THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF ENERGY

ENERGY AND WATER UTILITIES REGULATORY AUTHORITY (EWURA)

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

ELECTRICITY SUB-SECTOR REGULATORY PERFORMANCE REPORT FOR THE FINANCIAL YEAR 2021/22

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MARCH 2023

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CHAIRMAN'S STATEMENT

On behalf of the Board of Directors of the Energy and Water Utilities Regulatory Authority (EWURA), I am pleased to present the Electricity Sub-Sector Regulatory Performance Report for the Financial Year 2021/2022. This report has been prepared under the legislation governing the Electricity Supply Industry. EWURA's strategic objective is to ensure improved quality, availability and affordability of the regulated services including electricity services. These elements are key ingredients toward realizing the Tanzania Development Vision 2025 and the Sustainable Development Goals. During the period under review, the Electricity Supply Industry registered some success, including: improved service delivery to customers; increased electricity accessibility and connectivity; increased investment in electricity infrastructure; improved licensees' operational and economic efficiency; and improved quality, reliability and affordability of electricity supply industry services.

The Authority commends the Government's commitments to invest in power generation infrastructure, such as the 2115MW Julius Nyerere Hydropower Project and rural electrification programs. Equally, the Authority acknowledges the private sector's contribution to government efforts to expand both electricity generation capacity and access to electricity. Together, these measures have played a critical role towards ensuring the availability of adequate, reliable, affordable, sustainable and environmentally friendly supply of electricity to marshal Tanzania's needed socio-economic transformation.

I am also greatly humbled by the continued leadership, support, and cooperation of the Ministries of Energy, Water, and other stakeholders. I would like to assure them all that EWURA is committed to delivering its vision of being a World Class Regulator for Sustainable Energy and Water Services by promoting impartiality, morality, professionalism, accountability, consistency and transparency in our decision-making processes.

Finally, I would like to express my gratitude to the Board of Directors, Management and Staff of EWURA for the team spirit.

.....

Mark James Mwandosya
Chairman, EWURA Board of Directors
March 2023

FOREWORD

The Electricity Act, Cap 131 and EWURA Act, Cap. 414 mandates EWURA to undertake technical and economic regulatory functions in the Electricity Supply Industry. 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 the performance of their functions. Furthermore, Section 30(7) requires EWURA to publish reports on the performance of licensees.

The report presents performance of regulated activities in the Electricity Supply Industry from 1st July 2021 to 30th June 2022 under regulatory functions that are implemented by EWURA that includes, among others, promoting customer service through the fostering competition; promoting access to, and affordability of electricity services particularly in rural areas; and promoting least-cost investment and the security of supply for the benefit of the customer. It also includes promoting improvements in the operational and economic efficiency of the electricity supply industry and efficiency in the use of electricity; promoting appropriate standards of quality, reliability and affordability of electricity supply; and taking into account the impact of the industry on the environment.

Achievements made include, among others, an increase in customer connection by 16.66%; power demand by 11.63%; electricity distribution infrastructure investment by 8.36%; and electricity generation infrastructure investment by 8.15%.

The above achievements could not be attained without continued cooperation from the Government through the Ministry of Energy, the Board of Directors of EWURA, EWURA Management and Staff as well as our key stakeholders including development partners.

I hope that this report will provide the required information to all stakeholders in the Electricity Supply Industry.

.....

Dr. James A. Mwainyekule
Director General
March 2023

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
UGP1	:	Ubungo Gas Power Plant 1
UGP2	:	Ubungo Gas Power Plant 2
ZECO	:	Zanzibar Electricity Corporation Limited

EXECUTIVE SUMMARY

This report presents the Regulatory Performance of the Electricity Supply Industry from 1st July 2021 to 30th June 2022. It is made under Section 30(7) of the Electricity Act, Cap. 131, which requires EWURA to publish reports on the performance of licensees including, but not limited to, quality, reliability and security of supply, the progress of electrification, investment, efficiency of operations and other standard of customer services.

During the reporting period, EWURA developed two rules namely; the Electricity (Electrical Installation Services) Rules, 2022; and the Electricity (Licensing and Registration Fees) Rules, 2022. Furthermore, as part of its Regulatory functions, EWURA issued 1,109 licenses of which, two were for provisional electricity generation and 1,107 for electrical installation Personnel.

As of 30th June 2022, the installed capacity for entities generating electricity for sale was 1,740.43MW, with 1,694.55MW (97.36%) from the main grid and 45.878MW (2.64%) from off-grids. There is a gross increase of 131.18MW (8%) from 1609.25MW in 2020/21. Maximum demand was 1,340.68MW on 26th May 2022, increasing by 139.66MW (11.63%) from that recorded in 2020/21. The Main Grid generation mix consisted of natural gas (68.44%), hydropower (31.37%) and heavy fuel oil (0.19%).

TANESCO, being a vertically integrated utility, conducted electricity generation, transmission, distribution, supply, and cross border trade activities. TANESCO also sells power to Zanzibar. Apart from TANESCO, other eight (8) entities also conducted generation activities. These are Songas Tanzania Limited (189.00MW, natural gas); Mwenga Hydropower Limited (MHL) (4.00MW, hydro and 2.40MW, wind); Tanzania Wattle Company (TANWAT) (1.50MW, Biomass); Tanganyika Planting Company Limited (TPC) (9.00MW, bagasse); Andoya Hydro Electric Power Company Limited (AHEPO) (1.00MW, hydro); Madope Company Hydro Limited (1.84MW, hydro); NextGen Solawazi Limited (5.00MW, Solar); and Tulila Hydro Electric Plant Company Limited (5.00MW, hydro). In addition, Mwenga Power Services Limited also conducted distribution activities.

During the period, fourteen (14) licensed entities generated electricity for their own use. These are Lake Cement Limited (15.40MW, coal); Tanga Cement Public Limited Company (11.48MW, diesel); Kilombero Sugar Company Limited (12.55MW, bagasse and diesel); Kagera Sugar Limited (6.20MW, bagasse and diesel), Shanta Mine Company Limited (8.20MW, diesel), North Mara Goldmine Limited (18.00MW, Heavy Fuel Oil) and Bulyanhulu Goldmine Limited (39.10MW, Heavy Fuel Oil).

Others are Kilombero Plantation (1.692MW, bagasse, hydro and diesel); Geita Gold Mine Limited, (40.00MW, diesel); Tanzania Cigarette Public Company Limited (3.80MW, natural gas); Stamigold Company Limited (7.00MW, diesel); Dangote Cement Limited (50.00MW, natural gas) and ALAF Limited (11.00MW, natural gas).

There were also three (3) registered entities which generated electricity for sale in bulk to TANESCO. They are Yovi Hydropower Company Limited (0.95MW, hydro); Matembwe Village Company Limited (0.59MW, hydro); and Darakuta Hydropower Development Company Limited (0.32MW, hydro).

In addition, six (6) registered entities were generating and selling electricity to customers from solar-powered photovoltaic mini-grids during the period under review. They are Powercorner Tanzania Limited (310.10kW, twelve (12) sites); Jumeme Rural Power Supply Limited (1,231.00kW, twenty (22) sites); and PowerGen Renewable Energy Limited (437.24kW, twenty (20) sites); Watu na Umeme Limited (48.00kW, one site); Ruaha Energy Company Limited (128.00kW, one site); and E.O.N Off Grid Solution Gmbh (19.53kW, three (3) sites). Two (2) registered entities generated electricity for their use namely Nasra Estate Company Limited (800.00kW, diesel); and Kiliflora Limited (230.00kW, hydro). Furthermore, Unilever Tea Tanzania Limited continued to be a designated eligible customer to purchase power from Mwenga Hydro Limited.

As of 30th June 2022, the transmission network comprised a total of 6,139km and 61 grid substations with a total capacity of 6,872 MVA which is the same as the previous year. The distribution networks owned by licensed entities carrying electricity activities for sale comprised of 160,811km, of which 160,367km were for TANESCO and 444km for Mwenga Power Services Limited. There is an increase of 11,828km from the previous year when the total length was 148,983. In addition, 59.12km was for Andoya, and 596.41km were for other registered entities.

During the year under review, electricity energy losses for TANESCO amounted to 15.43%, of which 6.68% and 8.75% were for transmission and distribution systems respectively, which indicates an increase of 0.27% as compared to the previous year which had a total loss of 15.16%, of which 5.89% was from the transmission and 9.27% from distribution. Mwenga Power Services Limited had a distribution loss of 6%, indicating an increase of 0.5% as compared to the previous year which had a loss of 5.5%.

In the period under review, electricity generation projects with a potential capacity of 2,326.70MW, transmission line projects (2251km), and transmission substations of 550kVA were under construction through TANESCO. Electricity generation projects totalling 44.37MW capacity were under development through private entities.

The Government's investments in rural electrification through the REA and TANESCO increased overall electricity access and connectivity. As a result, a total of 3,847,995 customers were connected to electricity, which is an increase of 552,122 customers, equivalent to 17% as compared to the previous year which was 3,295,873.

During the period under review, financial performance analysis showed that gross revenue generation for all licensees had increased by 3%. During the year under review, TANESCO's performance improved from a loss of TZS 3.8 billion recorded in FY 2019/20 to a profit of TZS 38.96 billion in FY 2020/21. Further, the average unit cost of electricity sold decreased by 8% compared to a decrease of 1% recorded in FY 2019/20, implying an improvement in operational efficiency during the year under review.

Challenges faced during the year under review include low power reliability caused by inadequately maintained infrastructure and a decline in generation plant capacity, particularly hydropower plants, caused by limited hydrology in water catchment areas. To address these challenges, the Authority will continue to collaborate with the Government and other stakeholders to enhance the sustainability of electricity supply industry. Moreover, EWURA will continue to enforce compliance with regulatory frameworks and increase awareness programs.

1. INTRODUCTION

Section 5 and 6 of the Electricity Act, Cap. 131 mandates EWURA to perform technical and economic regulation of the Electricity Supply Industry (ESI) in Mainland Tanzania. Electricity plays a vital role in socio-economic development. Availability, affordability, reliability and access to electricity services are key ingredients towards achieving desired socio-economic development in Tanzania.

EWURA's strategic objective is to ensure improved and affordable regulated services including quality, availability and affordability of the electricity supply. The Authority's objective is in line with International and National Tanzania development agendas such as the Third Five-Year National Development Plan 2021/22 - 2025/26, the Sustainable Development Goals (SDGs), and the Tanzania Development Vision 2025 which include the industrialization agenda among others.

The strategies for implementation of this objective among other things includes 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's duties in 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, the electricity sub-sector regulatory performance during the financial year 2021/2022, particularly in the generation, transmission, distribution, supply and cross border trade in electricity. The Authority expects that this report will provide useful information and data to stakeholders.

2. REGULATORY TOOLS

Section 40 of EWURA Act, Cap. 414 and 45 of the Electricity Act, Cap 131, mandates EWURA to develop rules governing the activities of licensees. Therefore, during the period under review, EWURA developed two (2) rules which are;

a) The Electricity (Electrical Installation Services) Rules, 2022; the rules were published on 4th March 2022 with GN.113 to regulate electrical installation activities, and

b) The Electricity (Licensing and Registration Fees) Rules, 2022; the rules were published on 4th March 2022 with GN.112 to guide on license and registration fees.

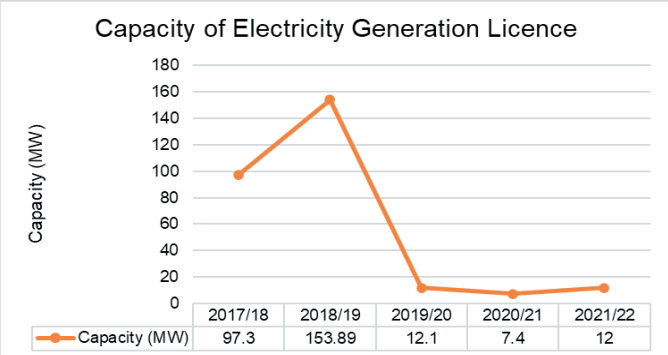
Apart from the developed rules, the Authority continued to use the existing regulatory tools as shown in **Annex 1**. EWURA will continue to develop rules for effective regulation of the electricity supply industry as the need arises.

3. LICENSING AND REGISTRATION

During the period under review, a total of 1,109 licenses were issued. Out of these, 1,107 were for electricity installations and 2 were for provisional electricity generation. The Authority did not receive an application for registration compared to last year when 14 mini-grids were registered to generate and distribute electricity in off-grid.

3.1 Power Supply Licensing

Section 5 of the Electricity Act, Cap. 131, mandates EWURA to award licenses to an entity undertaking or seeking to undertake licensed activities as stipulated under Section 8 of the Act. Therefore, during the period under review, two (2) provisional power generation licenses for 12MW capacity were awarded to Ninety-Two Limited (for a 2MW hydropower plant), and SSI Energy Tanzania Limited (for a 10MW solar photovoltaic power plant) as per **Annex 2.** The number of generation licenses issued with their respective installed capacity from 2017/18 to 2021/2022 is depicted in **Figure 1.** Likewise, a list of all actively licensed entities in the electricity supply industry is shown in **Annex 3.**



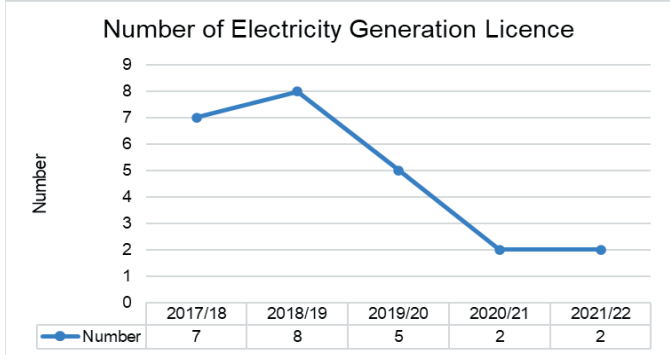
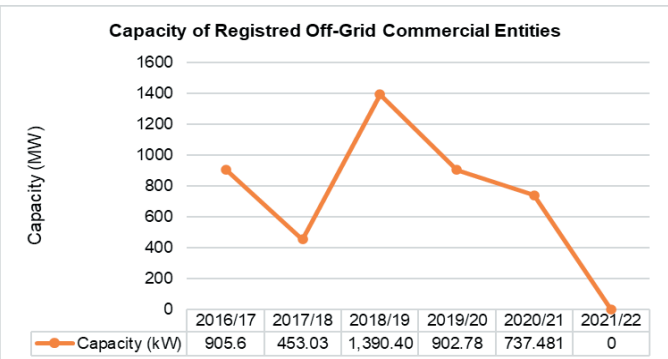


Figure 1: Electricity Generation License Issued FY 2017/18 – FY 2021/22

3.2 Power Supply Registration

Section 18 of the Electricity Act, Cap. 131, mandates the Authority to exempt any person from the requirement to have a license as stipulated in section 8. Subsequent to this, Rule 37 of the Electricity (Development of Small Power Projects) Rules, 2020, guides the mandatory registration requirements for generation projects below 1MW for commercial operation, and Rule 11(4) of the Electricity (Generation, Transmission and Distribution Activities) Rules, 2019 provides guidance on mandatory registration for generation and distribution services for a person exempted from Section 8 of the Act. However, during the period under review, the Authority did not receive an application for registration. Hence, it continued to monitor the performance of existing registered entities. The trend on the number of registered entities and capacity of electricity generated is as per **Figure 2** and details in **Annex 4.**



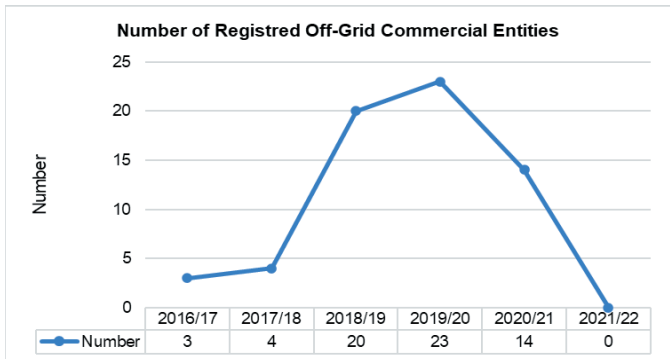


Figure 2: Trend of Registered Off-Grid Commercial Entities and Capacity of electricity generated from 2016/17 – 2021/22

3.3 Electrical Installation Licenses

Section 8(2) of the Electricity Act, Cap. 131 requires any person intending to conduct electrical installation activities to apply to the Authority for a license. In this regard, during FY 2021/22, the Authority awarded 1,107 licenses to electrical installations personnel, which is an increase of 152 licenses equivalent to 15.91% from the previous year as per **Figure 3**. The Complete list of electrical installation licensees is accessible through the Authority's website "www.ewura.go.tz".

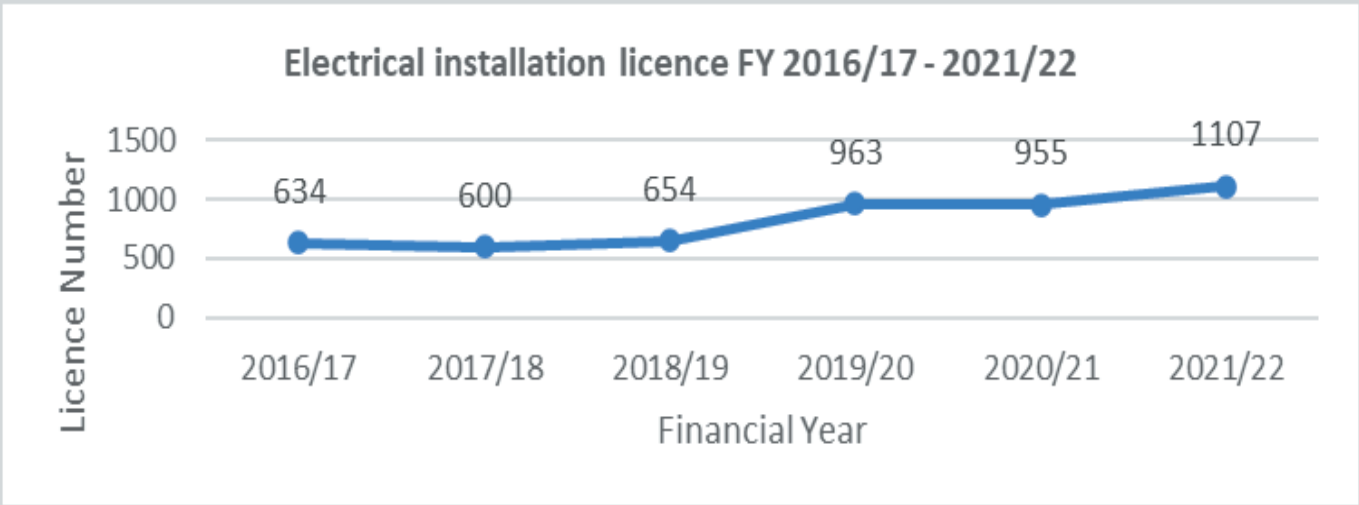


Figure 3: Trend of Electrical Installation Licenses Issued from 2016/17-2020/2021

4. REGULATORY APPROVALS AND RESOLUTION OF COMPLAINTS AND DISPUTES

EWURA is mandated to approve the following; initiation of procurement of new electricity Supply Installations, power purchase agreements, as well as tariffs and fees charged by licensees and enforcement thereof. In addition, EWURA facilitates resolution of complaints and disputes between service providers and their customers. This section reports approvals granted and the resolution of complaints and disputes facilitated by EWURA.

