UNITED REPUBLIC OF TANZANIA

MINISTRY OF ENERGY

ENERGY AND WATER UTILITIES REGULATORY AUTHORITY (EWURA)

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

NATURAL GAS SUB-SECTOR REGULATORY PERFORMANCE REPORT FOR THE YEAR ENDED 30TH JUNE 2024

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CHAIRMAN'S STATEMENT

I am privileged to present the Mid & Downstream Natural Gas Sub-Sector Performance Report for the Financial Year ending 30th June 2024. The Board of Directors believe the Natural Gas sub-sector is among the drivers for social-economic transformation as well as energy security in the country. Therefore, our top priority is to improve performance in the mid and downstream natural gas value chain, encouraging competition and stimulating investment through effective, efficient, and inclusive regulation.

For the period under review, EWURA continued to discharge its function as conferred in the EWURA Act, Cap 414, and the Petroleum Act, Cap 392, including monitoring the progress of natural gas production, consumption, and investment in the mid and downstream natural gas sub-sector. During the period under reviews, we witnessed a significant decrease in natural gas consumption for power generation from 70% share of the generation mix recorded in the previous Financial Year to 67.1% after the commissioning of two out of nine turbines at Julius Nyerere Hydro-Power Plant. However, this creates an opportunity and availability of natural gas for other beneficial economic activities including industrial, transport, commercial, and household.

Comparing with the previous Financial Year, the natural gas sub-sector experienced notable growth including expansion of distribution network and connections to Natural Gas end-users. As a result, natural gas consumption for industries and transport increased by 0.9%, and 75%, respectively.

This report provides comprehensive information to our stakeholders, including the Government and investors, and offers crucial insights into investment opportunities, challenges, proposed strategies, and mitigation measures. The Authority is committed to upholding transparency and accountability in regulating the mid and downstream Natural Gas sub-sector.

Special appreciation is extended to the President of the United Republic of Tanzania, Her Excellency, Dr. Samia Suluhu Hassan, for her leadership and guidance in the regulated sectors. Much gratitude to the Deputy Prime Minister and Minister for Energy, Hon. Doto M. Biteko (MP) for his tireless support and strategic guidance in developing the natural gas sub-sector to offset traditional fuels and support the National agenda of clean cooking initiative.

Finally, I acknowledge the work done by my fellow members of the Board of Directors, Management, and staff for their commitment and contribution to regulating the natural gas sub-sector.

Prof. Mark J. Mwandosya
Board Chairman

FOREWORD

EWURA has meticulously prepared the Natural Gas Sub-Sector Regulatory Performance Report for the fiscal year 2023/24 in accordance with the requirements outlined in Section 31(2) of the Petroleum Act, Cap. 392 and Section 7(1)(f) of the EWURA Act, Cap. 414. The primary objective of this report is to disseminate comprehensive information regarding the regulatory performance of the midstream and downstream Natural Gas sub-sector to the Government, industry and the general public in the country.

The report highlights the progress made in the Natural Gas subsector and covers key performance indicators, including plant availability, facility utilization, natural gas production and consumption, gas quality, facility integrity, wayleave management, quality of services, safety, environmental requirements, local content, and financial performance.

In the fiscal year 2023/24, the mid and downstream Natural Gas sub-sector significantly improved, whereby natural gas processing observed a slight increase of 1.3%, while the use of Compressed Natural Gas (CNG) in vehicles rose by 292%. Data also indicate that 1,919 vehicles refuelled with CNG per day compared to 490 vehicles recorded in the previous Financial Year. Additionally, the number of local companies registered in the LSSP database increased by 11% to 2,132. The Authority diligently oversaw regulated entities' compliance with regulatory requirements to uphold the quality of services and the integrity of the natural gas infrastructure.

On behalf of EWURA Management, we extend our heartfelt appreciation to the EWURA Board of Directors and the Government, through the Ministry of Energy, for the continued guidance and directives in ensuring the Natural Gas subsector continues to contribute to the country's economic growth.

Dr. James A. Mwainyekule
Director General

ABBREVIATIONS AND ACRONYMS

BCF or Bcf	Billion Standard Cubic Feet
BVS	Block Valve Station
CNG	Compressed Natural Gas
CNG-V	Compressed Natural Gas Vehicles
CQS	Common Qualification System
EWURA	Energy and Water Utilities Regulatory Authority
FY	Financial Year
GASCO	Gas Company (Tanzania) Limited
GJ	Gigajoule
GTL	Gas-to-Liquids
HSE	Health, Safety, and Environment
LOIS	License and Order Information System
LSSP	Local Suppliers and Service Providers
LNG	Liquefied Natural Gas
LTI	Lost Time Injuries
Mscf	Thousand Standard Cubic Feet
MLV	Main Line Valve
MMBtu	Million British Thermal Unit
MMSCF	Million Standard Cubic Feet
MMSCFD	Million Standard Cubic Feet per Day
M&P	Maurel & Prom Exploration Production (T) LTD
MW	Megawatt
NPGIS	National Petroleum and Gas Information System
PAET	Pan African Energy Tanzania Limited
PNG	Piped Natural Gas
PPE	Person Protective Equipment
PRS	Pressure Reduction Station
PSV	Pressure Safety Valve
SSI	Songo Songo Island
TANESCO	Tanzania Electric Supply Company Limited
TBS	Tanzania Bureau of Standards
TPDC	Tanzania Petroleum Development Corporation
USA	United States of America

