	**1.565**	**1.341**	**0.861**	**0.845**	**218**
SAIFI	**0.688**	**0.855**	**0.780**	**1.297**	**2.765**	**2.592**	**1.239**	**1.027**	**1.529**	**1.306**	**1.013**	**0.831**	**176**
CAIDI	**1.02**	**0.91**	**1.32**	**1.07**	**2.25**	**1.66**	**0.85**	**0.95**	**1.02**	**1.03**	**0.85**	**1.02**	**1.24**

Year Summary

Planned (Hrs)	674.61
Unplanned (Hrs)	580.93
Total (Hrs)	**1,255.54**
Planned (Frequency)	652.79
Unplanned (Frequency)	435.19
Total (Frequency)	**1,087.98**

Annex 15: Total Revenue (TZS in millions)

Description	Electricity Sales			Other Income			TOTAL		
FY	2017/18	2018/19	2019/20	2017/18	2018/19	2019/20	2017/18	2018/19	2019/20
TANESCO	1,430,849	1,535,255	1,564,353	218,102	191,944	225,613	1,648,951	1,727,199	1,789,966
Songas	183,645	189,669	199,657	41,121	38,005	26,116	224,766	227,674	225,773
Mwenga Hydro	3,799	2,921	3,894	775	1,172	2,381	4,573	4,092	6,275
Tulila	8,834	10,362	4,670	104	104	104	8,937	10,466	4,774
Andoya	1,262	1,123	527	-	331	276	1,262	1,454	803
Mwenga Power	448	338	406	55	64	0	503	402	406
TOTAL	1,628,836	1,739,667	1,773,506	260,157	231,619	254,490	1,888,993	1,971,286	2,027,996

Percentage Change

Description	Electricity Sales			Other Income			TOTAL		
FY	2017/18	2018/19	2019/20	2017/18	2018/19	2019/20	2017/18	2018/19	2019/20
TANESCO	1%	7%	2%	56%	-12%	18%	6%	5%	4%
Songas	6%	3%	5%	12%	-8%	-31%	7%	1%	-1%
Mwenga Hydro	3%	-23%	33%	-28%	51%	103%	-4%	-11%	53%
Tulila	17%	17%	-55%	0%	0%	0%	16%	17%	-54%
AHEPO	29%	-11%	-53%	NA	NA	-17%	29%	15%	-45%
Mwenga Power	30%	-25%	20%	-36%	16%	-100%	17%	-20%	1%
TOTAL	**2%**	**7%**	**2%**	**46%**	**-11%**	**10%**	**6%**	**4%**	**3%**

Annex 16: TANESCO Sales per Customer Category

Customer Category	Sales (TZS Billions)			Sales (MWh)		
	2017/18	2018/19	2019/20	2017/18	2018/19	2019/20
Domestic low usage	36	35	34	309	312	314
General usage	695	753	775	2,418	2,597	2,633
Low Voltage Supply	157	164	161	601	633	614
High Voltage Supply	469	501	497	2,282	2,571	2,546
ZECO	73	81	85	396	439	510
TOTAL	**1,431**	**1,535**	**1,553**	**6,005**	**6,551**	**6,616**

Percentage Contribution

	2016/17	2017/18	2018/19	2016/17	2017/18	2018/19
Domestic low usage	2%	2%	2%	5%	5%	5%
General usage	49%	49%	50%	40%	40%	40%
Low Voltage Supply	11%	11%	10%	10%	10%	9%
High Voltage Supply	33%	33%	32%	38%	39%	38%
ZECO	5%	5%	5%	7%	7%	8%

[1] Rusumo Hydro Power Project (80MW) is a Regional project developed by the Government of the United Republic of Tanzania (26.7MW), the Government of Republic of Rwanda (26.7MW) and the Government of Republic of Burundi (26.7MW).

[2] The prevailing exchange rate to be used

The Energy and Water Utilities Regulatory Authority (EWURA)
EWURA House, Plot No 3, Block AD, Medeli West,
P.O Box 2857, Dodoma • Tel: +255-26 2329002-4
Fax: +255-26 2329005 • Email: info@ewura.go.tz
Website: www.ewura.go.tz.