4.1 Initiation of Procurement of New Electricity Supply Installations

Section 5 (d) of the Electricity Act, Cap. 131, mandates EWURA to approve the initiation of the procurement of new electricity supply installations. However, during FY 2021/22, EWURA did not receive any application thereof, hence, as part of its regulatory functions, it continued to monitor the implementation of previously approved power projects with a total potential installed capacity of 586MW to 736MW as per **Table 1**.

Table 1: Initiation of Procurement of New Installation of The Electricity Supply as of June 2022

S/N	Name of the Project	Capacity (MW)	Status
1.	Kinyerezi III Gas Fired Power Project by Shangtan Power Ltd.	300	Not yet constructed
2.	Masigira Hydropower Project by Tanzania Masigira Power Ltd.	72	Not yet constructed
3.	Kikagati-Murongo hydropower project is located at the border townships of Kikagati (in Uganda) and Murongo (in the Kyerwa District of Tanzania)	14	Commissioned and operating
4.	Combine Cycle Gas Power Project to be implemented by TANESCO at Somanga Fungu in Kilwa District.	200 - 350	Not yet constructed
	Total	**236 - 736**	

4.2 Power Purchase Agreements

Section 25 (3) of the Electricity Act, Cap. 131 mandates the Authority to approve Power Purchase Agreement (PPA). During FY 2021/22, EWURA approved three (3) Standardized Power Purchase Agreements (SPPAs) as per **Table 2**. Likewise, EWURA continued to monitor implementation of all approved PPAs and SPPAs between power producers and TANESCO as an off taker as shown in

Table 2: Approved Standardized Power Purchase Agreements (SPPA) between TANESCO and Developers for FY-2022

S/N	Name of Developer	Capacity (MW)	Source Of Energy	Location
1.	Pinyinyi Hydro power project	2.006	Hydro	Arusha
2.	JUMEME Rural Power Supply	1	Solar	Sumbawanga
3.	JUMEME Rural Power Supply	1	Solar	Katavi
	Total	**4.006**		

Source: *EWURA Data Base*

Table 3: PPA For Operating Power Plants as of June 2022

S/N	Name of Power Producer	Capacity (MW)	Energy Source	Location
1.	Songas Tanzania Limited	189.00	Natural gas	Dar es Salaam
2.	Darakuta Hydropower Development Co. Ltd.	0.32	Hydro	Magugu – Babati
3.	Matembwe Village Community Co. Ltd.	0.49	Hydro	Njombe
4.	Mwenga Hydro Limited	4.00	Hydro	Mufindi
5.	Tulila Hydro Electric Plant Co. Ltd.	5.00	Hydro	Songea
6.	Andoya Hydro Electric Power Co. Ltd.	1.00	Hydro	Mbinga
7.	Ngombeni Power Limited	1.40	Biomass	Mafia
8.	Tanganyika Planting Co. Ltd.	9.00	Biomass	Moshi
9.	Tanganyika Wattle Co. Ltd.	1.50	Biomass	Njombe
10.	NextGen Solawazi Limited	5.00	Solar	Kigoma
	Total	**216.71**		

Source : *EWURA Data Base*

4.3 Rates and Charges

EWURA is empowered by section 5 (b) of the Electricity Act, Cap. 131, to approve and enforce tariffs and fees charged by licensees. During FY-2021/22, EWURA did not approve the new tariff, instead, it continued to monitor the implementation of the existing tariff orders including the Electricity (Standardized Small Power Projects Tariff) Order G.N. No. 464 of 21st June 2019 for guiding SPPs selling power based on avoided cost to TANESCO before May 2015; technology specific tariffs after May 2015 as per **Annex 5**; TANESCO tariff adjustment order No. 2016-010 of 2016, and its amendment with G.N. No. 1020 of 4th December 2020 as per **Annex 6**; and Mwenga Power Services Limited (MPL) Multi Year Tariff Adjustment with GN No. 61 of 28th January 2022 as per **Annex 7**.

4.4 Complaints and Dispute Resolutions

According to Section 7 of EWURA Act, Cap. 414, EWURA is mandated to facilitate resolution of complaints and disputes between service providers and their customers. During the Financial Year 2021/2022, EWURA received 177 complaints in electricity sub-sector and resolved 132 complaints which is equivalent to 74.58% as per **Table 4**. There is an increase in 55 (46%) complaints as compared to FY-2020/21. The nature of complaints disputes included electricity billings, quality of power, connections, disconnection, rates and charges, trespass, and damage of property/Injury).

Table 4: **Status of Electricity Complaints from FY 2017/18 - 2021/2022**

Year	Received	Resolved
2021/22	177	132
2020/21	121	72
2019/20	122	93
2018/19	138	131
2017/18	134	65

Source: *EWURA*

EWURA will continue to raise awareness among service providers on the importance of providing satisfactory services to their customers, including resolving disputes before they are reported to EWURA. Further, EWURA will continue to raise awareness to customers of regulated services to report to the Authority on any disputes related to the unsatisfactory provision of services that have been reported but not resolved by respective service providers.

5. TECHNICAL PERFORMANCE MONITORING

This section highlights the technical performance of the industry concerning 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, plant utilization and energy dispatched.

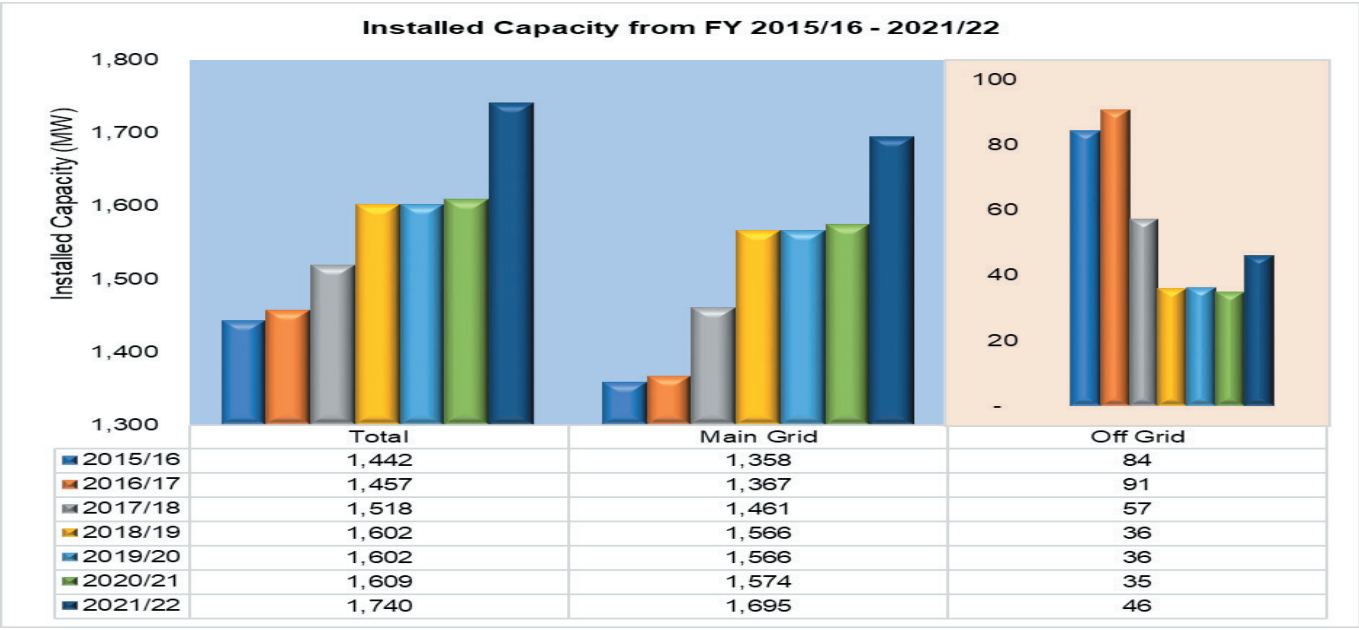
5.1.1 Installed Capacity

As of June 2022, the installed capacity for entities carrying out electricity activities for sale was 1,740.43MW, where 1,694.55MW (97.36%) were connected to the main-grid, and 45.878MW (2.64%) to off-grids as per **Table 5** and details in **Annex 8**. There was a gross increase of 131.18MW equivalent to 8% from 1609.25MW in 2020/21. Likewise, there was an increase in the main grid from 1358.01 MW in 2015/16 to 1694.55 in 2021/22 whilst there was a decrease in off-grid from 84.2MW to 45.878MW due to expansion of the Main Grid as per **Figure 4**.

Table 5: Total Installed Capacity

Description	General Capacity (MW)	Specific capacity (MW)	Owner
Main Grid	1,694.55 (97.36%)	1,482.29MW (87.47%)	TANESCO
		189MW (11.15%)	IPP (SONGAS)
		23.26MW (1.37%)	SPP owned by private entities
Off-Grid	45.878 (2.64%)	35.43 MW (78.72%)	TANESCO
		7.40 (16.44%) MW	SPP owned by private entities.
		2.176 MW (4.83%)	VSPP owned by private entities.
Total	**1740.428**	**1,517.72 (87.25%)**	**TANESCO**
		189 (10.86%)	**IPP (SONGAS)**
		30.66 (1.76%)	**SPP (all private entities)**
		2.176 (0.13%)	**VSPP (all private entities)**

Source: *EWURA TANESCO*



	Total	Main Grid	Off Grid
2015/16	1,442	1,358	84
2016/17	1,457	1,367	91
2017/18	1,518	1,461	57
2018/19	1,602	1,566	36
2019/20	1,602	1,566	36
2020/21	1,609	1,574	35
2021/22	1,740	1,695	46

Figure 4: Trend in Installed Capacity from FY 2015/16 to 2021/22

5.1.2 Electricity Maximum Demand

During the period under review, electricity Maximum Demand (MD) was 1,340.68MW recorded on 26th May 2022. This indicates an increase of 139.66MW (11.63%) compared to the year ended June 2021 which was 1,201.02MW as recorded on 2nd June 2021. The increase in Maximum Demand is attributed to the country's achievement to increase electricity accessibility and connectivity to 78.4% and 37.7% as of July 2020 compared to 67.5% and 32.8% as of June 2017, respectively, as illustrated in **Table 6.**

Table 6: Maximum Demand (MD) and Date

Year	MD (MW)	Date
2017/18	1,045.70	27th June 2018
2018/19	1,116.58	30th Nov.2018
2019/20	1,151.66	27th February 2020
2020/21	1,201.02	2nd June 2021
2021/22	1,340.68	26th May 2022

Source: *TANESCO*

5.1.3 Energy Generation Mix

For the FY 2021/22, the energy generation mix comprised of natural gas (68.44%), hydropower (31.37%), liquid fuel – Heavy Fuel Oil (HFO)/Industrial Diesel Oil (IDO)/Gas Oil (GO) (0.19%) and biomass (0.00%) as depicted in **Figure 5**. There is a decrease in hydropower generation due to poor hydrology in catchment areas. Furthermore, the increase in electricity generation from natural gas was attributed to the commissioning of Ubungo III (120MW).

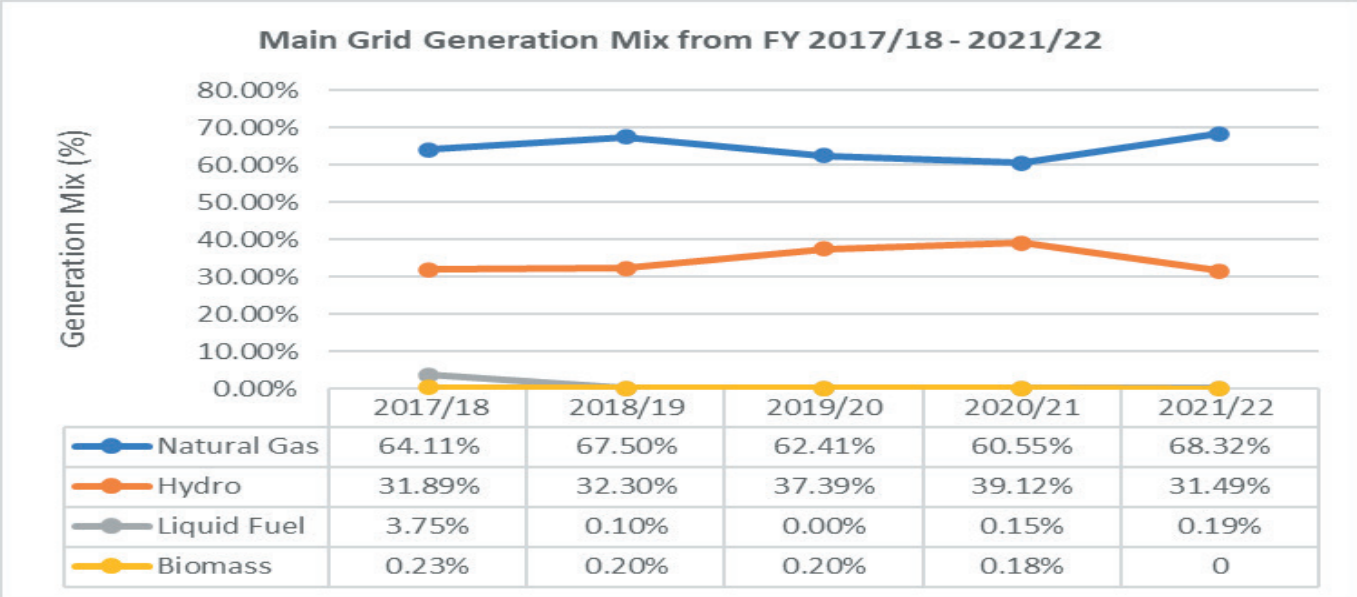


Figure 5: Energy Generation Mix (%) from FY 2017/18 – 2021/22

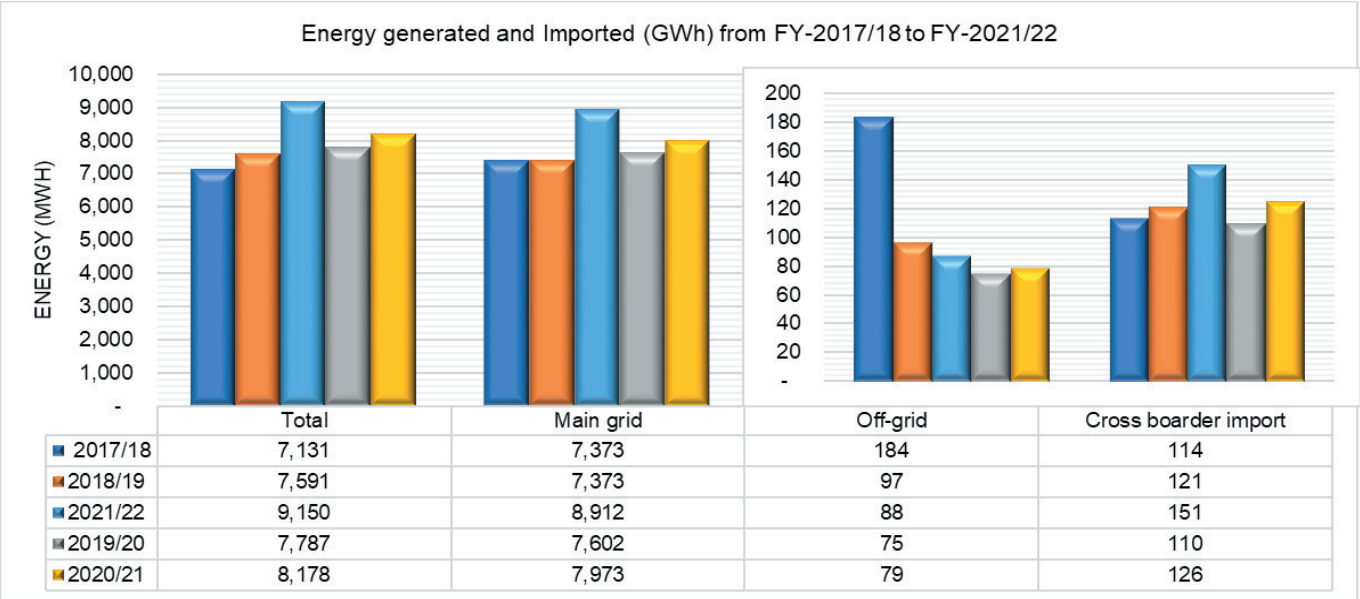
5.1.4 Electricity Generated and Imports

Energy generated and imported by entities carrying out electricity activities for sale was 9,150.33GWh where 8,912.19 GWh (97.40%) was generated from the main-grid, 87.512GWh (0.96%) from off-grid, and 150.628GWh (1.65%) was imported through cross border trade as per **Table 7**. There is a continued increase in energy dispatched from 2017/18 to 2021/22 as depicted in **Figure 6**. There is an increase of 972GWh (12%) from 8177.66 GWh in 2020/21.

Table 7: Electricity Generation and Imports for 2021/22

Description	GWh	Remarks
Main Grid	8,912.19 (97.40%)	7,326.339GWh (82.21%) - TANESCO
		1,514.507GWh (16.99%) – IPP (Songas)
		71.345GWh (0.80%) - SPP owned by private entities
Off-Grid	87.512 (0.96%)	83.132GWh (94.99%) -TANESCO
		4.38GWh (5.01%) - SPP Off-Grid (2.176 MW*8760hours*23% SPP capacity factor for solar).
Cross Border Imports	150.628 (1.65%)	0.00GWh (0.00%) – Kenya
		110.598GWh (73.40%) – Uganda
		40.030GWh (26.60%) – Zambia
Total	**9,150.33**	**7,409.47GWh (80.97%) - TANESCO**
		1,514.51 GWh (16.55 %) – IPP (Songas)
		75.73GWh (0.83%) - SPP & VSPP owned by private entities
		150.63GWh (1.65%) Cross Border Imports

Source: *TANESCO*

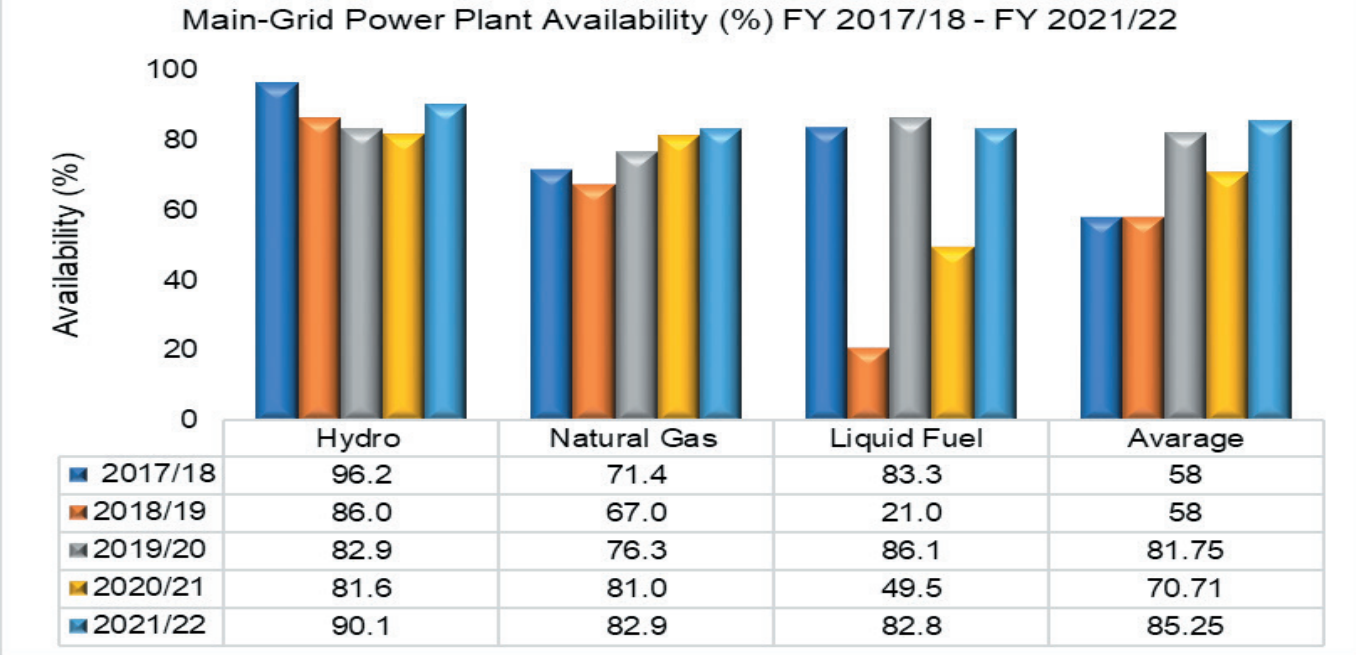


	Total	Main grid	Off-grid	Cross boarder import
2017/18	7,131	7,373	184	114
2018/19	7,591	7,373	97	121
2021/22	9,150	8,912	88	151
2019/20	7,787	7,602	75	110
2020/21	8,178	7,973	79	126

Figure 6: Energy Generated and Imported (GWh) from FY-2017/18 to FY 2021/22

5.1.5 Availability of Power Plants

During FY 2021/22, the availability of Main Grid power plants was 85.25% whereby hydropower plants was 90.09%, Gas Fired Power Plants 82.93%, and Liquid Fuel Power Plant 82.82% as per **Figure 7** and **Annex 9**. There is an average increase of 14.57% compared to FY 2020/21 due to an increase in maintenance practices.