EXECUTIVE SUMMARY

EWURA has prepared the Natural Gas Sub-Sector Regulatory Performance Report for FY 2023/24 in line with the requirement provided under Section 31(2) of the Petroleum Act, Cap. 392 and Section 7(1)(f) of the EWURA Act, Cap. 414. This fifth Report provides an overall performance of the mid and downstream Natural Gas sub-sector concerning technical, safety and economic requirements. The covered scope and area of concentration includes processing, transmission, distribution and supply of natural gas in mainland Tanzania.

9
Construction Approvals issued

3
CNG Operation Licenses issued

In the fiscal year 2023/24, the Authority granted nine (9) construction approvals to developers of natural gas infrastructure and issued three (3) operation licenses for CNG activities. These approvals and licenses were for constructing natural gas supply lines and CNG stations in the Dar es Salaam and Pwani regions.

During the same period, the natural gas processing plants were operated and maintained as required, with TPDC Madimba, M&P, TPDC Songo Songo, and Songas processing plants working almost by 100%. The daily nomination for M&P, TPDC Madimba, TPDC Songo Songo, and Songa's processing plants ranged between 75% and 99%.

82,912.62

Produced Natural Gas (MMscf)

In the fiscal year 2023/24, the average daily natural gas production stood at 226.45 MMscfd. The capacity utilization for each natural gas processing plant experienced varied changes compared to the previous Financial Year, with TPDC Madimba seeing a 9.5% increase, while TPDC Songo Songo, Songas, and M&P experiencing a decrease of 8.6%, 4.9%, and 2.7%, respectively. Despite these changes, the country's overall capacity utilization for natural gas processing plants remained under 50%. The quantity of processed natural gas increased by 1.3% from 81,849.40 MMscf to 82,912.62 MMscf, mainly due to the growth in power generation from gas-fired power plants and new industrial customers.

In FY 2023/24, 82,025.03 MMscf of gas was consumed by power generation, industrial, CNG-V, commercial, and domestic customers out of the total supplied gas of 81,868.86 MMscf, indicating that about 150 MMscf being complemented from the line park.

82,025.03

Consumed Natural Gas (MMscf)

During the period of review, no investments were made in transmission pipelines, only because the current infrastructure has sufficient capacity to transport more natural gas to consumers. The natural gas distribution network has been expanding steadily in recent years, including the addition of low-pressure and virtual pipelines. By June 30th, 2024, the total length of the distribution pipelines had reached 241.58km, representing a 9% increase from the 220.5km reported in the previous Financial Year.

7,268
Produced CNG (MT)

5,662 MT
Consumed by CNG-V

1,606 MT
Consumed by Industries & hotel

For the CNG, production reached 7,268,161.87 kilogrammes in FY2 2023/24. 5,662,448.20 kg of CNG was used to fuel vehicles, an increase of 75% compared to 3,239,873.03 kgs of CNG consumed by vehicles in FY 2022/23. Industries and hotels consumed 1,426,950.88 kgs and 178,762.78 kgs respectively. Similarly, the refueling frequency increased from 178,773 CNG vehicles to 700,389 CNG vehicles. This is equivalent to a refueling rate of approximately 1,919 CNG vehicles daily, in contrast to 490 CNG vehicles per day recorded in the previous year. It has also noted a significant increase in CNG vehicles and three-wheeler motorcycles from 3,100 recorded the previous year to 7,000.

7,000
Number of CNG Vehicles and three-wheeler motorcycles

The Authority continued to monitor the regulated entities' compliance with local content requirements as per Regulation 7 of the Petroleum (Local Content) Regulations, 2017 against local content and procurement plans. During the Financial Year 2023/24, 212 new companies, equivalent to an 11% increase, were registered in the LSSP database. As of 30th June 2024, the total number of local companies registered with the LSSP reached to 2,132.

2,132

Registered Local Companies

During the period under review, the regulated entities' (PAET, TPDC, M&P, and Songas) revenue generation increased by 21% compared to an 8% increase in the previous Financial Year. On the other hand, the overall costs increased by an average of 21%, whereas natural gas processing costs increased by 15%, distribution costs by 16%, and transmission costs increased by 37%.

Further, all utilities recorded a current ratio of one and above, implying that they were in a good position to meet matured short-term obligations. However, accounts receivables (debtors) that lasted for more than 90 days were substantial for PAET and TPDC. The lowest was 0% recorded by M&P, while the largest was 84% recorded by PAET. Furthermore, the highest collection efficiency was 94% recorded by M&P and the lowest was 83% recorded by Songas.

During the period under review, it was noted that the mid and downstream natural gas sub-sector faced some challenges, such as inadequate investments in distribution projects to meet the natural gas demand and future markets, shortage of CNG facilities and a deficit of natural gas to meet peak demand requirements. Despite the mentioned challenges, operators in the sub-sector maintained the standards and complied with the regulatory requirements. The Authority will continue to improve its regulatory tools to attract private investments in the mid and downstream natural gas sub-sector.

1. INTRODUCTION

The Natural Gas Regulatory Performance Report for Financial Year 2023/24 is the fifth report since its first issue in FY2019/20. These reports are prepared in respect of legal requirements under Section 31(2) and 7(1)(f) of the Petroleum Act, Cap. 392 and EWURA Act, Cap. 414, respectively. The Authority is obliged to disseminate information on matters related to its functions, including submitting to the Minister responsible for Energy the annual regulatory performance report on mid and downstream natural gas activities.

EWURA, as provided for in Section 29 of the Petroleum Act, Cap. 392, is responsible for regulating mid and downstream natural gas activities which cover processing, transmission, storage and distribution of natural gas in mainland Tanzania. Further, Regulation 4 of the Petroleum (Natural Gas Mid and Downstream) General Regulations 2020, EWURA has the following functions: -

(a) to protect the interests of consumers regarding price, availability, quality and reliability of supply;

(b) to protect the public from dangers arising from processing, transportation, storage, conveyance, shipping, supply or use of natural gas;

(c) to promote the efficient use of natural gas by consumers; and

(d) to advise the Government on all matters related to importation, exportation, processing, storage, transportation, conveyance, shipping, supply, or use of natural gas.

The report, which provides an overall performance of the mid and downstream natural gas sub-sector, is centered on activities and accomplishments during the year under review. This includes compliance monitoring, inspections and evaluation of key performance indicators in undertaking mid and downstream natural gas activities to improve the quality-of-service delivery, availability, accessibility and affordability of the natural gas supply. Moreover, the report provides analysis and highlights of the technical and economic performance of the mid and downstream natural gas activities.

The technical activities highlighted in the report were performed on natural gas processing, transmission and distribution. The distribution activities were grouped into two categories, namely low-pressure distribution pipelines and virtual pipelines which mainly include CNG mother stations, daughter stations and filling stations.

Unlike technical compliance which involves all players in the mid and downstream sub-sector, the evaluation of the financial performance targeted only owners of the Processing facilities, Transmission pipelines, and Distribution networks which are: -

(i) Tanzania Petroleum Development Corporation (TPDC), which is the National Oil Company and is undertaking mid and downstream natural gas activities, including processing, transportation, distribution and aggregation of natural gas. These infrastructure are operated by GASCO, a subsidiary company of TPDC,

(ii) Songas, which is involved in natural gas processing, transportation and generation of electricity in Tanzania by using natural gas from Songo Songo Island,

(iii) PanAfrican Energy Tanzania Limited (PAET), which deals with the production, distribution and marketing of natural gas produced from Songo Songo Island. Maurel & Prom Exploration and Production Tanzania (M&P) which produces, processes, and transports natural gas in the Mtwara Region.

2. REGULATORY TOOLS AND STANDARDS

EWURA monitored the compliance of service providers to existing laws, guidelines, codes and standards. During the period under review, the Authority submitted one (1) proposal to the Tanzania Bureau of Standards (TBS), for reviewing the existing standard; namely, TZS 2267:27, 2017 - General Purpose Natural Gas – Specification. The objective of the review was to insert the appropriate testing parameters and the respective required specifications. An updated list of developed and applicable regulatory tools in the natural gas sub-sector is shown in **Annex 1. Annex 2** shows a list of adopted and gazetted natural gas standards.

3. CONSTRUCTION APPROVALS AND LICENCES

3.1 Construction Approvals issued

In FY 2023/24, the Authority issued nine (9) construction approvals for the construction of natural gas infrastructure, compared to 10 construction approvals issued in the previous year. Out of nine (9) construction approvals, five (5) were for the construction of CNG filling stations in Dar es Salaam and Pwani, whereas the remaining four (4) approvals were for the construction of natural gas distribution supply pipelines in Dar es Salaam, and Pwani regions. The list of issued construction approvals for FY 2023/24 is presented in **Table 1** and the detailed list of all the construction approvals issued during the period under review is illustrated in **Annex 3**.