	Hydro	Natural Gas	Liquid Fuel	Avarage
2017/18	96.2	71.4	83.3	58
2018/19	86.0	67.0	21.0	58
2019/20	82.9	76.3	86.1	81.75
2020/21	81.6	81.0	49.5	70.71
2021/22	90.1	82.9	82.8	85.25

Figure 7: Main Grid Power Plant Availability (%) from 2017/19 to 2021/22

The off-grid power plant availability rose to 91.91% from 80.31% recorded in 2020/21 which is an increase of 11.60%. **Figure 8** shows the trend of off grid power plant availability and details thereof in **Annex 9**.

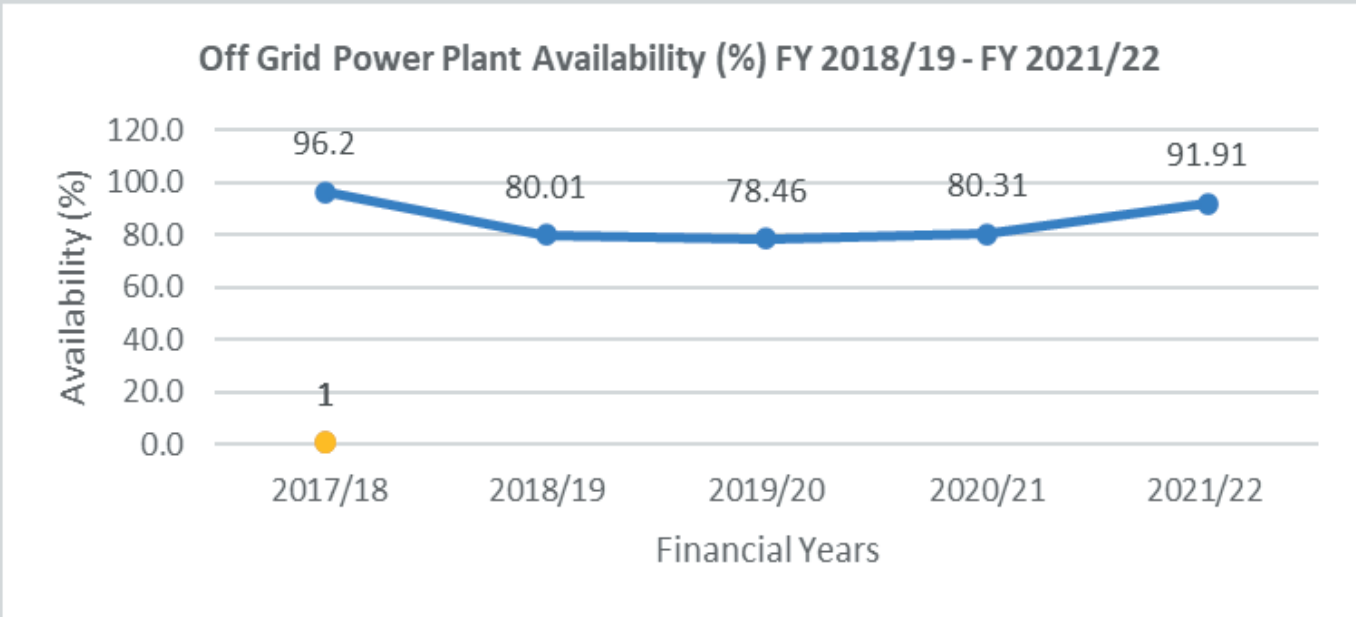


Figure 8: Off-grid power plant availability (%) FY 2017/18 - FY 2021/22

5.1.6 Power Generation Plants Utilization

In FY 2021/2022, the average utilization of all power plants in the main-grid reached 40.56%, slightly higher than utilization recorded in FY 2020/2021. However, the utilization of hydropower plants decreased from 86% in FY 2018/19 to 50.44% in 2021/22 due to limited hydrology in the water catchment areas as per **Figure 9** and details in **Annex 9**.

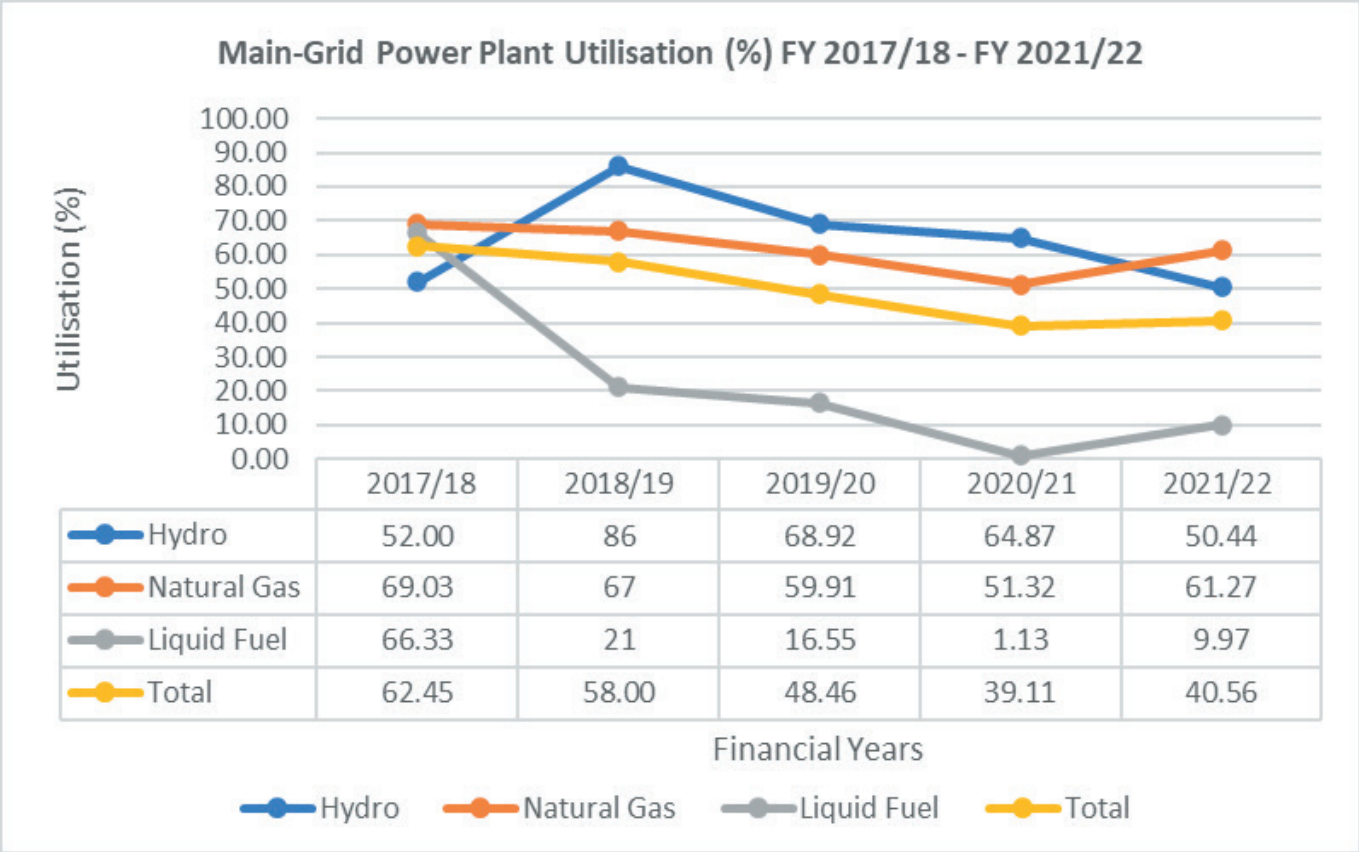


Figure 9: Main-Grid Power Plant Utilization (%) FY 2017/18 – 2021/22

In FY 2021/22, off-grid average power plant utilization was 27.94%, indicating a continuous decrease from 80.01% in FY 2018/19 as per **Figure 10** and details in **Annex 9.** The main reason for a decrease in plant utilization is an expansion of the main grid in the areas which were saved by off-grid projects.

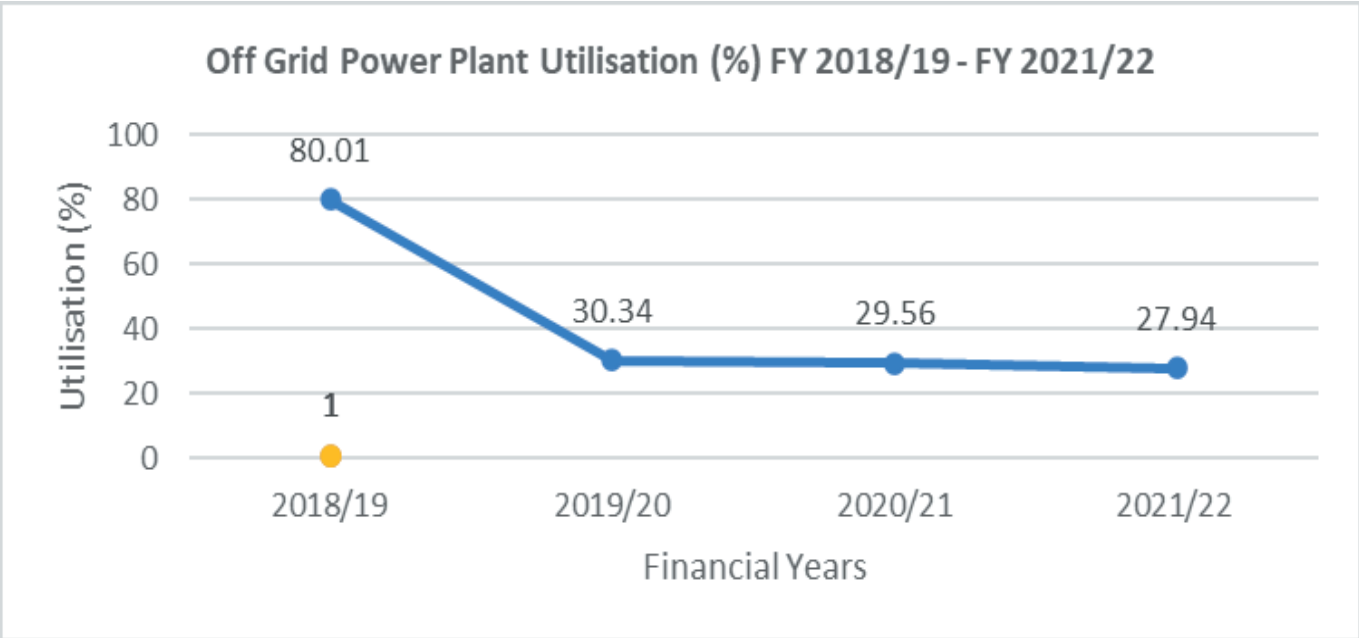


Figure 10: Off-grid power plant utilization (%) FY 2018/19 – FY 2021/22

5.1.7 Private Sector Participation in Generation Segment

During FY 2021/22, private entities generating electricity for sale contributed a total of 218.54MW, an increase of 5MW (2.34%) from FY 2020/21 as per **Figure 11.** Details of electricity generated for sale by private entities during FY 2021/22 are depicted in **Table 8**.

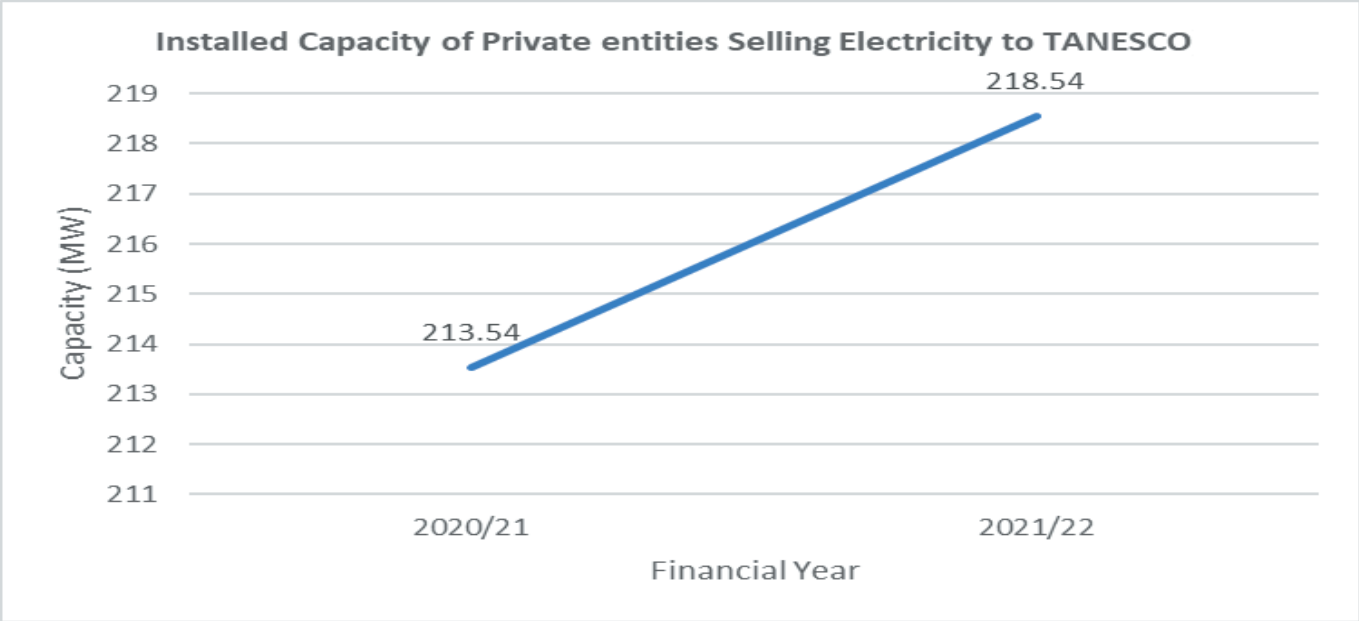


Figure 11: Installed capacity of Private Entities selling electricity to TANESCO

Table 8: 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 Hydro Electric (5.00MW), Matembwe Village Company Limited (0.59), Yovi Hydropower Company Limited (0.995MW), Darakuta Hydropower Development Company Limited (0.32MW), TPC (9.00MW), & TANNWAT (1.5MW)
Off-grid	7.18	Powercorner Tanzania Limited, 12 sites, Solar PV, 310.10kW; Jumeme Rural Power Supply Limited, 22 sites, solar PV, 1,231.00kW; PowerGen Renewable Energy Limited, 20 sites, Solar PV, 438.88kW; Watu na Umeme Limited, 1 site, Solar PV, 48kW; Ruaha Energy Company Limited, 1 site, Solar PV, 128kW; and EON Off-Grid Solution Gmbh, 2 sites, 19.53kW; NextGen Solarwazi Limited 5.00MW; Mwenga Hydro Limited 2.4MW(Wind)
Total	**220.94**	

Source: *EWURA & TANESCO*

5.2 Electricity Transmission Performance

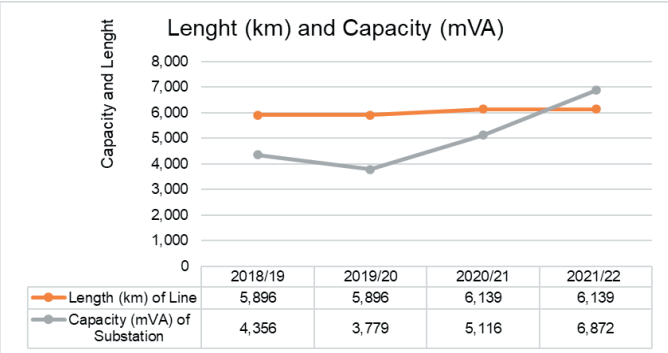
This section of the report presents assessment of transmission performance with respect to entities conducting transmission services, status of infrastructure, the number of customers supplied, and supply reliability.

5.2.1 Entities Licensed to Conduct Transmission Services

During FY 2021/22 TANESCO continued to be the only entity licensed to carry out electricity transmission activities. It operates transmission lines in voltage levels of 66kV, 132kV, 220kV, and 400kV.

5.2.2 Electricity Transmission Infrastructure

As of 30th June 2022, the transmission network comprised of 6,139km which is the same as the previous year as per **Figure 12**. It also comprised 61 grid substations, an increase of 2 substations from the previous year. There is an increase of 1,756 MVA in capacity of substation. This is due to commissioning of new substations and expansion of existing substations including the Nyakanazi substation (220kV, 80MWA), Luguruni Substation (220kV, 180MVA), Kurasini Substation (132kV, 50MVA), and Sumbawanga Substation (66kVA, 15MVA).



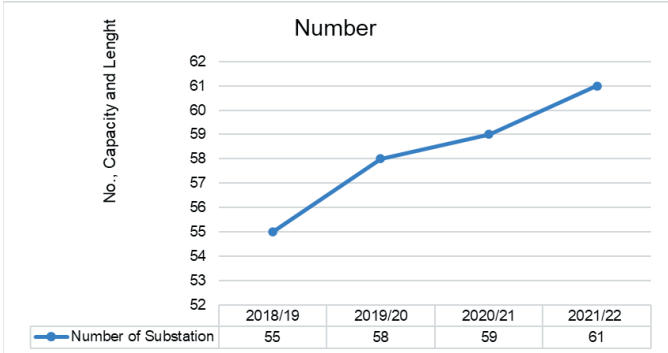


Figure 12: Electricity Transmission Infrastructure from 2018/19 - 2021/22

5.2.3 Customers Connected to the Transmission Infrastructure

As of June 2021, five (5) customers were connected to the transmission network. These are Bulyanhulu Gold Mine, which is connected to 220kV transmission line; Zanzibar Electricity Corporation (ZECO), Tanganyika Portland Cement, Tanga Cement, Rhino Cement, Buzwagi Gold Mine, and Nyamongo Gold Mine which are connected to 132kV transmission line.