Table 1: The List of issued Construction Approvals for FY 2023/24

SN	Applicant Name	Approval No.	Date of Issue	Type of Construction Approval
1.	Tanzania Petroleum Development Corporation - P. O. Box 2774 Dar es Salaam	NGCA-2023-07	29-Sep-23	Construct natural gas distribution facilities for supplying natural gas to Dangote Cement (T) Limited CNG Station at Mwanambaya Area in Mkuranga District
2.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-08	29-Sep-23	Construct a Compressed Natural Gas Daughter Station for supplying natural gas to Kairuki Pharmaceutical Industries Limited at Zegereni Industrial Area in the Kibaha District
3.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-09	29-Sep-23	Construct a Compressed Natural Gas Daughter Station for supplying natural gas to Muhimbili National Hospital in Ilala District
4.	Pan-African Energy (T) Limited - P. O. Box 80139 Dar es Salaam	NGCA-2023-10	29-Sep-23	Construct natural gas distribution facilities for supplying natural gas to TAQA Dalbit (T) Limited CNG Filling Station at Kipawa Area in Ilala District
5.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-11	29-Sep-23	Construct a Compressed Natural Gas Mother Station for supplying natural gas to Daughter Stations in Dar es Salaam and Pwani Regions
6.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2024-01	02-Feb-24	Construct natural gas distribution facilities for supplying natural gas to KEDA Float Glass Factory located at Msufini Village, Mbezi Ward in Mkuranga District
7.	Pan-African Energy (T) Limited P. O. Box 80139 Dar es Salaam	NGCA-2024-02	31-May-24	Construct natural gas distribution facilities for supplying natural gas to Tembo Energies CNG Mother and Filling Station at Tabata Mwananchi area, opposite to Nida Textile Mills, along Nelson Mandela Road, Ubungo

8.	Tembo Energies Limited, P. O. Box 21456 Dar es Salaam	NGCA-2024-03	31-May-24	Construct a Compressed Natural Gas Mother and Filling Station for supplying natural gas to the public
9.	Global Aluminium Limited, P. O. Box 32080 Dar es Salaam	NGCA-2024-04	31-May-24	Construct a Compressed Natural Gas Receiving Station for own use

3.2 Licences issued

According to section 131(1) of the Petroleum Act, Cap 392, EWURA is mandated to issue a license to any person who intends to undertake a regulated activity in the mid and downstream petroleum sub-sector, including the natural gas sub-sector. During the period under review, EWURA issued three (3) licenses, whereby two (2) licenses were for operating CNG Filling Station and one (1) was for CNG supply as detailed in Table 2. The list of licensed natural gas facilities is detailed in Annex 4.

Table 2: Natural Gas licenses issued.

SN.	Licencee	License Number	Date of Issue	Type of License
1.	TAQA Dalbit (T) Limited P.O. Box 76908 Dar es Salaam	CNGFSL–2023–001	6th Nov 2023	CNG Filling Station
2.	Dangote Cement Limited Tanzania P.O. Box 1241, Mtwara	CNGOL–2023–001	1st Dec 2023	CNG Filling Station for Own Use
3.	Anric Gas Technology Tanzania Company Limited P. O. Box 12101 Dar es Salaam	CNGSL–2024–001	30th May 2024	CNG Supply License

3.3 Complaints and dispute resolution

Section 7(1)(e) of the EWURA Act, Cap 414, requires the Authority to resolve disputes and complaints that involve suppliers, operators and consumers of regulated goods and services. However, during the period under review, the Authority did not receive any registered complaint regarding the natural gas sector operations.

4. NATURAL GAS INFRASTRUCTURE MONITORING

This section offers an overview of the performance in terms of technical compliance of the natural gas processing, transmission, and distribution infrastructure for the fiscal year 2023/24 in line with the prevailing regulatory standards and Best International Petroleum Industry Practices. The infrastructure, comprising of natural gas processing plants, transportation pipelines, distribution networks, virtual pipeline systems, and CNG filling stations, are regularly monitored for compliance and integrity. The regulated entities whose compliance performance was evaluated during this period are listed in **Annex 5**.

4.1 Natural Gas Processing Infrastructure

During the period of review, there was no newly installed natural gas processing plant. The existing natural gas processing infrastructure includes the TPDC Madimba plant, located in Mtwara Region; the TPDC Songo Songo plant, situated in Lindi Region; the Songas facility, also in Lindi Region; and the M&P facility at Mnazi Bay, which is located in Mtwara Region.

4.1.1 Processing plants technical performance

The Authority conducted a thorough technical compliance monitoring of natural gas processing plants to evaluate their capacity utilization and performance. This assessment relied on key performance indicators, including installed capacity, the amount of processed natural gas relative to plant nominations, plant availability, plant utilization, and integrity management. The evaluation was based on the data from the regulated entities.

4.1.1.1 Installed capacity of processing plants

The combined processing capacity of the four (4) natural gas processing plants was 470 million standard cubic feet per day (MMscfd). The TPDC's Madimba plant has a processing capacity of 210 MMscfd, while the Songo Songo plant has a processing capacity of 140 MMscfd. The Songas plant can process 110 MMscfd, and the M&P processing facility has a capacity of 10 MMscfd. TPDC contributes 74.5% of the total capacity from its two plants, while Songas and M&P contribute 23.4% and 2.1%, respectively. **Figure 1** shows the processing plants' installed capacity in percentage.

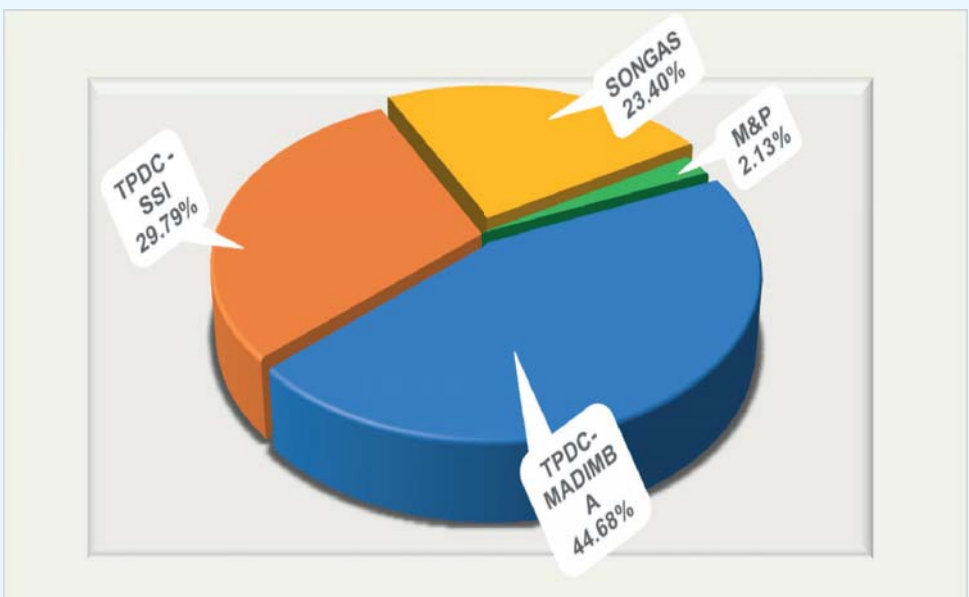


Figure 1: **Processing Plants Capacity Contribution**

4.1.1.2 Daily Natural Gas processing plants nomination

The Authority monitored the performance of the gas nominated to the four (4) natural gas processing plants whether conformed with the gas developers' commercial terms and was consistent with end users' gas demand. Generally, all four processing plants complied with and delivered natural gas to end-users as per the required demand. The lower delivered gas volume at the TPDC Songo Songo plant was attributed to unplanned and emergency maintenance of production wells and plant facilities.

For other plants, the variation/ changes in downstream customer demand were the main reason for variance between nominated and delivered gas volume. **Table 3** provides an overview of the daily gas nomination by the gas processing plants during the Financial Year 2023/24.

Table 3: Average variance nomination compliance recorded

S/N	Processing Plant	Nominated Natural Gas (MMscfd)	Delivered Volume (MMscfd)	Percentage Nomination Achieved
1.	TPDC Madimba	115.53	109.65	95%
2.	TPDC Songo Songo	31.88	24.06	75%
3.	Songas Ltd	96.67	89.64	93%
4.	Maurel et Prom	3.12	3.09	99%

Source: TPDC, Songas/PAET and M&P

4.1.1.3 Natural Gas processing plants availability

The Authority continued to monitor the performance of the natural gas processing plants to ensure their availability. During the period under review, the overall availability of natural gas processing plants was almost 100%. The average plant availability is shown in **Table 4**.

Table 4: Annual average processing plant availability

S/N	Processing Plant	Total Operation hours	Downtime hours	Average Plant Availability (%)
1.	TPDC Madimba	8,784	0	100%
2.	TPDC Songo Songo	8,784	21.20	99.76%
3.	Songas Ltd	8,784	4.81	99.95%
4.	M&P	8,760	3.17	99.96%

Source: TPDC, Songas and M&P

Processing Plants Capacity Utilization

Table 5 below is the contrast of the annual average capacity utilization percentage for TPDC Madimba, TPDC Songo Songo, Songas, and M&P natural gas processing plants for FY 2023/24, FY 2022/23, and FY 2021/22. The breakdown in **Table 5** and **Figure 2** shows an increasing trend in plant utilization each year for TPDC Madimba whereas TPDC Songo Songo, Songas Ltd, and M&P, recorded a decreasing trend in the Financial Year 2023/24 as detailed below.

Table 5: Gas processing plants capacity utilization

S/N	Plant Name	Installed Capacity (MMscfd)	Average Plant Capacity Utilization for FY 2023/24		Average Plant Capacity Utilization for 2022/23		Average Plant Capacity Utilization for FY 2021/22	
			MMscfd	(%)	MMscfd	(%)	MMscfd	(%)
1.	TPDC Madimba	210	109.65	52.2	89.69	42.7	84.96	40.5
2.	TPDC SongoSongo	140	24.06	17.2	36.17	25.8	34.04	24.3
3.	Songas Ltd	110	89.64	81.5	95.02	86.4	78.31	71.2
4.	Maurel & Prom (M&P)	10	3.09	30.9	3.36	33.6	3.05	30.5