5.2.4 Power System Reliability in Transmission Infrastructure

Power system reliability is analysed using System Average Interruption Frequency Index at Connection Point (SAIFI-CP). This 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 9.91 indicating an increase of 3.55 from 6.36 recorded in 2020/21. However, the performance on reliability was within the target set by TANESCO as per **Figure 14**. Total outage hours were 1397.38 indicating a decrease of 48% from the previous year with outage hours of 2372. Likewise, outage frequency decreased by 11% from 384 to 312 as per **Figure 14**. Furthermore, there was no grid failure compared with the previous year as per **Figure 15**.

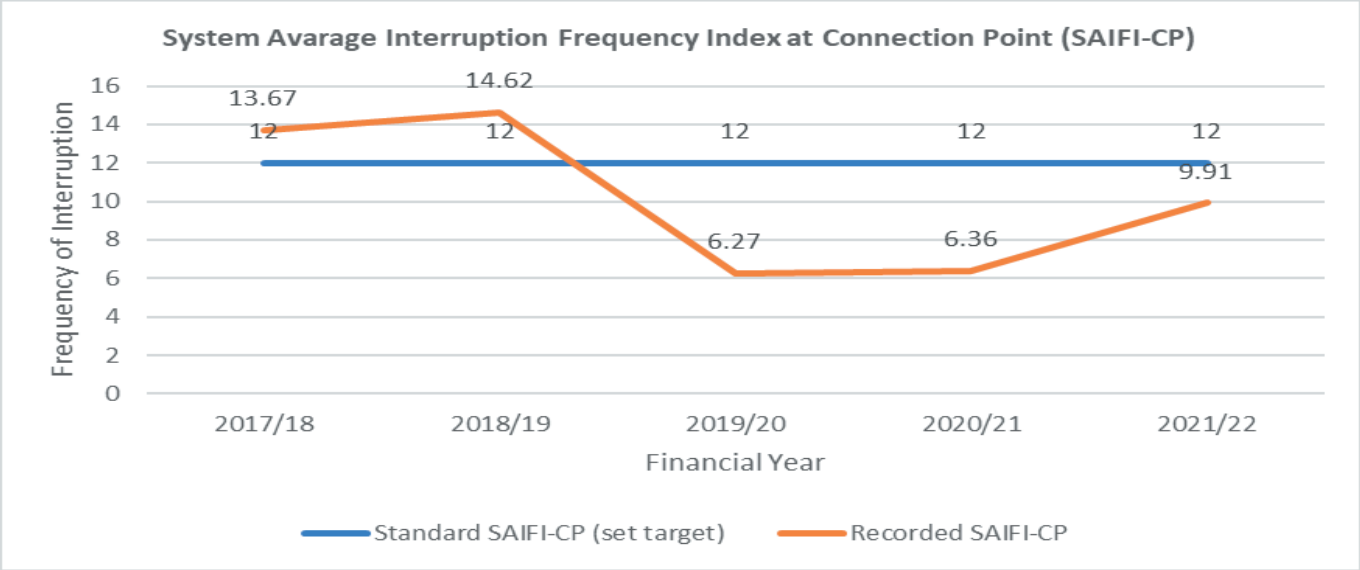


Figure 13: SAIFI-CP from FY 2017/18 – FY 2021/22

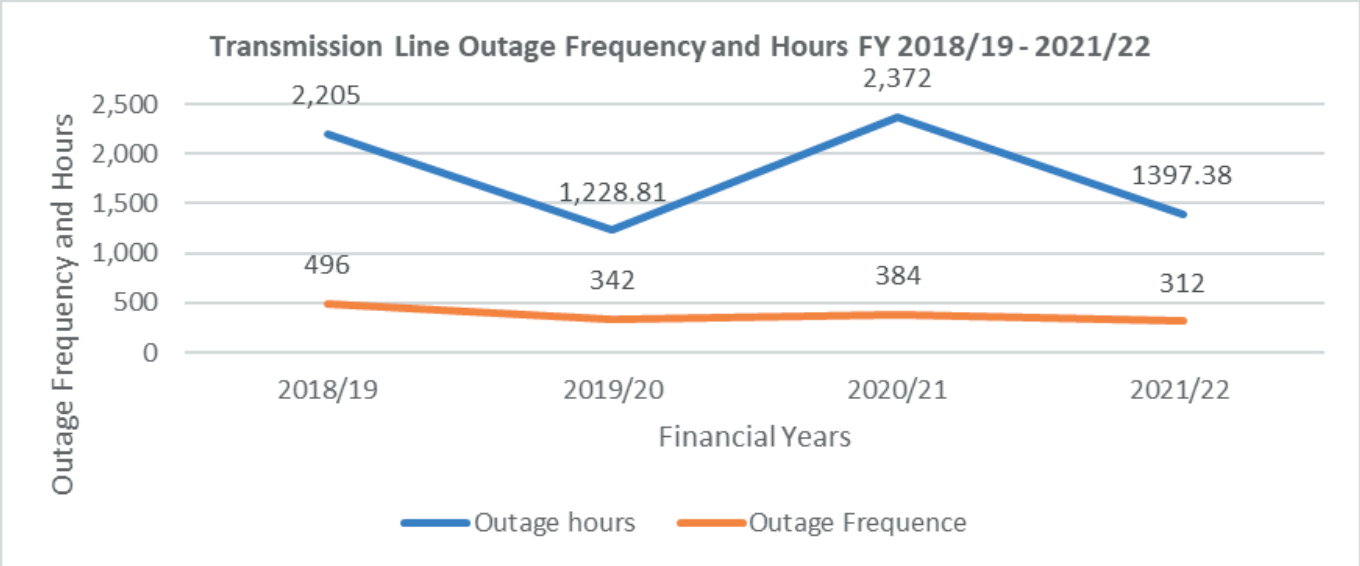


Figure 14: Transmission Line Outage Hours and Frequency FY 2017/18 – FY 2021/22

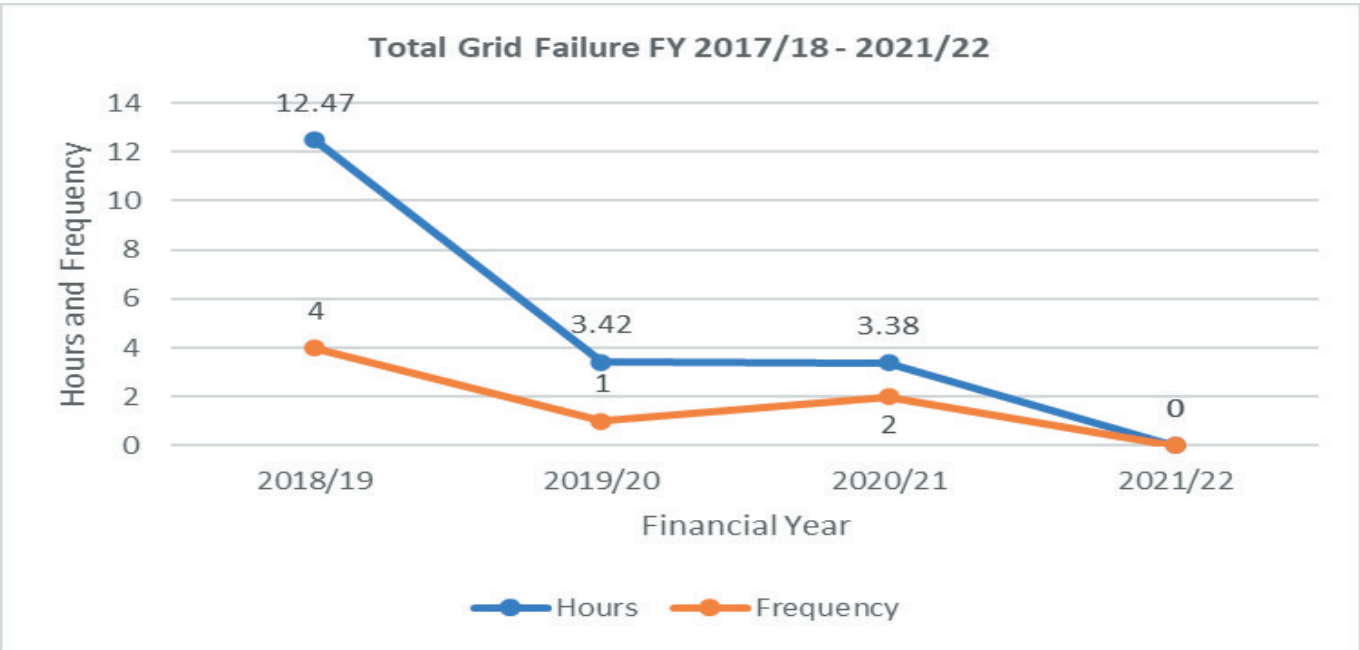


Figure 15: Total Grid Failure Frequency and Hours FY 2017/18 – FY 2021/22

5.3 Electricity Distribution Performance

Electricity distribution performance was assessed with respect to the number of licensed entities, the status of infrastructure, number of customers supplied, system losses, and supply reliability.

5.3.1 Entities Licensed to Conduct Distribution Services

During the period under review, two (2) entities were licenced, and six (6) entities were registered for conducting electricity distribution activities as per **Table 9**.

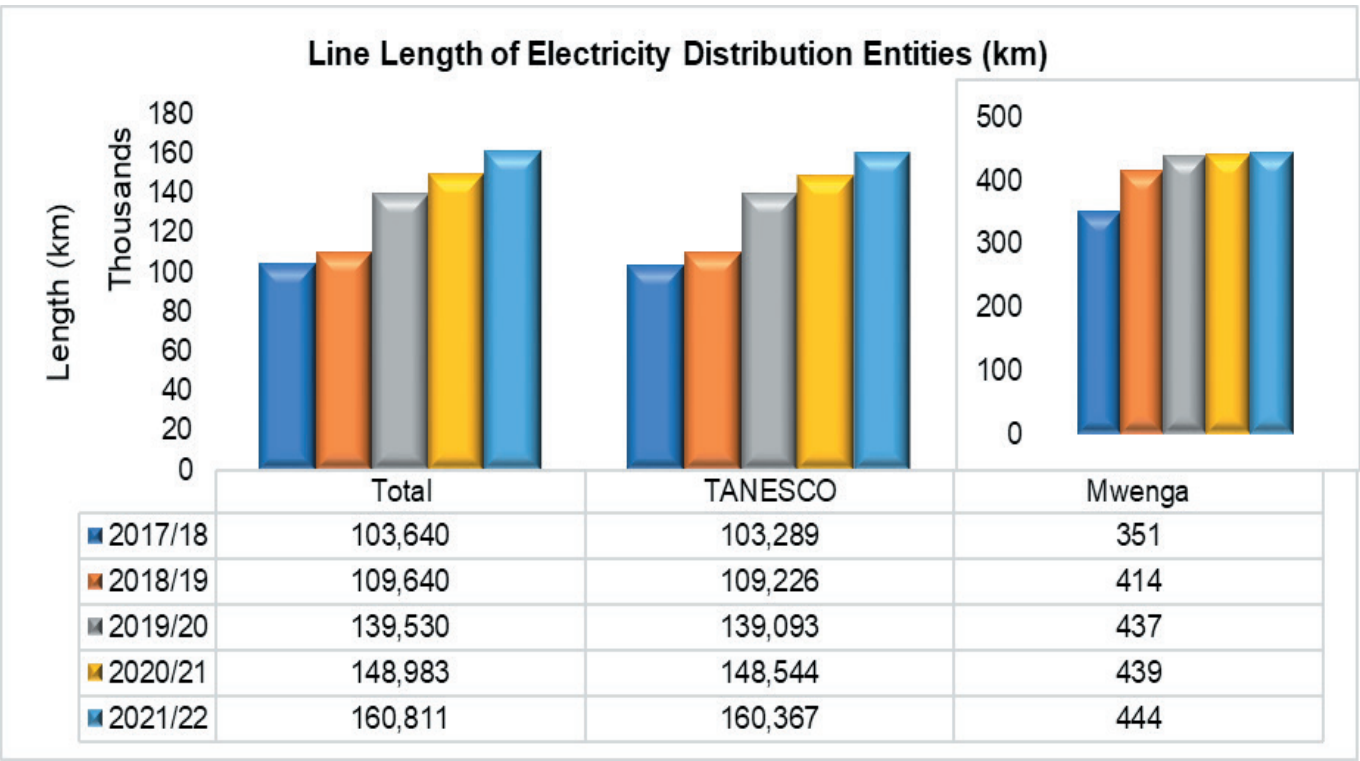
Table 9: Entities Licensed and Registered to Carry Out Electricity Distribution Activities in 2021/2022

Description	Name of Entity
Licensed Entities (Above/equal 1MW)	1. Tanzania Electric Supply Company (TANESCO)
	2. Mwenga Power Services Limited
Registered Entities (Below 1MW)	1. Powercorner Tanzania Limited, 12 site, Solar PV, 310.10kW
	2. Jumeme Rural Power Supply Limited, 22 sites, solar PV, 1,231.00kW
	3. PowerGen Renewable Energy Limited, 20 sites, Solar PV, 438.88kW
	4. Watu na Umeme Limited, 1 site, Solar PV, 48kW
	5. Ruaha Energy Company Limited, 1 site, Solar PV, 128kW
	6. EON Off-Grid Solution Gmbh, 3 sites, 29.03kW

Source: *EWURA Data Base*

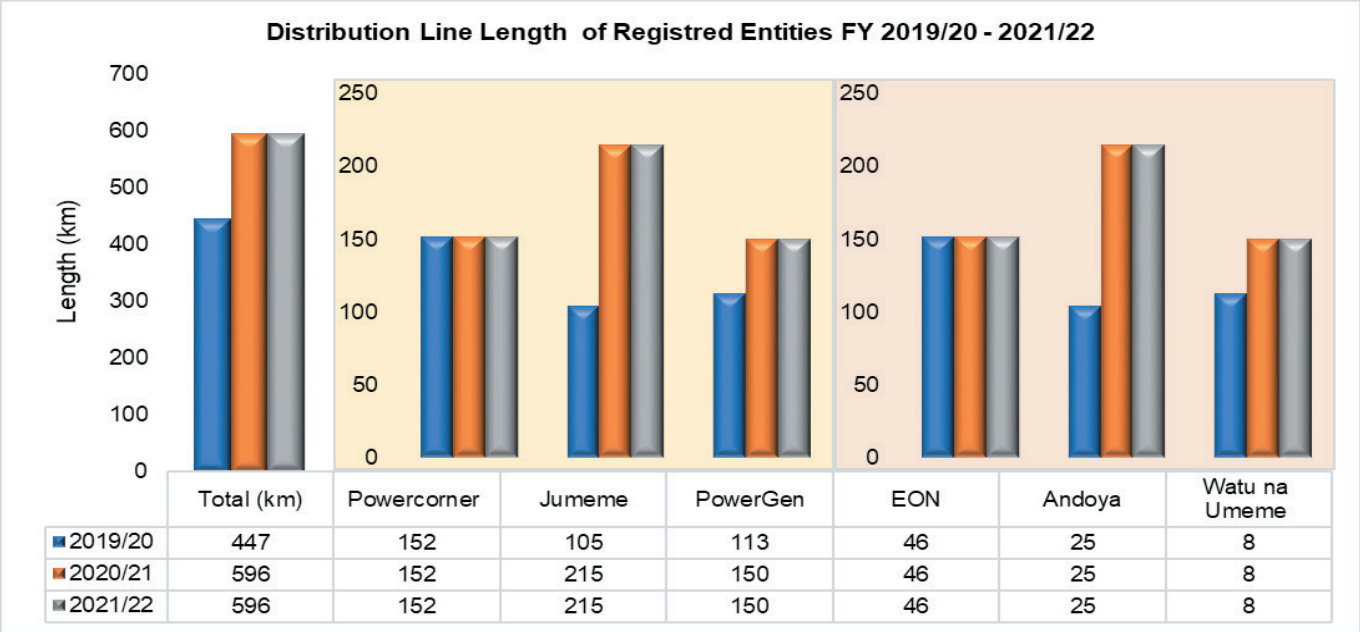
5.3.2 Electricity Distribution Line Length

As of 30th June 2022 the distribution network length was 160,811km, of which 160,367 km was for TANESCO, and 444 km for Mwenga as per **Figure 16**. In addition, the 596km line length was for registered entities as per **Figure 17**. The line length increased by 57,777km (56%) from 103,630 in FY 2017/18 to 161,407km in FY 2021/22. For registered entities, Jumeme had the highest line length of 215km, equivalent to 36% of all line lengths for registered entities as of 30th June 2022.



	Total	TANESCO	Mwenga
2017/18	103,640	103,289	351
2018/19	109,640	109,226	414
2019/20	139,530	139,093	437
2020/21	148,983	148,544	439
2021/22	160,811	160,367	444

Figure 16: Line Length of Electricity Distribution Entities FY 2017/18 – FY 2021/22



	Total (km)	Powercorner	Jumeme	PowerGen	EON	Andoya	Watu na Umeme
2019/20	447	152	105	113	46	25	8
2020/21	596	152	215	150	46	25	8
2021/22	596	152	215	150	46	25	8

Figure 17: Distribution Line Length of Registered Entities FY 2019/20 – FY 2021/22

5.3.3 Electricity Accessibility and Connectivity

The Government through REA and TANESCO has facilitated access to electricity in rural areas. The two (2) licensed entities namely TANESCO and Mwenga Power Services, as well as six (6) registered entities namely Powercorner Tanzania Limited, Jumeme Rural Power Supply Limited, PowerGen Renewable Energy Limited, Watu na Umeme Limited, Ruaha Energy Company Limited, and, EON Off-Grid Solution Gmbh was conducting electricity supply services in urban and rural areas during the period under review. As a result of these initiatives, overall electricity accessibility increased from 67.5% in 2016/17 to 78.4% in 2019/20 as per **Table 10**. In rural areas, accessibility has increased from 49.3% to 69.8% respectively. On the other hand, overall connectivity has increased from 32.8% in 2016/17 to 37.7% in 2019/20 whereby in rural areas the connectivity has increased from 16.9% to 24.5% in 2019/20 as per **Table 11**. There is no published data on electricity accessibility and connectivity as of FY 2021/22.