Source: TPDC, Songas and M&P

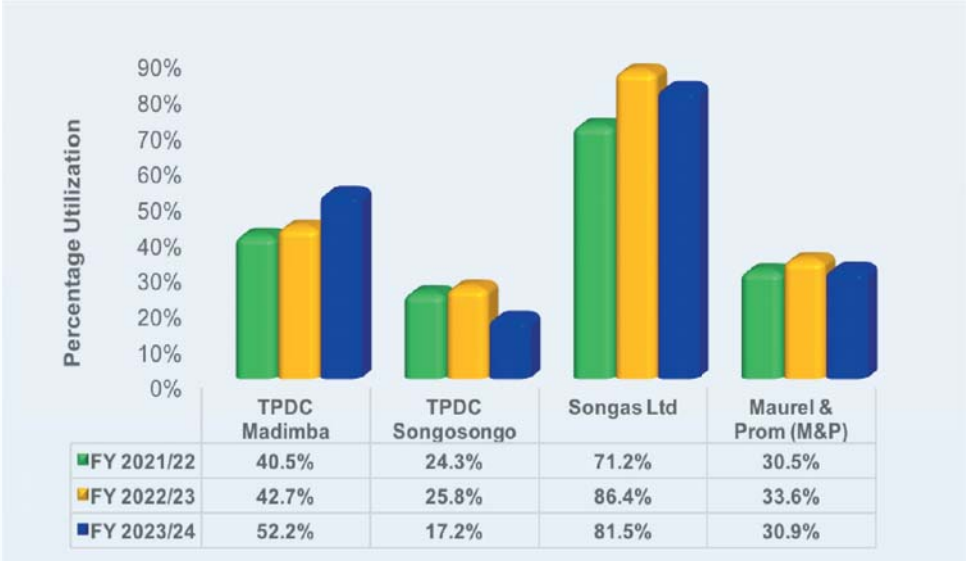


Figure 2: Gas processing plants capacity utilization

(i) TPDC Madimba Gas processing plant capacity utilization

In FY 2023/24, the Madimba Natural Gas processing plant achieved an average daily utilization of 109.65 MMscfd, representing 52.2% of its total installed capacity. This is an increase of 9.5% compared to the 42.7% utilization recorded in the previous year. The increase was mainly due to increased downstream demand, specifically the newly installed 20MW power generation plants (Mtwara 2) in Mtwara region and industries.

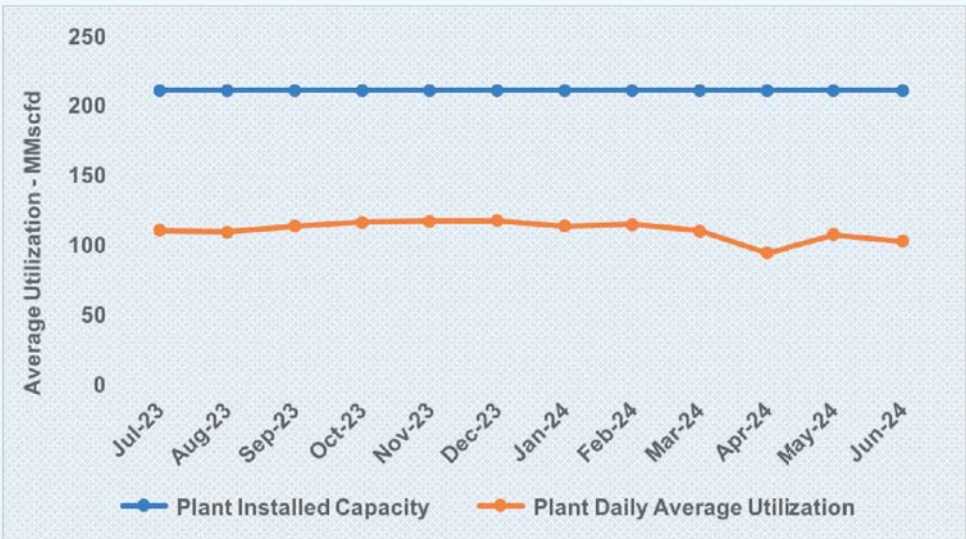


Figure 3. Average monthly TPDC Madimba Gas Plant utilization capacity

The highest daily average production recorded was 116.54 MMscfd in December 2023 and the lowest was 93.54 MMscfd in April 2024. **Figure 3** displays the capacity utilization of the Madimba gas processing plant for the period under review.

(ii) TPDC Songo Songo Gas processing plant capacity utilization

The analysis shows that the Songo Songo Natural Gas processing plant had an average daily utilization of 24.06 MMscfd, equivalent to 17.2% of its capacity. This represents 8.6% decrease compared to the previous year's average utilization of 36.17 MMscfd.

This decrease was due to a decline in reservoir pressure of the Songo Songo gas field. While the highest average production recorded was 28.2 MMscfd in July 2023, the lowest average production recorded was 19.82 MMscfd in June 2024. **Figure 4** illustrates the capacity utilization of the TPDC Songo Songo processing plant during the period under review.

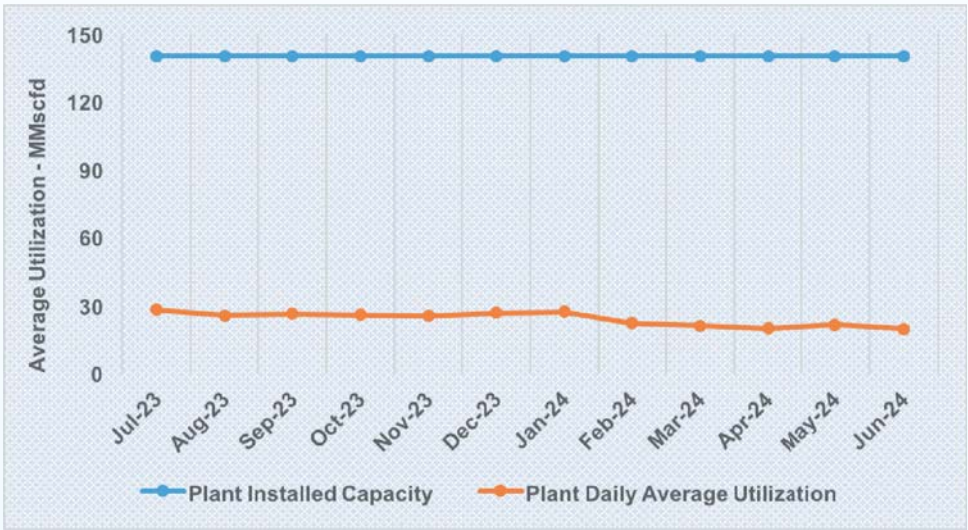


Figure 4 Average monthly capacity utilization of TPDC Songo Songo Processing Plant.

(iii) Songas Gas processing plant capacity utilization

The Songas gas processing plant achieved an average daily utilization of 89.64 MMscfd, which is equivalent to 81.5% of its capacity. This represents a 4.9% decrease compared to the previous year's utilization of 86.4%. This decrease was due to a decline in reservoir pressure of the Songo Songo gas field. The maximum average production reached was 101.42 MMscfd in August 2023 while the recorded minimum average production was 71.66 MMscfd in June 2024. **Figure 5** below displays the capacity utilization of the Songas processing plant during the period under review .

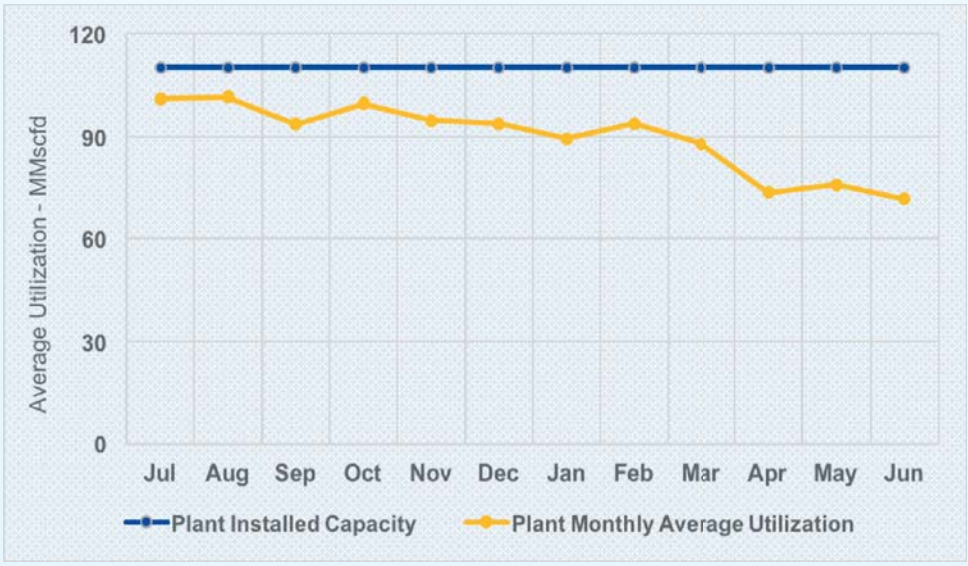


Figure 5: Monthly Songas Gas Plant capacity utilization in FY 2023/24

(iv) M&P Gas processing capacity utilization

The M&P gas processing plant recorded an average daily utilization rate of 3.09 MMscfd, equivalent to 30.9% of its capacity in FY 2023/24. This utilization rate reflects a 2.7% decrease from the previous average of 3.36 MMscfd and a 0.1% increase compared to the FY 2021/22 average of 3.05MMscfd.

Previously, the gas-to-power demand in Mtwara region was being met exclusively by M&P through Mtwara 1 gas-fired power plant. TANESCO has installed a 20MW gas-fired power generation plant (Mtwara 2) that takes gas from TPDC. Therefore, this decrease was due to load sharing between the two power plants, Mtwara 1 and Mtwara 2. The maximum average production reached was 3.55 MMscfd in August 2023 and the recorded minimum average production reached was 2.07 MMscfd in May 2024. **Figure 6** illustrates the capacity utilization of the M&P gas processing plant during FY 2023/24.