Table 10: Electricity Accessibility

Year	Urban (%)	Rural (%)	Overall
2016/17	99.6%	49.3%	67.5%
2019/20	97.3%	69.8%	78.4%

Source: REA&NBS, (2020)

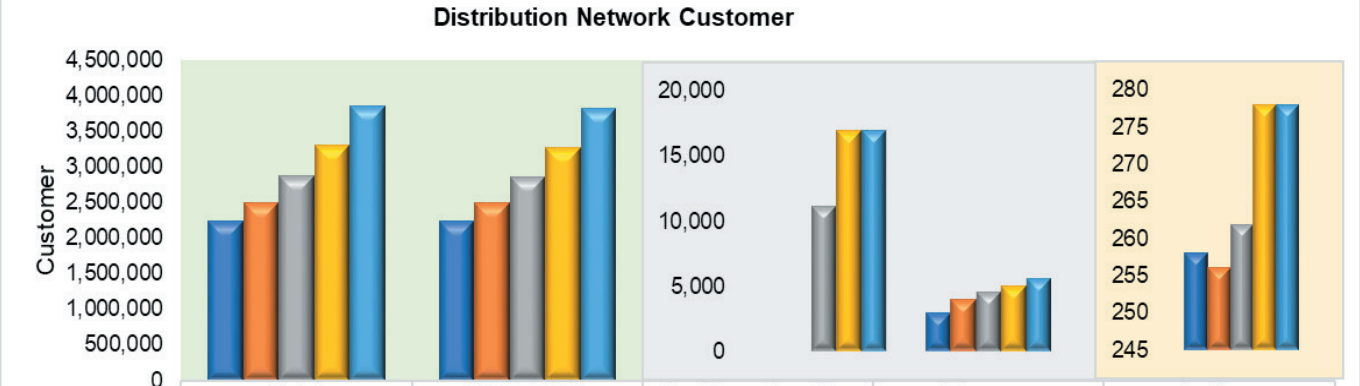
Table 11: Electricity Connectivity

Year	Urban (%)	Rural (%)	Overall
2016/17	65.3%	16.9%	32.8%
2019/20	73.2%	24.5%	37.7%

Source: REA&NBS, (2020)

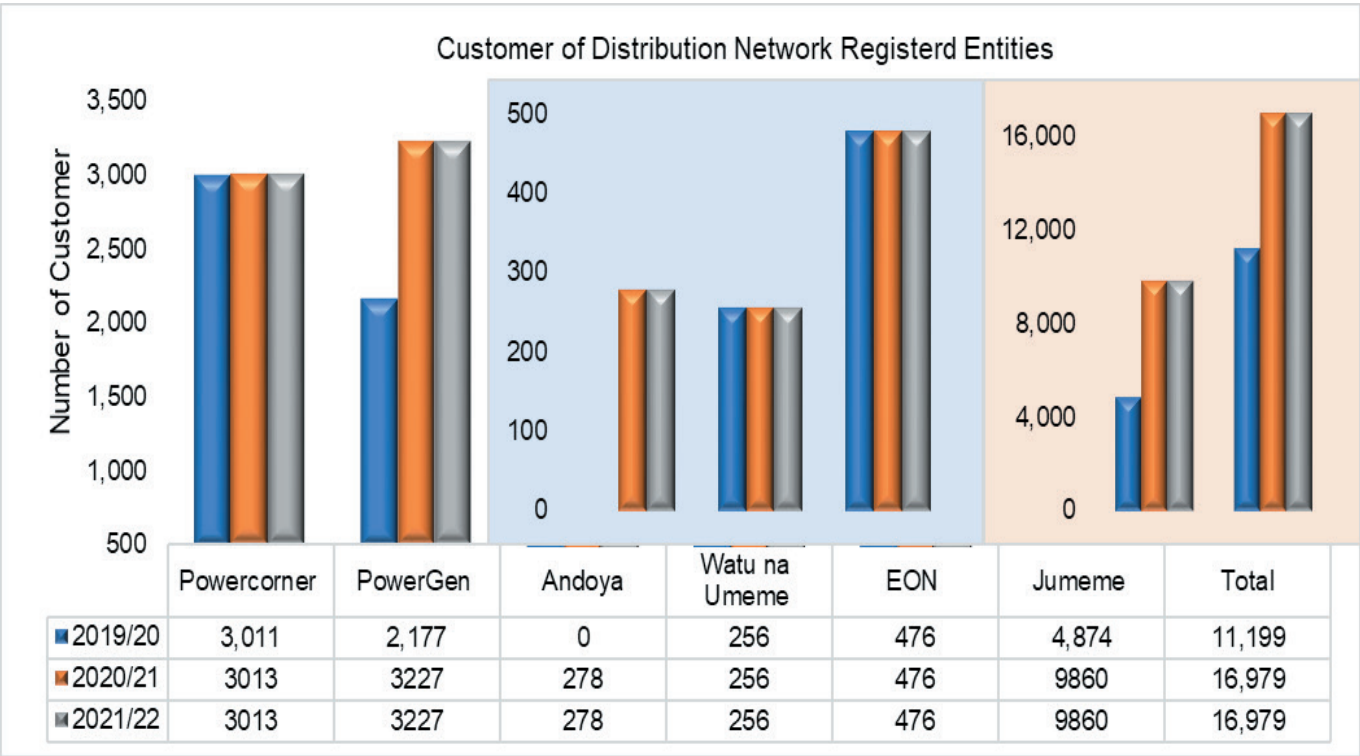
5.3.4 Customers

As of 30thJune 2022, a total of 3,864,696 customers were connected to electricity distribution networks of which 3,842,096 were for TANESCO, 5,621 for Mwenga, and 16,979 for registered entities as per **Figure 18**, Customers increased by 1,638,137 (74%) from 2,226,559 in FY 2017/18 to 3,864,696 in FY 2021/22. For registered entities, Jumeme had 9,860 customers, being the highest, which is 58% of all customers as of 30th June 2022 as per **Figure 19**.



	Total	TANESCO	Registered entities	Mwenga	Andoya
2017/18	2,226,817	2,223,638	0	2,921	258
2018/19	2,488,414	2,484,202	0	3,956	256
2019/20	2,880,612	2,864,560	11,199	4,591	262
2020/21	3,312,852	3,290,490	16,979	5,105	278
2021/22	3,864,974	3,842,096	16,979	5,621	278

Figure 18: Number of Customers for TANESCO FY 2017/18 – FY 2021/22



	Powercorner	PowerGen	Andoya	Watu na Umeme	EON	Jumeme	Total
2019/20	3,011	2,177	0	256	476	4,874	11,199
2020/21	3013	3227	278	256	476	9860	16,979
2021/22	3013	3227	278	256	476	9860	16,979

Figure 19: Customer of Registered Entities FY 2019/20 – FY 2021/22

5.3.5 Power System Reliability in the Distribution Infrastructure

Power system reliability indices were assessed based on Tanzania Standard TZS 1374:2011 (Power quality–Quality of service and reliability). In this report the Indices calculated were System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI) and Customer Average Interruption Duration Index (CAIDI).

During the period under review, the performances of licensed and registered entities in system reliability are detailed in **Table 12**. TANESCO had a SAIFI of 11 instead of 3 interruptions per customer per year required by the standard, SAIDI of 26,820 instead of 650 minutes per customer per year required by the standard, and CAIDI of 2,438.18 instead of 4 minutes per interruption event per year.

Also, Mwenga had a SAIFI of 14 instead of 3 interruptions per customer per year required by the standard, SAIDI of 1,380 instead of 650 minutes per customer per year required by the standard, and CAIDI of 98.57 instead of 4 minutes per interruption event per year.

Furthermore, Andoya had a SAIFI of 193 instead of 3 interruptions per customer per year required by the standard, SAIDI of 328 instead of 650 minutes per customer per year required by the standard, and CAIDI of 1.7 instead of 4 minutes per interruption event per year.

Table 12: Power Reliability Indices for 2021/2022

Licensee	Index	Standard index	2018/19	2019/20	2020/21	2021/22
TANESCO	**SAIFI**	**3**	46.032	218	48	*11*
	SAIDI	**650**	2,784	10,560	22,380	*26,820*
	CAIDI	**4**	60.5	48.44	466.25	*2,438.18*
Mwenga	**SAIFI**	**3**	19.1	35.93	28	14
	SAIDI	**650**	803.16	1570.2	1848	1380
	CAIDI	**4**	42.05	43.70	66	98.57
Andoya	**SAIFI**	**3**	124	1.00	1	193.00
	SAIDI	**10.8**	255.3	66	8.40	328.00
	CAIDI	**4**	2.1	66	8.4	**1.7**

During the period under review, TANESCO recorded 1409.89 hrs of outage, Mwenga Power Services Limited had 539.62 hrs equals an increase of 5.0 % and 60.5 % respectively, while Andoya Hydro Electric Power Limited had 1,484 hrs of outage equals an increase of 889.3% compared to the previous year as per **Table 13**.

Table 13: Electricity Distribution Outage Hours FY 2017/18 – 2021/22

Licensee	Hours	2017/18	2018/19	2019/20	2020/21	2021/22	Difference	±%
TANESCO	Planned	19344	677.97	674.61	698.99	1,182.76	483.77	69.2
	Unplanned	14217	732.8	580.93	643.89	227.13	-416.76	-64.7
	Total	**33561**	**1,410.77**	**1,255.54**	**1,342.88**	**1,409.89**	**67.01**	5.0
Mwenga	Planned	49.28	221.7	96.37	126.15	71.32	-54.83	-43.5
	Unplanned	145.4	19.02	237.62	210	468.3	258.30	123.0
	Total	**194.68**	**240.72**	**333.99**	**336.15**	**539.62**	203.47	60.5
Andoya	Planned	36	2.37	20	35	288	253.00	722.9
	Unplanned	134	1.93	135	115	1,196	1081.00	940.0
	Total	**170**	**4.3**	**155**	**150**	**1,484**	**1,334**	889.3

Source: *TANESCO, Mwenga and Andoya Reports*

The total outage frequency was 1,621.60 for TANESCO, 226 for Mwenga Power Services Limited, and 193 for Andoya Hydro Electric Power Company Limited, under the period of review. This indicates an increase of 55 % for TANESCO, a decrease of 37 % for Mwenga, and an increase of 371.00% for Andoya as per **Table 14**. The tremendous rate of outages for Andoya was contributed by a damage to its electricity generation turbine.

Table 14: Electricity Distribution Outage Frequency for 2019/20 and 2021/22

Licensee	Frequency	2018/19	2019/20	2020/21	2021/22	Difference	±%
TANESCO	Planned	853	653	306	382.059	76.059	24.9
	Unplanned	888	435	738	1239.55	501.55	68.0
	Total	**1,741.00**	**1,088.00**	**1,044.00**	**1,621.60**	**577.60**	**55**
Mwenga	Planned	32	88	71	44	-27	-38.0
	Unplanned	1,141	159	290	182	-108	-37.2
	Total	**1,173**	**247**	**361**	**226**	**- 135**	**- 37**
Andoya	Planned	11	25	26	24	-2	-7.7
	Unplanned	116	10	15	169	154	1026.7
	Total	**127**	**35**	**41**	**193**	**152**	**371**

5.3.6 New Connections to Power Supply

During the period under review, TANESCO connected 551,606 new customers equivalent to 88.98% of its customers who completed application process for power connection. This includes pending applications from previous years. In addition, Mwenga Power Services Limited and Andoya Hydro Electric Power Company Limited connected 87.56% and 50% respectively, of customers who applied for the power connection as per **Table 15.**

Table 15: Electricity Distribution Customer Connection

Licensee	Year	Applications[1]	Connections	Pending	Achievement (%)
TANESCO	2021/22	619,911	551,606	68,305	88.98
	2020/21	684,655	425,930	258,725	62.21
	2019/20	413,307	380,358	32,949	92.03
	2018/19	276,764	260,564	16,200	94.15
	2017/18	273,272	197,543	75,729	72.20
MWENGA	2021/22	193	169	24	87.56
	2020/21	578	514	64	88.93
	2019/20	800	780	20	98.00
	2018/19	1035	1035	0	100.00
	2017/18	387	380	7	98.00
ANDOYA	2021/22	26	13	13	50.00
	2020/21	0	0	0	0.00
	2019/20	0	0	0	0.0
	2018/19	6	6	0	100.00
	2017/18	64	20	44	31.00

***Source**: TANESCO, MWENGA & ANDOYA*

5.4 Energy Losses

Analysis of energy losses was performed to three (3) utilities of TANESCO, Mwenga and Andoya. In accordance with the Electricity Supply Industry Reform Strategy and Roadmap (ESI-RSR), 2014 Section 6.2 to 6.4, the desired total losses in the electricity supply industry are supposed to be 12% by 2025. The ESI-RSR sets the trajectory for loss reduction in the tune of 14%-12% from July 2021 to June 2025. However, the desired targets do not allocate the portion for distribution segment.

TANESCO had a total energy loss of 15.43% of which, transmission loss was 6.68% as per **Table 16** and distribution loss was 8.75% as per **Table 17**. The recorded total loss diverts with the targets set in the ESI-RSR where the desired total losses is supposed to be in the tune of 14%-12% from July 2021 to June 2025. The total energy losses have increased by 0.27% compared to the previous year which had a

total energy loss of 15.16%. The slight increase in transmission losses is contributed by the increased load while the transmission line capacity is still the same. In order to reduce the transmission losses, the utility is undertaking several initiatives, including construction of new transmission infrastructure and rehabilitation of the existing one. EWURA will continue to monitor performance of licensee to ensure timely completion of the projects aiming to reduce energy losses.

The Mwenga Power Services Limited had a distribution loss of 6% which is within the recommended value, but slightly higher by 0.51% than that of previous years, whereby the loss was 5.49%. Furthermore, Andoya had a distribution loss of 3.98 % indicating continuous improvement compared to the previous year where the loss was 4.34% as per **Table 17.**

EWURA will ensure that utilities comply with the best practices in reducing energy losses including; compliance to standards of constructing infrastructure, the use of prepaid meters, installation of pre-paid meters, and avoiding energy theft.

Table 16: Transmission Energy Losses

Description	2017/18	2018/19	2019/20	2020/21	2021/22
Energy Received in Transmission System (GWh)	6742.405	7413.95	7531.11	7891.33	8821.89
Energy Received for Distribution (GWh)	6341.677	6975.21	7085.79	7426.87	8232.26
Losses (GWh)	397.16	435.55	442.92	464.46	589.63
Losses (%)	**5.89**	**5.87**	**5.89**	**5.89**	**6.68**

Source: *TANESCO Reports*

Table 17: Electricity Distribution Losses

Licensee	Year	Energy Distributed (GWh)	Energy Sales (GWh)	Losses (GWh)	Losses (%)
TANESCO	2021/22	7,854.39	7,167.31	687.09	8.75
	2020/21	7,622.27	6,898.49	723.78	9.50
	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	6,642.67	6,341.68	300.99	4.53
Mwenga	2021/22	30.00	29.00	1.8	6.00
	2020/21	25.28	23.891	1.389	5.49
	2019/20	20.68	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	2021/22	3.013	2.893	0.12	3.98
	2020/21	4.0405	3.865	0.18	4.34
	2019/20	2.792	2.64	0.156	5.59
	2018/19	2.742	2.584	0.1576	5.75
	2017/18	2.995	2.773	0.222	7.41

Source: *TANESCO, Mwenga and Andoya Reports*

5.5 Investment In Electricity Infrastructure

Section 6(1)(c) of the Electricity Act 2008, mandates the Authority to promote least-cost investment and the security of supply for the benefit of customers. During the period under review, several projects were under development as detailed below.

5.5.1 Public Power Plants Under construction

TANESCO is currently developing power plants which are at various stages of implementation with a total potential installed capacity of 2,327.70MW. Upon completion of the strategic projects, Tanzania will have reserve capacity enough to cater for current and forecasted increased demand 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 18**.

Table 18:: Power Plant Projects Currently Under Development

Name of Project	Capacity (MW)	Energy Source	Expected COD	Location
Julius Nyerere Hydro Power Project	2,115.00	Hydro	2023	Coast
Kinyerezi I Extension Gas Power Project	185.00	Natural Gas	2022	Dar- es-Salaam
Rusumo Hydro Power Project [2]	26.70	Hydro	2022	Kagera
Total	**2,326.70**			

Source: *TANESCO*

5.5.2 Private Power Plants under construction

As of June 2022**,** the ongoing projects being implemented by private investors expect to contribute 44.37MW as per **Table 19**. This will enhance government initiatives to ensure security of electricity supply in the country. This has been achieved through establishment favorable regulatory framework which promotes private sector investment in the electricity sub-sector.

Table 19: Approved SPPAs under Development

S/N	Name of Power Producer	Capacity (MW)	Source	Expected COD	Location
1.	Madope HPP	1.70	Hydro	2025	Njombe
2.	Maguta HPP	1.20	Hydro	2025	Iringa
3.	Ijangala HPP	0.36	Hydro	2025	Njombe
4.	Kahama solar	10.00	Solar PV	2025	Shinyanga
5.	Diwale HPP	5.00	Hydro	2025	Morogoro
6.	Pinyinyi HPP- Ngorongoro	1.90	Hydro	2025	Arusha
7.	Jumeme	1.00	Solar PV	2025	Sumbawanga
8.	Jumeme	1.00	Solar PV	2025	Katavi
9.	Suma HPP	4.00	Hydro	2025	Rungwe
10.	Rukwa Generating Company	0.95	Hydro	2025	Rukwa
11.	Lung'ali Natural Resources Company Limited	1.20	Hydro	2025	Njombe
12.	Nishati Lutheran (DKK) Investment Limited	0.36	Hydro	2025	Njombe
13.	Mofajus Investment Limited	3.00	Hydro	2025	Katavi
14.	Franciscan Sisters of Charity	1.00	Hydro	2025	Morogoro
15.	Bwelui Company Limited	4.70	Hydro	2025	Mbeya
16.	Tangulf Nakatuta Energy Company Limited	5.00	Hydro	2025	Ruvuma
17.	Luponde Hydro Limited	2.00	Hydro	2025	Njombe
Total		**44.37**			

Source: *EWURA*

5.5.3 Transmission Projects Currently Under Development

TANESCO is implementing electricity transmission projects which during the year under review were are at various stages. The projects which were under construction have a total length of 1926 km of transmission line and substations capacity of 1,110 MVA. The status of the implementation of the projects for transmission line and substation are indicated in **Table 20** and **Table 21** respectively.

Table 20: Transmission Line Projects Currently Under Development

S/N	Name Of Transmission Line Project	Voltage Level	Distance (Km)	Expected COD
1.	Rusumo –Nyakanazi	220kV	94	2023
2.	Geita-Nyakanazi	220kV	114	2023
3.	Kenya - Tanzania Interconnector Project (Singida – Arusha – Namanga)	400kV	414	2023
4.	SGR Lot 2-1 - Morogoro (Msamvu) - Dodoma (Ihumwa)	220kV	237	2023
5.	SGR Lot 2-2 -Dodoma (Ihumwa) Singida (Makutupora)	220kV	176	2023
6.	JNHPP-Chalinze	400kV	160	2023
7.	Tabora-Kigoma	132kV	395	2024
8.	Tabora-Katavi	132kV	381	2024
9.	Kigoma-Nyakanazi	400kV	280	2024
	Total		**2251**	

Source: *EWURA*

Table 21: Transmission Substations Projects Currently Under Development

S/N	Substation Name	Voltage level	MVA	Expected COD
1.	Lemugur substation (Arusha)	400/220/33kV	250	2023
2.	Ifakara substation (Morogoro)	220/33kV	20	2023
3.	Nyakanazi substation (Kagera)	220/33kV	80	2023
4.	Urambo (Tabora)	132/33kV	35	2024
5.	Nguruka (Kigoma)	132/33kV	15	2024
6.	Ipole (Tabora)	132/33kV	15	2024
7.	Inyonga (Katavi)	132/33kV	15	2024
8.	Mpanda (Katavi)	132/33kV	35	2024
9.	Kunduchi (Dar es salaam)	132/33kV	65	2024
	Total		**530**	

Source: *TANESCO*

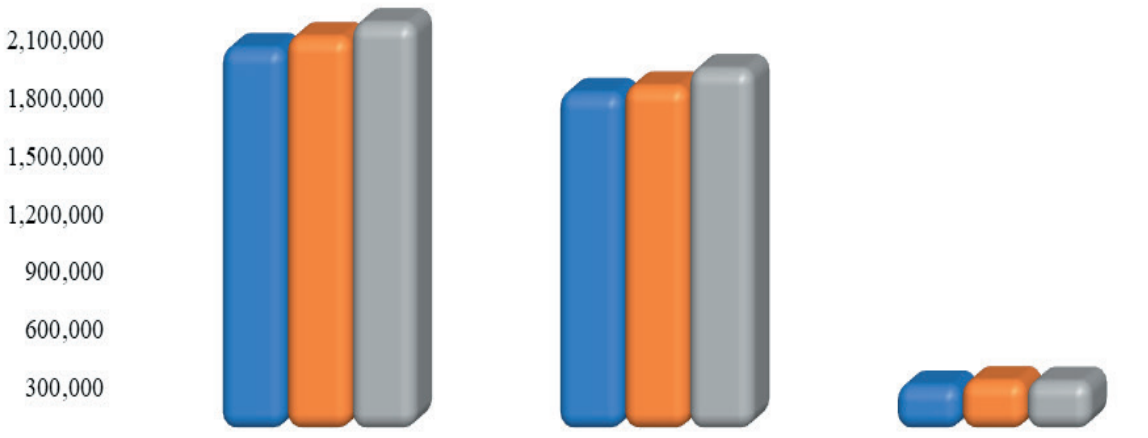
6. FINANCIAL PERFORMANCE

This section focus on the financial performance of six entities from FY 2018/19 to 2020/21 which are TANESCO, Andoya Hydroelectric Power Company Limited, Mwenga Power Services Limited, Songas, Mwenga Hydro Limited and Tulila Hydro Electric Plant Company Limited. Songas generates electricity which is sold to TANESCO under a long term PPA, whereas Mwenga Hydro and Tulila generate electricity that is sold to TANESCO under SPPAs.

It is worth noting that Songas, Tulila and Andoya report financial performance based on calendar year and others use the fiscal year, hence, for calendar year 2018 to 2020, this is referred to as FY 2018/19 to 2020/21, respectively. Thus, the financial performance analysis is either based on the draft Financial Statements of FY 2020/21 or audited financial statements of the Calendar Year 2020 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 segments.

6.1 Revenue Generation

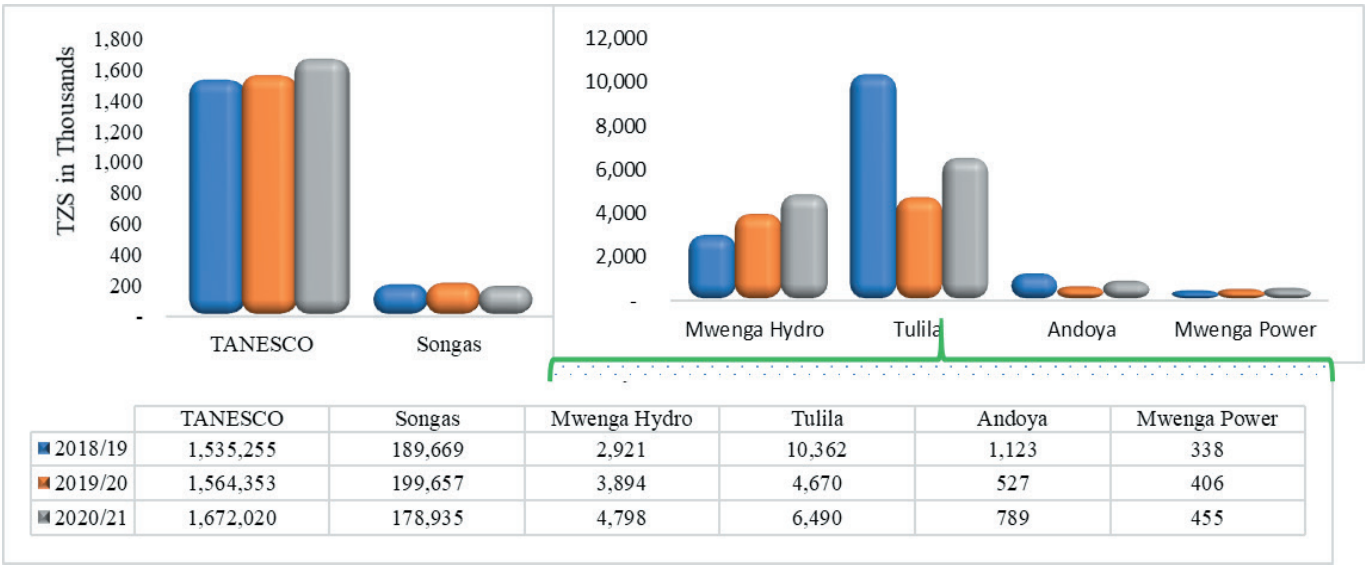
In FY 2020/21, the average gross revenue of all entities increased by 4% compared to an increase of 3% recorded in FY 2019/20. The revenue from the sale of electricity increased by 5% from 2% recorded in the previous FY, however, other revenue decreased by 1%. In addition to that, 88% of revenue was generated from the sale of electricity and 12% from other sources. ***Figure 20*** shows the three-year trend of revenues from sale of electricity and other income and is detailed in **Annex 11**.



	TOTAL	Electricity Sales	Other Income
2018/19	1,971,286	1,739,667	231,619
2019/20	2,027,996	1,773,506	254,490
2020/21	2,114,746	1,863,486	251,260

Figure 20: Total Revenue by Source (TZS in million)

During the FY 2020/21, revenue generated from the sale of electricity increased by 50% for Andoya, 39% for Tulila, 23% for Mwenga Hydro, 12% for Mwenga Power and 7% for TANESCO, whilst Songas recorded a drop of 10%. The main reason for the drop of energy revenue is low generation as a consequential effect of reduced demand due to COVID 19 pandemic. Revenue generated by each utility is presented in ***Figure 21*** and detailed in **Annex 11**.

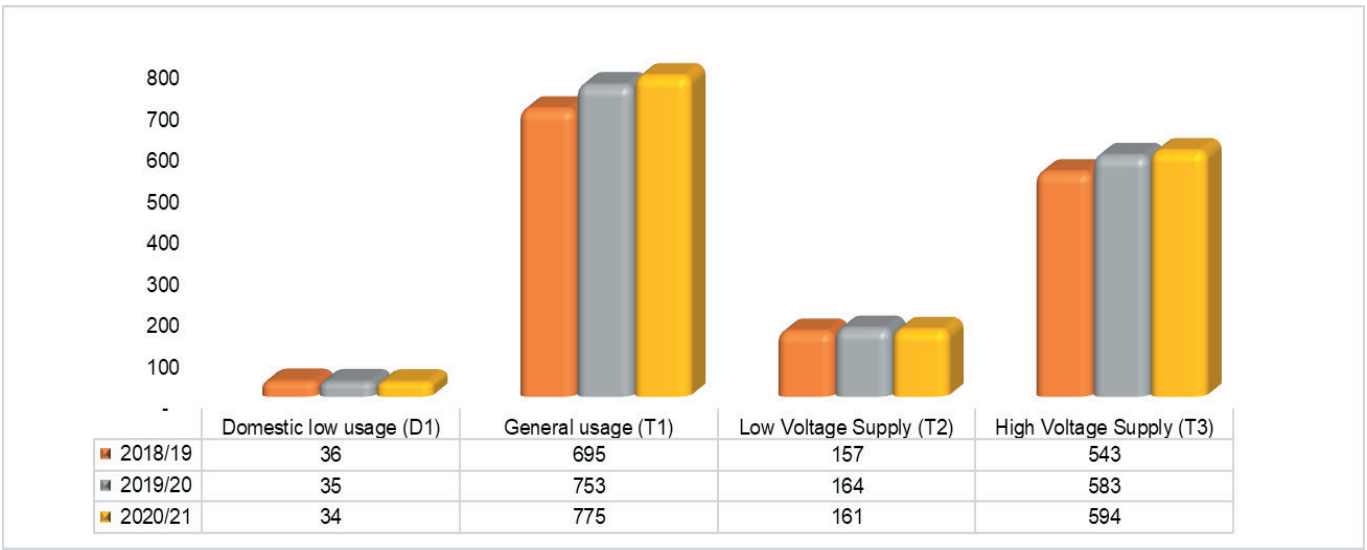


	TANESCO	Songas	Mwenga Hydro	Tulila	Andoya	Mwenga Power
2018/19	1,535,255	189,669	2,921	10,362	1,123	338
2019/20	1,564,353	199,657	3,894	4,670	527	406
2020/21	1,672,020	178,935	4,798	6,490	789	455

Figure 21: Total Revenue by Utility

Being a public utility, TANESCO generates most of its revenue from sales of electricity. The sales made to general Usage Customers (T1) contributed to 50%, High Voltage supply customers (T3) 38%, whilst Low Voltage Supply (T2) and Domestic Low Usage (D1) customers amounted to 10% and 2% of the total electricity sales revenue respectively.

During the FY 2020/21, TANESCO recorded a general increase of sales from electricity by 2%, higher than an increase of 1% recorded in the previous year. The rise was associated with an increase in new connections of 425,930 customers. The increased revenue was also associated with increased power consumption by an average of 4%, that, from Domestic Low Usage (7%), General Usage (5%), High Voltage Supply (4%) and Low Voltage Supply (1%). **Figure 22** shows three years of TANESCO revenue by customer category and is detailed in **Annex 12**.



	Domestic low usage (D1)	General usage (T1)	Low Voltage Supply (T2)	High Voltage Supply (T3)
2018/19	36	695	157	543
2019/20	35	753	164	583
2020/21	34	775	161	594

Figure 22: TANESCO Revenue by Customer Category (TZS Billions)

6.2 TANESCO Cost Structure

The cost structure for TANESCO was mainly dominated by generation and transmission costs that covered 31% of operational costs, 22% was depreciation, 16% distribution, 14% purchase of electricity and other

costs amounted to 17%. In addition, during the FY 2020/21, operational costs including depreciation increased by 4% from TZS 1.79 trillion in FY 2019/20 to TZS 1.86 trillion. ***Figure 23*** shows the TANESCO's composition of cost structure.

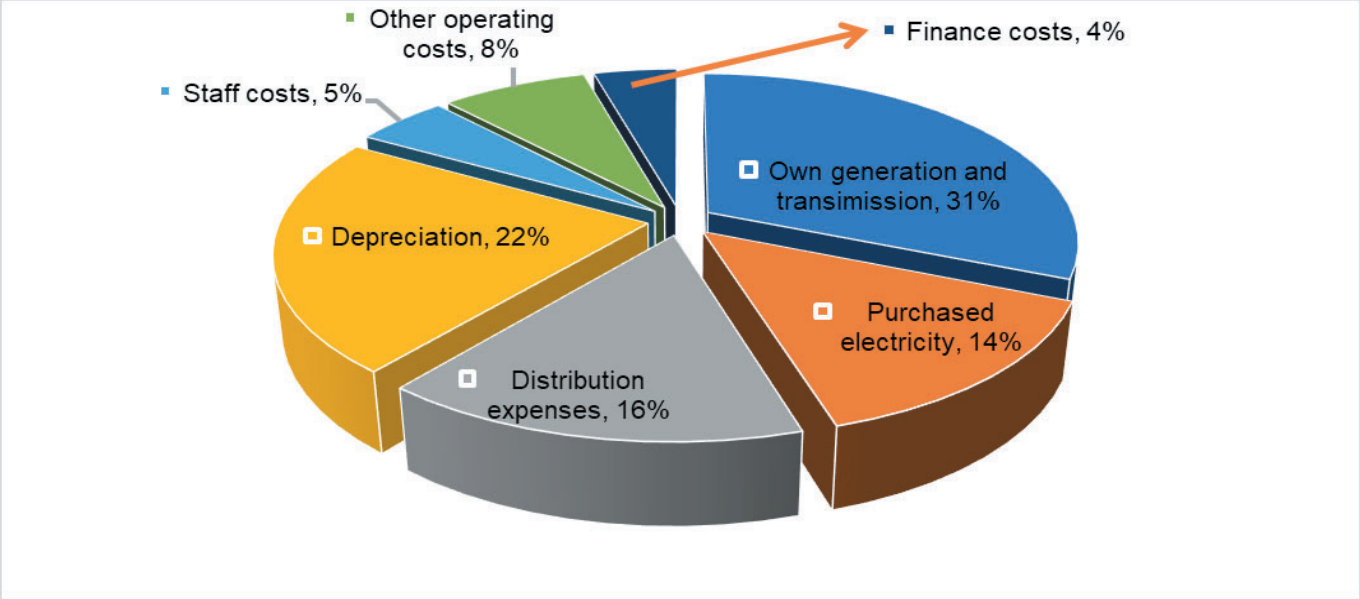
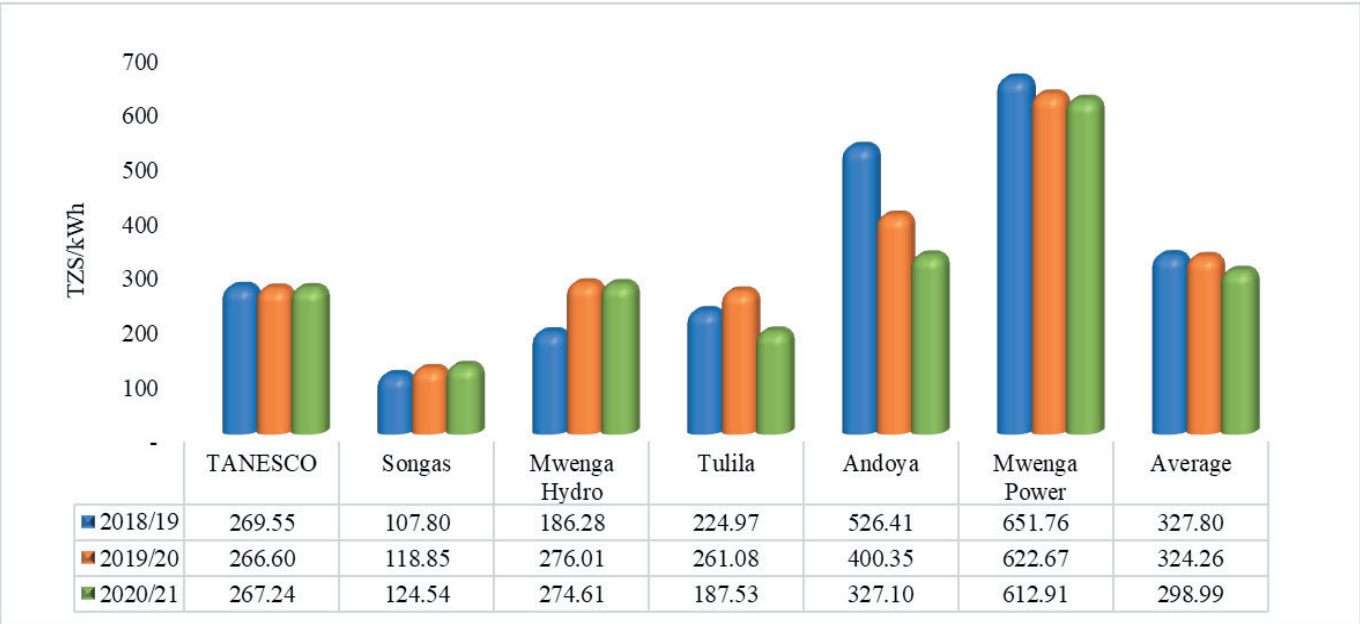


Figure 23: TANESCO's cost structure

6.3 Cost per Unit Sold

In FY 2020/21, the average unit cost of electricity sold decreased by 8% compared to a decrease of 1% recorded in FY 2019/20, implying an improvement in operational efficiency during the year under review. The improvement of operational efficiency resulted in a decrease in unit cost of Tulila by 28%, Andoya by 18%, Mwenga Power by 2% and Mwenga Hydro by 1%. However, Songas and TANESCO's unit costs increased by 5% and 0.2% respectively. Provide clarity why TANSECO and Songas.

Further, compared to other utilities, the highest cost per unit sold of TZS 613/kWh was recorded by Mwenga Power, whilst, the lowest was recorded by Songas as TZS 125/kWh. **Figure 24** indicates trend of unit costs for three FYs.



	TANESCO	Songas	Mwenga Hydro	Tulila	Andoya	Mwenga Power	Average
2018/19	269.55	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
2020/21	267.24	124.54	274.61	187.53	327.10	612.91	298.99

Figure 24: Total cost per unit sold

7. REGULATORY IMPACT

The following regulatory impacts were noted during the period under review.

1. **Affordability of electricity services:** In promoting affordability of electricity services as one of its functions, EWURA issued 1,107 licences to electrical installation personnel to carry out electrical installation activities, and hence increased a number of licensed personnel to provide electrical installation services, particularly in rural areas by promoting customer service through competition. Furthermore, it increased the safety of people and their property.

2. **Security of electricity supply:** In promoting least-cost investment and the security of electricity supply as one of its functions, EWURA issued two generation licences of which commissioning of those projects will compliment Government effort to ensure security of power supply by adding 12MW in the national grid installed capacity.

3. **Quality and Reliability of Services:** In promoting customer services including quality and reliability of services as one of its function, EWURA continued to monitor and measure the performance of regulated entities which resulted into improved quality of services, including connection of 552,122 new customers.

4. **Sustainability of regulated entities:** In promoting efficient operation and sustainability of regulated entities as one of its function, EWURA approved tariff for mini-grid operators to ensure cost reflective tariff and hence sustainability of mini-grids. Also, it continued to monitor and measure performance of regulated entities to ensure efficient operation of their activities through compliance monitoring.

5. **Electrification:** In promoting electrification as one of its functions, EWURA continued to monitor all regulated entities to ensure timely connection of customers to the power supply which resulted in connection of 552,122 new customers.

6. **Investment:** In promoting least cost investment in electricity Sub-sector, EWURA continued to monitor implementation of projects of licensed activities which resulted into increase of 131.18MW of generation installed capacity, 1,756 MVA of transmission substation, and 57,777km of distribution line.

8. FUTURE OUTLOOK OF THE SUB - SECTOR

Following the ongoing developments in the electricity sub-sector. The following are among the anticipated future outlook of the sub-sector in accordance with the actual situation as well as future projections.

a) **Generation Mix:** Following the commissioning of the ongoing hydropower projects which include Julius Nyerere Hydropower Project 2115MW, Rusumo Hydropower project 26.67MW, and Kinyerezi I Extension 185MW, will increase the national grid installed capacity from 1822.05MW as of 1st March 2023 to 4,013.72MW by 2024. This indicates that in the national grid power generation mix contribution based on installed capacity will be 2,716.27MW (67.67%) hydro, 1,198.82MW (29.87%) natural gas, 88.13MW (2.20%) Heavy Fuel Oil and 10.5MW (0.26%) of Biomass. Furthermore, this indicates that the commissioning of the hydropower and natural gas power plants will contribute to increased contribution of hydropower from 32.33% to 67.67% and decrease of natural gas contribution from 62.12% to 29.87%, Heavy Fuel Oil from 4.96% to 2.20% and Biomass from 0.59% to 0.26%. In addition, based on Power System Master Plan 2020 as of 2044, the power generation mix will consist of hydro (5,684 MW or 28.15%), natural gas (6,700 MW or 33.18%), coal (5,300 MW or 26.24%), wind (800MW or 3.96%), solar (715 MW or 3.54%), geothermal (995 MW or 4.93%) and (0 MW or 0%) diesel/HFO.

b) **Generation Forecast:** The trend shows that there was an increase of 972GWh (12%) in energy generated and imported from 8178GWh in 2020/21 to 9,150.33GWh in 2021/22. This is less than what was projected from Power System Master Plan 2020 of 10,176GWh by 2022. Nevertheless, energy generated is expected to continue increasing as per PSMP 2020 projections which indicates that energy generation of 11,470GWh in 2023, 15,271GWh in 2025, 28,663GWh in 2030, 51,496GWh in 2035, 78,657GWh in 2040, and 107,937GWh by 2044, provided that investment in power infrastructure will be implemented as per plan.

c) **Power Demand:** The trend indicates that there was an increase of 139.66MW (11.63%) in maximum demand from 1201.02MW in 2020/2021 to 1,340.68MW in 2021/22. The demand in electricity is expected to continue increasing as per the Power System Master Plan 2020, whereby the demand is expected to grow at an annual average of 11.7%, resulting into a demand of 2,677MW in 2025, 4,878MW in 2030, 8,554MW in 2035, 12,854MW in 2040, and 17,611MW in 2044.

d) **Electrification:** The trend indicates that a total of 3,847,995 customers were connected to electricity, being an increase of 552,122 customers, equivalent to 17% from the previous year. In accordance with the Power System Master Plan 2020, electricity connectivity is expected to grow to 36.2% in 2025, 48.5% in 2030, 75.7% in 2035, 86.3% in 2040, and 96.1% in 2044.

e) **System Losses:** The trend indicates that system losses for 2021/22 was 15.43%, being an increase of 0.27% from 15.16% in the previous year. This diverts with the targets set in the Electricity Supply Industry-Reform Strategy and Roadmap and Power System Master Plan 2020 due to extension of the distribution networks and prolonged under-investments in the transmission and distribution infrastructure. In future, the system losses are expected to be reduced to 12.3% by 2025 to 12% by 2026 as per the Power System Master plan 2020, provided that relevant investments are done as planned.

f) **Tariff:** In accordance with the Power System Master Plan 2020, tariffs are expected to decrease significantly after the completion of the Julius Nyerere Hydropower Power Plant (JNHPP). Hence, the decrease in the tariff may lead to an increase in electricity consumption and stimulate investment in various sectors.

9. ACHIEVEMENTS, CHALLENGES, AND WAY FORWARD

9.1 Achievements

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

a) Issuance of two (2) operational generation licenses with a potential to increase generation capacity by 12MW;
b) Issuance of 1,107 electrical installation personnel licence which facilitated increased safety of the people and their properties;
c) Increase in energy demand by 11.63% indicating an increase in customer base and economic activities;
d) Increase in capacity of electricity transmission substations by 1,756 MVA;
e) Increase in electricity distribution infrastructure by 57,777km (56%) from 103,630 in FY 2017/18 to 161,407km in FY 2021/22;
f) Increase in customer connections by 1,638,137 (74%) from 2,226,559 in FY 2017/18 to 3,864,696 in FY 2021/22;
g) The energy demand growth rate was 11.63% during the period under review, which is within the expected value of 10% - 15% as per the Power System Master Plan of 2020 ; and
h) Increase in installed capacity of power plants by 131.18 MW (8) from 1,609.25MW in FY 2020/21 to 1,740.43MW in FY 2021/22.

9.2 Challenges and Way Forward

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

a) 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 TBS. EWURA will continue to ensure that utilities comply with best practices and standards in constructing, operating and maintaining infrastructure.
b) Low Private Sector Participation - Private sector investments in the electricity sub-sector continued to be inadequate. To address this, EWURA in collaboration with other stakeholders will continue to promote private sector investments.

10. CONCLUSION

Despite the challenges that the electricity sub-sector has faced, there has been notable investment in the industry, which has contributed towards improvement of availability and reliability of power supply to the community. EWURA in collaboration with other stakeholders, and under the guidance of the Government, will continue to regulate and promote more investments in the electricity sub-sector in order to meet the ongoing energy demand growth and increase energy consumption per capita.

ANNEXES

Annex 1: Regulatory Tools and Standards

(a) Regulatory Tools

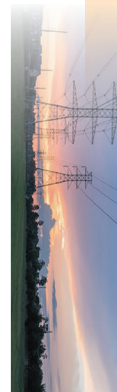
(i). EWURA Act, 2001.
(ii). The Electricity Act, 2008.
(iii). National Energy Policy, 2015.
(iv). The Electricity (System Operations Services) Rules, 2016.
(v). The Electricity (Market Operation Services) Rules, 2016.
(vi). Electricity System Operations Cooperation (Establishment Order), 2016.
(vii). The Electricity (Grid and Distribution Codes) Rules, 2017, GN. 451.
(viii). The Electricity (Net Metering) Rules, 2018, GN. 76.
(ix). Electricity Inspection Manual of March, 2019.
(x). The Electricity (Procurement of Power Projects and Approval of Power Purchase Agreement) Rules 2019, GN. 453.
(xi). The Electricity (Generation, Transmission and Distribution Activities) Rules, 2019, GN. 462.
(xii). The Electricity (Standardized Small Power Projects Tariff) Order 2019, GN. 464.
(xiii). The Electricity (Supply Services) Rules 2019, GN. 387.
(xiv). The Standardized Power Purchase Agreement, 2020.
(xv). The Electricity (General) Regulations 2020 GN 945.
(xvi). The Electricity (Development of Small Power Projects) Rules, 2020, GN. 491.
(xvii). The Energy and Water Utilities Regulatory Authority (Electricity and Natural Gas) (Tariff Application and Rate Setting) Rules, 2021. GN.396.
(xviii). The Energy and Water Utilities Regulatory Authority (Fees and Levies Collection Procedure) Rules, 2021. GN. 420.
(xix). The Electricity (Electrical Installation Services) Rules, 2022, G.N. 113.
(xx). The Electricity (Licensing and Registration Fees) Rules, 2022, G.N.112.
(xxi). Model Power Purchase Agreements for seven technologies (i.e., Hydro, Natural Gas, Oil, Coal, Geothermal, Solar and Wind).

(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.
(x). TZS1382:2011 Electromagnetic compatibility (EMC) – Power quality measurement methods.

Annex 2: Electricity Generation Licenses Issued for FY 2021/22

S/N	Name of Licensee	Project Area	Capacity (MW)	Type of License	Duration (Years)	License No.	Date of issue	Date of Expiry	Source
1.	Ninety-Two Limited	Ngorogoro	2.00	Generation (Provisional)	1.5	PEGL-2021-001	28/9/2021	27/3/2023	Hydro
2.	SSI Energy (T) Limited	Kahama	10.00	Generation (Provisional)	3	PEGL-2022-001	29/4/2022	28/4/2025	Solar
Total Generation Capacity			**12.00**						



Annex 3: Active Licenses as of June 2022

S/N	Licensee	Project Area	Energy Source	Capacity (MW)	Duration (Years)	License No.	Date of Issue	Date of Expiry
(a) Electricity Generation License – Sale								
1.	Songas	Ubungo	Natural Gas	189.00	33	-	11/10/01	10/10/34
2.	TANESCO	Mainland TZ	Hydro, Natural Gas, HFO & Diesel	-	20	EGL-2013-001	1/3/13	28/2/33
3.	TPC Ltd	Moshi	Biomass	20.00	13	EGL-2012-006	18/6/12	17/6/25
4.	Tanganyika Wattle Company Ltd	Njombe	Biomass	2.75	13	EGL-2012-005	18/6/12	17/6/25
5.	Mwenga Hydro Ltd	Mufindi	Hydro	3.36	15	EGL-2013-001	1/3/13	28/2/28
6.	Tulila Hydro Electric Plant Co. Ltd	Songea	Hydro	7.50	20	EGL-2016-001	3/8/16	2/8/30
7.	Andoya Hydro Electric Power Co. Ltd	Mbinga	Hydro	1.00	15	EGL-2016-002	22/8/16	21/8/31
8.	Ngombeni Power Limited	Mafia	Biomass	1.40	15	EGL-2016-003	7/9/16	6/9/31
9.	Luponde Hydro Limited	Njombe	Hydro	1.06	15	EGL-2020-001	30/6/20	29/6/35
10.	Madope Hydro Company Limited	Ludewa	Hydro	1.84	15	EGL-2020-002	30/6/20	29/6/35
11.	Mwenga Hydro Limited	Mufindi	Wind	2.40	15	EGL-2020-003	29/12/20	28/12/35
12.	NextGen Solawazi Limited	Kigoma	Solar	5.00	20	EGL–2021 - 002	31/5/20	30/5/41
(b) Electricity Generation – Own Use								
1.	Ashanti Goldfields T Ltd	Geita	Diesel	31.00	25	P/G 1134	3/12/99	2/12/24
2.	Shanta Mine Co. Ltd	Chunya	Diesel	4.20	15	BEGL-2013-001	6/9/13	5/9/28
3.	Lake Cement Limited	Kimbiji Village, Temeke	Coal	15.40	15	BEGL-2016-001	29/3/16	28/3/31
4.	Tanga Cement Public Limited Company	Tanga	Diesel	11.48	15	SEGL-2016-001	4/10/16	3/10/31
5.	Kilombero Sugar Company Limited	Kidatu - Morogoro	Biomass	12.552	15	BEGL-2017-001	18/4/17	17/4/32
6.	Kagera Sugar Limited	Misenyi - Kagera	Biomass	6.20	15	BEGL-2017-002	18/4/17	17/4/32
7.	Shanta Mine Co. Ltd	Songwe	Diesel	8.20	15	BEGL-2018-001	2/2/18	1/2/33

S/N	Licensee	Project Area	Energy Source	Capacity (MW)	Duration (Years)	License No.	Date of Issue	Date of Expiry
8.	Kilombero Plantations Limited	Morogoro	Biomass	1.692	15	EGL-2018-001	30/2/18	29/8/33
9.	Geita Gold Mining Limited	Geita	Diesel	40.00	25	BEGL-2018-002	3/12/99	2/12/24
10.	Tanzania Cigarette Public Limited Company	Dar es Salaam	Natural Gas	3.8	5	BEGL-2019-001	22/3/19	21/3/24
11.	Stamigold Company Limited	Biharamulo	Diesel	7.00	15	BEGL-2019-002	22/3/19	21/3/34
12.	Dangote Cement Limited	Mtwara	Natural Gas	45.00	5	BEGL-2019-003	30/3/19	29/4/24
13.	ALAF Limited	Dar es Salaam	Natural Gas	4.00	5	BEGL-2020-001	30/1/20	29/1/25
14.	North Mara Goldmine Ltd	Tarime	Heavy Fuel Oil	18.00	5	EGOWL-2020-001	27/11/20	26/11/25
15.	Bulyanhulu Goldmine Ltd	Kahama	Heavy Fuel Oil	39.10	5	EGOWL-2020-002	27/11/20	26/11/25
16.	Dangote Cement Limited	Mtwara	Natural Gas	50.00	5	EGOWL-2021-001	28/6/20	27/6/26
(c) Electricity Distribution, Supply, Transmission and Cross Border Trade								
1.	TANESCO	Mainland Tanzania	Supply	-	20	ESL-2013-001	1/3/13	28/2/33
2.	TANESCO	Mainland Tanzania	Transmission and Cross Border Trade	-	20	ETSOC - 2013-001	1/3/13	28/2/33
3.	TANESCO	Mainland Tanzania	EDCBTL	-	20	PEL-2013-002	1/3/13	28/2/33
4.	Mwenga Power System Limited	Mufindi	Distribution	4	15	EDL-2013-005	30/4/13	29/4/28
(d) Provisional Electricity Generation Licenses								
1.	Mwenga Hydro Limited	Mafinga	Hydro	2.5	3	PEGL-2019-003	26/12/19	25/12/22
2.	Jacana Resources Tanzania Ltd	Dar es Salaam	Diesel	2.7	3	PEGL-2020-001	30/1/20	29/1/23
3.	Ninety-Two Limited	Ngorogoro	Hydro	2.00	1.5	PEGL-2021-001	28/9/2021	27/3/2023
4.	SSI Energy (T) Limited	Kahama	Solar	10.00	3	PEGL-2022-001	29/4/2022	28/4/2025

Annex 4: Total Registered Entities Selling Electricity as of June 2022

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	03-Jul-13	02-Jul-23	1	0	0
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	0	0
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, Lindi Region	30	CRG-2018-005 & CRD-2018-005	10	31-Oct-18	30-Oct-28	270	13.3	0
3.	Nakopi Village, Nanyumbu District, Lindi Region	30	CRG-2018-006 & CRD-2018-006	10	31-Oct-18	30-Oct-28	250	9.8	0
4.	Barikiwa Village, Liwale District, Lindi Region	30	CRG-2018-007 & CRD-2018-007	10	31-Oct-18	30-Oct-28	272	16.5	0
5.	Mwenge Village, Sikonge District, Tabora Region	28	CRG-2019-014 & CRD-2019-014	10	01-Jul-19	30-Jun-29	362	16.9	0
6.	Mgambo Village, Sikonge District, Tabora Region	20	CRG-2019-015 & CRD-2019-015	10	01-Jul-19	30-Jun-29	222	9.7	0
7.	Kiegei Village, Nachingwea District, Lindi Region	16	CRG-2019-016 & CRD-2019-016	10	18-Dec-19	17-Dec-29	256	12.8	0
8.	Matekwe Village, Nachingwea District, Lindi Region	12	CRG-2019-017 & CRD-2019-017	10	18-Dec-19	17-Dec-29	161	9.8	0
9.	Lukumbule Village, Nachingwea District, Lindi Region	40.5	CRG-2019-018 & CRD-2019-018	10	18-Dec-19	17-Dec-29	257	16.3	0
10.	Kagerankanda Village, Kasulu District, Kigoma Region	44	CRG-2019-019 & CRD-2019-019	10	18-Dec-19	17-Dec-29	442	17.6	0

11.	Kalya Village, Uvinza District, Kagoma Region	28	CRG-2019-020 & CRD-2019-020	10	18-Dec-19	17-Dec-29	314	19.7	0
12.	Hololа Village, Nanyumbu District, Mtwara	16	CRG-2019-021 & CRD-2019-021	10	27-Dec-19	26-Dec-29	126	7.6	0
13.	**Sub-Total**	**310.1**					**3,013**	**152**	**0**
D.	**E. ON Off Grid Solution Gmbh (generating and distributing using solar, located in the off-grid & sales to customers)**								
1.	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
2.	Itaswi Village, Chemba District, Dodoma Region	6.39	CRG-2017-005 & CRD-2017-005	10	19-Dec-17	18-Dec-27	64	11	0
	Sub-Total	**19.53**					**156**	**19.5**	**0**
E.	**Ruaha Energy Co. Ltd (generating and distributing using solar, located in the off-grid & sales to customers)**								
1.	Zombo Village, Kilosa District, Morogoro Region	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.	Mpale, 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)**								
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

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
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	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.	Itabagumba Village, Ziragula Island, Buchosa District, Mwanza Region	30.32	CRG-2019-010 & CRD-2019-010	10	01-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	01-Jul-19	30-Jun-29	181	10.1	0
13.	Kanyara Village, Kasalazi island, Buchosa District, Mwanza Region	30.32	CRG-2019-012 & CRD-2019-012	10	01-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
15.	Lyegoba Island, Ukerewe District, Mwanza Region	30.32	CRG-2020-013 & CRD-2020-013	10	07-Dec-20	06-Dec-30	180	2.91	0
16.	Bezi Island, Ilemela District, Mwanza Region	42.6	CRG-2020-014 & CRD-2020-014	10	07-Dec-20	06-Dec-30	340	3.59	0
17.	Juma Island, Sengerema District, Mwanza Region	42.6	CRG-2020-015 & CRD-2020-015	10	07-Dec-20	06-Dec-30	180	7.64	0
18.	Chembaya Island, Buchosa District, Mwanza Region	29.8	CRG-2020-016 & CRD-2020-016	10	07-Dec-20	06-Dec-30	155	2.55	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
19.	Sozia Island, Bunda District, Mara Region	29.8	CRG-2020-017 & CRD-2020-017	10	07-Dec-20	06-Dec-30	130	15.1	0
20.	Raranya Village, Rorya District, Mara region	6.36	CRG-2020-018 & CRD-2020-018	10	07-Dec-20	06-Dec-30	65	5.5	0
	Sub-Total	**438.88**					**3227**	**150.19**	**0**
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	680	16.1	5.8
2.	Kibumba/Chembuzi Village, Muleba District	10	CRG-2020–001 & CRD-2020-001	10	14-May-20	13-May-30	72	1.57	0
3.	Kasenyi Village, Muleba District	20	CRG-2020-002 & CRD-2020-002	10	14-May-20	13-May-30	348	3.02	0
4.	Nabweko/Sambi Village, Irungwa ukerewe District	100	CRG-2020-003 & CRD-2020-003	10	14-May-20	13-May-30	559	3.3	0
5.	Kerebe Village, Muleba District	35	CRG-2020-004 & CRD-2020-004	10	14-May-20	13-May-30	256	2.5	0
6.	Goziba Village, Muleba District	45	CRG-2020-005 & CRD-2020-005	10	14-May-20	13-May-30	339	3.64	0
7.	Rukuba/Etaro Village, Musoma District, Mara Region.	10	CRG-2020-006 & CRD-2020-006	10	14-May-20	13-May-30	160	4.73	0
8.	Maisome (Kanoni/Busimbi/ Kisaba) Village, Buchosa District, Mwanza Region.	100	CRG-2020-007 & CRD-2020-007	10	14-May-20	13-May-30	675	18.46	0.75
9.	Mulumo (Bunyozi/Ilamba) Village, Mazinga Island, Muleba District, Kagera Region.	45	CRG-2020-008 & CRD-2020-008	10	14-May-20	13-May-30	378	7	0
10.	Mahaiga Village, Muleba District	20	CRG-2020-009 & CRD-2020-009	10	14-May-20	13-May-30	206	1.42	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
11.	Bukiko/kome Village, Ukerewe District, Mwanza Region.	100	CRG-2020-010 & CRD-2020-010	10	14-May-20	13-May-30	693	20.84	**7.61**
12.	Chifule/Bukungu Village, Ukerewe District, Mwanza Region.	100	CRG-2020-011 & CRD-2020-011	10	14-May-20	13-May-30	548	18.54	5.5
13.	Herembe village, Uvinza District, Kigoma Region	56	CRG-2021–001 & CRD-2021-001	10	01-Jun-21	31-May-31	238	8.56	0.87
14.	Igalula village, Uvinza District, Kigoma Region	56	CRG-2021–002 & CRD-2021-002	10	01-Jun-21	31-May-31	638	10.18	2.17
15.	Kashagulu village, Uvinza District, Kigoma Region	102	CRG-2021–003 & CRD-2021-003	10	01-Jun-21	31-May-31	740	9.3	0
16.	Katumbi village, Uvinza District, Kigoma Region	20	CRG-2021–004 & CRD-2021–04	10	01-Jun-21	31-May-31	342	4.06	0
17.	Lubengela village, Uvinza District, Kigoma Region	20	CRG-2021–005 & CRD-2021-005	10	01-Jun-21	31-May-31	315	3.73	0
18.	Mgambo village, Uvinza District, Kigoma Region	72	CRG-2021–006 & CRD-2021-006	10	01-Jun-21	31-May-31	470	8.27	1.67
19.	Nkonkwa village, Uvinza District, Kigoma Region	36	CRG-2021–007 & CRD-2021-007	10	01-Jun-21	31-May-31	256	5.45	0
20.	Rukoma village, Uvinza District, Kigoma Region	46	CRG-2021–008 & CRD-2021-008	10	01-Jun-21	31-May-31	644	13.14	0
21.	Sibwesa village, Uvinza District, Kigoma Region	92	CRG-2021–009 & CRD-2021-009	10	01-Jun-21	31-May-31	601	8.71	0
22.	Sigunga village, Uvinza District, Kigoma Region	56	CRG-2021–010 & CRD-2021-010	10	01-Jun-21	31-May-31	702	13.83	4.75
	Sub-Total	**1231**					**9860**	**186.35**	**29.12**
	Total	**3,648.01**					**16,661**	**516**	**29**

SUMMARY

GENERAL SUMMARY FOR ALL COMPANIES				
A. Generation Capacity (kW)	**2019/20**	**2020/21**	**%±**	**Description**
1. Total VSPP (kW)_Hydro + Solar	2780	3,620.51	23%	All registered Entities
2. Total_VSPP_solar_Main Grid	0	0	0%	No registered Entity in this category
3. Total_VSPP_Solar_Off Grid	1,466	2,175.5	33%	PowerCorner (310.10kW) +EON (19.53kW) + Ruaha Energy (128.00kW) + Watu na Umeme (48.00kW) + Powergen (438.88kW) + Jumeme (1,231.00kW).
4. Total_VSPP_Hydro_Main Grid	1,315.00	1,315.00	0%	Darakuta (320kW) +Yovi (995kW)
5. Total_VSPP_Hydro_Off Grid	0	0	0%	No registered Entity in this category
6. Total_VSPP_Main-Grid	1,315.00	1,315.00	0%	Darakuta (320kW) +Yovi (995kW)
7. Total_VSPP_Off-Grid	1,466	2,175.5	33%	PowerCorner (310.10kW) +EON (19.53kW) + Ruaha Energy (128.00kW) + Watu na Umeme (48.00kW) + Powergen (438.88kW) + Jumeme (1,231.00kW).
B. Number of Customer	**2019/20**	**2020/21**	**%±**	
8. Total VSPP _Hydro + Solar	10,943	16,661	34%	All registered Entities
9. Total_VSPP_solar_Main Grid	0	0	0%	No registered Entity in this category
10. Total_VSPP_Solar_Off Grid	1,466.29	16,661	91%	PowerCorner (3,013) +EON (156) + Ruaha Energy (147) + Watu na Umeme (256) + Powergen (3,227) + Jumeme (9,860).
11. Total_VSPP_Hydro_Main Grid	2	2	0%	Darakuta (1) +Yovi (1) – all sale to TANESCO
12. Total_VSPP_Hydro_Off Grid	0	0	0%	No registered Entity in this category
13. Total_VSPP_Main-Grid	2	2	0%	Darakuta (1) +Yovi (1) – all sale to TANESCO
14. Total_VSPP off-Grid	10,941	16,659	34%	PowerCorner (3,013) +EON (156) + Ruaha Energy (147) + Watu na Umeme (256) + Powergen (3,227) + Jumeme (9,860).
C. Infrastructure Line length (km)	**KM**			
15. Total VSPP _Hydro + Solar	422.91	544.91	34%	All registered Entities
16. Total_VSPP_solar_Main Grid	0	0	0%	No registered Entity in this category
17. Total_VSPP_Solar_Off Grid	422.91	544.91	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	0	0%	Darakuta (0) +Yovi (0) – all are doing generation activities only. No distribution activities.

19. Total_VSPP_Hydro_Off Grid	0	0	0%	No registered Entity in this category
20. Total_VSPP_Main-Grid	0	0	0%	Darakuta (0) +Yovi (0) – all are doing generation activities only. No distribution activities.
21. Total_VSPP off-Grid	422.91	544.91	34%	PowerCorner (152) +EON (**46.2**) + Ruaha Energy (NA) + Watu na Umeme (7.75) + Powergen (112.9) + Jumeme (104.07).

SPECIFIC SUMMARY FOR EACH COMPANY				
D. Company Name	**Description**	**2019/20**	**2020/21**	**%±**
1. Darakuta Hydropower Development Co. Limited ■ *Hydro power plant, connected to Main-Grid, and Sales power to TANESCO.*	Capacity (kW)	320	320	0
	Number of Customer	1	1	0
	Infrastructure Line length (km)	1	1	0
2 . Yovi Hydropower Company Limited ■ *Hydro power plant, connected to Main-Grid, and Sales power to TANESCO.*	Capacity (kW)	995	995	0%
	Number of Customer	1	1	0%
	Infrastructure Line length (km)	1	1	0%
3. PowerCorner ■ *solar power plants, connected to off-grids, and distributing power to customers.*	Capacity (kW)	257.76	310.1	20%
	Number of Customer	2,177	3,013	38%
	Infrastructure Line length (km)	112.9	152	35%
4. E. ON Off Grid Solution Gmbh ■ *solar power plants, connected to off-grids, and distributing power to customers.*	Capacity (kW)	47.03	19.53	-58%
	Number of Customer	476	156	-67%
	Infrastructure Line length (km)	46.2	46.2	0%
5. Ruaha Energy Co. Ltd ■ *solar power plants, connected to off-grids, and distributing power to customers.*	Capacity (kW)	128	128.00	0%
	Number of Customer	147	147	0%
	Infrastructure Line length (km)	unknown	unknown	#VALUE!
6. Watu na Umeme Limited ■ *solar power plants, connected to off-grids, and distributing power to customers.*	Capacity (kW)	48	48.00	0%
	Number of Customer	256	256	0%
	Infrastructure Line length (km)	7.75	7.75	0%
7. Power Gen Renewable Energy Limited ■ *solar power plants, connected to off-grids, and distributing power to customers.*	Capacity (kW)	257.76	438.88	70%
	Number of Customer	2,177	3,227	48%
	Infrastructure Line length (km)	112.9	112.9	0%
8. Jumeme Rural Power Supply Ltd ■ *solar power plants, connected to off-grids, and distributing power to customers.*	Capacity (kW)	675	1,231	82%
	Number of Customer	4,874	9,860	102%
	Infrastructure Line length (km)	104.07	104.07	0%

Annex 5: 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
	USc[3]/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	Dry season	243.73
Standardized SPPT Payable in	Wet season	182.80

Annex 6: Tanzania Electric Supply Company Limited (TANESCO) Tariff

Note: *It commenced 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 average consume les than 75kWh per month. Any unit exceeding 75kWh is charged a high rate of TZS 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 commercial and light industrial use, Public lighting and billboards. Power is supplied at low voltage single phase (230V) as well as three phase (400V).
T2:Applicable to general use customers where power is metered at 400V and average consumption is more than 7,500kWh 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	Approved Connection Charge (TZS)	
	Urban rate (VAT exclusive)	Rural rate (VAT inclusive)
Within 30 Meters	272,000	27,000
Within 70 Meters (one pole)	436,964	27,000
Within 120 Meters (two poles)	590,398	27,000

ii. Three Phase Charges for Urban and Rural Area

Service line	Meter Type	Approved Connection Charge (TZS)	
		Urban rate (VAT exclusive)	Rural rate (VAT exclusive)
Within 30 Meters (Cable 16mm^2)	LUKU	772,893	772,893
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 7: 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
Source: EWURA			

b) Approved Service Line Connection Charges

Description	After the First 2,600 Connections (TZS)	The First 2,600 connections (subsidized) (TZS)
Application fees	5,000	5,000
(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
Source: *EWURA*		

Annex 8: Installed Capacity

(a) 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. Ubungo II	3	Natural Gas	129.00
3. Ubungo III	5	Natural Gas	120.00
4. Tegeta	5	Natural Gas	45.00
5. Kinyerezi I	4	Natural Gas	150.00
6. Kinyerezi II	6	Natural Gas	248.22
7. Mtwara	9	Natural Gas	30.60
8. Somanga	3	Natural Gas	7.50
Sub-Total Natural Gas			***1,021.32***
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			**88.13**
Sub-Total Main Grid Power Plant Owned by TANESCO			***1,671.29***
(b) Power Plant owned by Independent Power Producer (IPP)			
1. Songas	6	Natural Gas	189.00
Sub-Total Main Grid Power Plant owned by IPP			***189.00***
(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
9. Luponde	1	Hydro	0.90
Sub-Total Main Grid Small Power Producers (SPP)			***23.26***
Total Main Grid Installed Capacity			***1,694.55***

Part II: Off-Grid Power Plant			
(a) Off-Grid Power Plant owned by TANESCO			
1. Kigoma	7	GO	10.50
2. Mpanda	5	GO	5.00
3. Mafia	5	GO	3.20
4. Sumbawanga	4	GO	5.00
5. Kasulu	3	GO	3.75
6. Kibondo	2	GO	2.50
7. Loliondo	2	GO	2.25
8. Inyonga	3	GO	0.42
9. Bukoba	4	GO	2.56
Sub-Total Off-Grid Power Plant owned by TANESCO			***35.53***
(b) Power Plant owned by Small Power Producers (SPP)			
1. Mwenga Hydro Limited	3	Wind	2.40
2. NextGen Solawazi	16,160	Solar	5.00
Sub-Total Off-Grid Power Plant owned by SPP			***7.40***
(c) Sub-*Total Off-Grid Power Plant owned by Private Entities - Refer Annex 5*			**2.176**
Total Off-Grid Installed Capacity			**37.706**
National System Total (Main Grid and Off-Grid)			**1,739.256**

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

(b) Grid and Off-Grid installed capacity by Technology

S/N	Power Plant Name	Location	Installed Capacity (MW)	Energy Source
1.	Kidatu	Morogoro	204.00	Hydro
2.	Kihansi	Morogoro	180.00	Hydro
3.	Mtera	Iringa	80.00	Hydro
4.	N/P Falls	Tanga	68.00	Hydro
5.	Hale	Tanga	21.00	Hydro
6.	Nyumba ya Mungu	Kilimanjaro	8.00	Hydro
7.	Uwemba	Njombe	0.84	Hydro
8.	Mwenga	Njombe	4.00	Hydro
9.	Matembwe	Njombe	0.59	Hydro
10.	Yovi	Morogoro	0.95	Hydro
11.	Andoya	Ruvuma	1.00	Hydro
12.	Tulila	Ruvuma	5.00	Hydro
13.	Darakuta	Manyara	0.32	Hydro
14.	Luponde	Njombe	0.90	Hydro
15.	Songas	Dar es Salaam	189.00	Natural Gas
16.	Ubungo I	Dar es Salaam	102.00	Natural Gas
17.	Ubungo II	Dar es Salaam	129.00	Natural Gas
18.	Ubungo III	Dar es Salaam	120.00	Natural Gas
19.	Tegeta	Dar es Salaam	45.00	Natural Gas
20.	Kinyerezi I	Dar es Salaam	150.00	Natural Gas
21.	Kinyerezi II	Dar es Salaam	248.22	Natural Gas
22.	Mtwara	Mtwara	30.60	Natural Gas
23.	Somanga	Lindi	7.50	Natural Gas
24.	Liwale	Lindi	0.85	Diesel

S/N	Power Plant Name	Location	Installed Capacity (MW)	Energy Source
25.	Zuzu	Dodoma	7.40	Diesel
26.	Nyakato	Mwanza	63.00	Diesel
27.	Bihalamulo	Kagera	4.14	Diesel
28.	Songea	Ruvuma	5.77	Diesel
29.	Tunduru	Ruvuma	1.72	Diesel
30.	Mbinga	Ruvuma	1.00	Diesel
31.	Madaba	Ruvuma	0.48	Diesel
32.	Ludewa	Njombe	1.27	Diesel
33.	Ngara	Kagera	2.50	Diesel
34.	Kigoma	Kigoma	6.25	Diesel
35.	Mpanda	Katavi	5.05	Diesel
36.	Mafia	Coast	3.20	Diesel
37.	Sumbawanga	Rukwa	6.25	Diesel
38.	Kasulu	Kigoma	2.50	Diesel
39.	Kibondo	Kigoma	2.50	Diesel
40.	Loliondo	Manyara	3.50	Diesel
41.	Inyonga	Njombe	0.82	Diesel
42.	Bukoba	Kagera	2.56	Diesel
43.	PowerCorner	Manyara, Lindi, Mtwara, Tabora	0.31	Solar
44.	E.O. N	Dodoma	0.03	Solar
45.	Ruaha Energy	Morogoro	0.13	Solar
46.	Watu na Umeme	Tanga	0.05	Solar
47.	PowerGen	Singida, Kagera, Morogoro, Mwanza, Mara	0.44	Solar
48.	Jumeme	Mwanza and Kagera	1.23	Solar

(c) 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. Ubungo III	Natural Gas	120.00
5. Kinyerezi I	Natural Gas	150.00
6. Kinyerezi II	Natural Gas	248.22
7. Mtwara	Natural Gas	22.00
8. Somanga	Natural Gas	7.50
Sub-Total Natural Gas		***832.32***

Licensee Name & Description	Energy Source	Installed Capacity (MW)
1. Zuzu	HFO	7.40
2. Nyakato	HFO	63.00
3. Biharamulo	GO	4.14
4. Songea	GO	5.77
5. Tunduru	GO	1.72
6. Ludewa	GO	1.27
7. Mbinga	GO	2.00
8. Madaba	GO	0.48
9. Ngara	GO	2.50
10. Liwale	GO	0.85
Sub-Total HFO/GO		***88.13***
Sub-Total Main Grid Power Plant Owned by TANESCO		***1,482.29***
(b) Off Grid		
1. Kigoma	GO	10.75
2. Mpanda	GO	5.00
3. Mafia	GO	3.20
4. Sumbawanga	GO	5.00
5. Kasulu	GO	3.75
6. Kibondo	GO	2.50
7. Loliondo	GO	2.25
8. Inyonga	GO	0.42
9. Bukoba	GO	2.56
Sub-Total Off-Grid Power Plant owned by TANESCO		***35.43***
Total TANESCO (Main Grid + Off-Grid)		***1,517.72 (87.25%)***
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 (10.86%)***
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
9. Luponde	Hydro	0.90
Sub-Total Main Grid SPP		***23.26 (1.34%)***
VSPP Off-Grid Power Plant -Refer Annex 5		***2.176 (0.13%)***
SPP Off -Grid		***7.40(0.43%)***
National System Total (Main Grid and Off-Grid)		***1,739.56***

Source: TANESCO and EWURA

Annex 9: Power Plants Operation Performance Data

(a). Main Grid Power Plants Operation Performance for FY 2021/22

Plants Name	Energy Source	Installed Capacity (MW)	Plant Availability (%)	Plant Utilization (%)
Kidatu	Hydro	204	96.81	72.23
Kihansi	Hydro	180	97.87	38.17
Mtera	Hydro	80	98.85	83.24
N/P Falls	Hydro	68	99	36
Hale	Hydro	21	66	20
Nyumba ya Mungu	Hydro	8	82	53
Average			**90.09**	**50.44**
Songas	Natural Gas	189	90.56	99.00
UGP1	Natural Gas	102	86.31	56.28
UGP2	Natural Gas	129	87.04	83.16
TGP	Natural Gas	45	69.82	68.61
Kinyerezi I	Natural Gas	150	95.59	52.11
Kinyerezi II	Natural Gas	248.22	96.62	79.05
Mtwara	Natural Gas	22	74.60	40.18
Somanga	Natural Gas	7.5	62.93	11.74
Average			**82.93**	**61.27**
TANESCO Diesel (Zuzu)	Diesel	7.4	94.29	1.59
Nyakato	HFO	63	53.83	2.04
Biharamulo	HFO	1.25	100.00	11.30
Ngara	HFO	1.25	99.03	2.67
Loliondo	HFO	2.25	80.76	11.56
Inyonga	HFO	0.816	69.00	30.67
Average			**82.82**	**9.97**

(b). Off-Grid Power Plants Operation Performance for FY 2021/22

Plants Name	Energy Source	Installed Capacity (kW)	Plant Availability (%)	Plant Utilization (%)
Kigoma	HFO	8750	86.00	40.50
Mpanda	HFO	5000	96.80	48.22
Mafia	HFO	3200	72.00	25.74
Sumbawanga	HFO	5000	96.00	3.40
Kasulu	HFO	3750	92.58	41.63
Kibondo	HFO	2500	100.00	35.78
Bukoba	HFO	2560	100.00	0.28
Average			**91.91**	**27.94**

Annex 10: Electricity Transmission outage

a) Transmission Line Outage Hours

Voltage(kV)	Outage	2018/19	2019/20	2020/21	2021/22	±%
220	Planned	558	868.87	978	728.12	11
	Unplanned	191	17.19	493	41.35	97
	Sub-Total	**749**	**886.06**	**1471**	**769.47**	**40**
132	Planned	911	248.61	434	149.58	43
	Unplanned	112	30.37	160	58.65	81
	Sub-Total	**1,023**	**278.98**	**594**	**208.23**	**53**
66	Planned	181	63.24	235	303.88	73
	Unplanned	252	0.53	72	115.8	99
	Sub-Total	**433**	**63.77**	**307**	**419.68**	**79**
Total	**Total Planned**	**1650**	**1180.72**	**1647**	**1181.58**	**28**
	Total Unplanned	**555**	**48.09**	**725**	**215.8**	**93**
	Grand Total	**2,205**	**1,228.81**	**2,372**	**1397.38**	**48**

Source: *TANESCO*

b) Transmission Line Outage Frequency

Voltage(kV)	Outage	2018/19	2019/20	2020/21	2021/22
220	Planned	110	112	105	93
	Unplanned	148	65	59	61
	Total	**258**	**177**	**164**	**154**
132	Planned	87	41	57	26
	Unplanned	113	108	126	93
	Total	**200**	**149**	**183**	**119**
66	Planned	16	11	26	28
	Unplanned	22	5	11	11
	Total	**38**	**16**	**37**	**39**
Summary	Total Planned	213	164	188	147
	Total Unplanned	283	178	196	165
	Grand Total	**496**	**342**	**384**	**312**

Source: *TANESCO*

Annex 11: Total Revenue (TZS in millions)

Description	Electricity Sales			Other Income			TOTAL		
FY	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21
TANESCO	1,535,255	1,564,353	1,641,019	191,944	225,613	224,187	1,727,199	1,789,966	1,865,206
Songas	189,669	199,657	178,935	38,005	26,116	25,270	227,674	225,773	204,205
Mwenga Hydro	2,921	3,894	4,798	1,172	2,381	1,657	4,092	6,275	6,455
Tulila	10,362	4,670	6,490	104	104	104	10,466	4,774	6,594
Andoya	1,123	527	789	331	276	34	1,454	803	823
Mwenga Power	338	406	455	64	0	9	402	406	463
TOTAL	**1,739,667**	**1,773,506**	**1,832,486**	**231,619**	**254,490**	**251,260**	**1,971,286**	**2,027,996**	**2,083,746**

Percentage Change

Description	Electricity Sales			Other Income			TOTAL		
FY	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21
TANESCO	1%	2%	5%	56%	18%	-1%	6%	4%	4%
Songas	6%	5%	-10%	12%	-31%	-3%	7%	-1%	-10%
Mwenga Hydro	3%	33%	23%	-28%	103%	-30%	-4%	53%	3%
Tulila	17%	-55%	39%	0%	0%	0%	16%	-54%	38%
AHEPO	29%	-53%	50%	NA	-17%	-88%	29%	-45%	3%
Mwenga Power	30%	20%	12%	-36%	-100%	4238%	17%	1%	14%
TOTAL	**2%**	**2%**	**3%**	**46%**	**10%**	**-1%**	**6%**	**3%**	**3%**

Annex 12: TANESCO Sales per Customer Category

Customer Category	Sales (TZS Billions)				Sales (MWh)			
FY	2017/18	2018/19	2019/20	2020/21	2017/18	2018/19	2019/20	2020/21
Domestic low usage (D1)	36	35	34	37	309	312	314	337
General usage (T1)	695	753	775	817	2,418	2,597	2,633	2,773
Low Voltage Supply (T2)	157	164	161	164	601	633	614	623
High Voltage Supply (T3)	543	583	594	624	2,677	3,010	3,055	3,166
TOTAL	1,431	1,535	1,564	1,641	6,005	6,551	6,616	6,898

Percentage Contribution

FY	2017/18	2018/19	2019/20	2020/21	2017/18	2018/19	2019/20	2020/21
Domestic low usage (D1)	2%	2%	2%	2%	5%	5%	5%	5%
General usage (T1)	44%	48%	50%	50%	40%	40%	40%	40%
Low Voltage Supply (T2)	10%	11%	10%	10%	10%	10%	9%	9%
High Voltage Supply (T3)	35%	37%	38%	38%	45%	46%	46%	46%

(Footnotes)

[1] Application means the applicant has completed all application requirements.

[2] 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).

[3] The prevailing exchange rate to be used

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