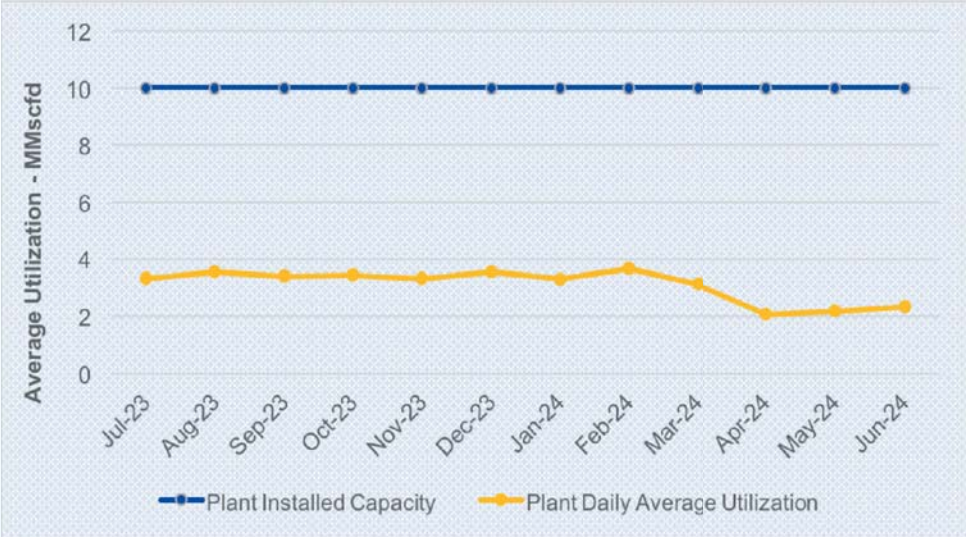


Figure 6: Average monthly M&P Gas Plant capacity utilization

4.1.1.4 Processed Natural Gas

In the Financial Year 2023/24, the amount of natural gas processed increased by 1.30%, from 81,849.40 MMscf in FY 2022/23 to 82,912.62 MMscf. This represents a 12.84% increase compared to the 72,533.57 MMscf processed in FY 2021/22. The rise in processed gas was primarily attributed to increased consumption at gas-fired power plants in Mtwara, Ubungo, and Kinyerezi as well as the addition of new industrial customers in Mkuranga (Pwani) and the new CNG stations. **Table 6** presents a three-year trend in natural gas processing.

Table 6: Natural Gas processing trend

S/N	Processing Plant	FY 2021/22	FY 2022/23	FY 2023/24	Increment (%) between FY 2021/22 and 2022/23	Increment (%) between FY 2022/23 and 2023/24
1.	TPDC Madimba	30,798.15	32,738.51	40,138.66	6.30%	18.44%
2.	TPDC Songo Songo	12,249.00	13,200.50	8,817.32	7.77%	-49.71%
3.	Songas/PAET	28,440.94	34,685.64	32,825.69	21.96%	-5.67%
4.	Maurel Prom (M&P)	1,045.48	1224.75	1130.95	17.15%	-8.29%
Total		**72,533.57**	**81,849.40**	**82,912.62**	**12.84%**	**1.30%**

Source: TPDC, Songas & M&P

4.1.2 Asset integrity management

During the period under review, the Authority assessed compliance with the asset integrity management plans of the four gas processing plants, which included a close evaluation of pressure safety valves (PSVs), export meters, gas chromatography units, and other critical equipment. The assessment revealed that all regulated entities adhered to their facility integrity plans, as detailed in **Table 7**.

Table 7: PSV, Metering and chromatography device's integrity matrix

SN	Processing Plant	Type of devices	No. of devices available	The device Planned for calibration	Device calibrated in %	Target in %
1.	TPDC – Songo Songo	PSV	96	96	100%	100%
		Export Meter	2	2	100%	100%
		Gas Chromatography	1	1	100%	100%
2.	TPDC - Madimba	PSV	85	85	100%	100%
		Export Meter	2	2	100%	100%
		Gas Chromatography	1	1	100%	100%
3.	M&P	PSV	32	32	100%	100%
		Meter	1	1	100%	100%
		Chromatography	2	0	100%	100%
4.	Songas	PSV	100	0	100%	100%
		Meter	1	1	100%	100%
		Gas Chromatography	2	2	100%	100%

Source: TPDC, Songas and M&P

4.1.3 Natural Gas quality monitoring

The Authority monitored natural gas quality to ensure it met regulatory standards and customer requirements. Throughout the review period, the quality of the natural gas produced by the four processing plants conformed to standard specifications. **Table 8** presents the gas quality data for the existing four processing plants analyzed in the period under review.

Table 8: Composition and quality of natural gas as of 30th June 2024

Natural Gas Component	Standard	Composition (% Mole) / Quality of Natural Gas as of 30th June 2024			
		Songas	TPDC- SSI	TPDC-Madimba	M&P
Methane (CH_4)	87.0 - 99.0	97.2720	97.4026	98.8768	98.1035
Ethane (C_2H_6)	1.5 - 9.0	0.9775	0.9710	0.0968	1.0097
Propane (C_3H_8)	0.1 - 1.5	0.2827	0.2860	0.0124	0.2644
iso-Butane (C_4H_{10})	0.01 - 0.3	0.0618	0.0587	0.0020	0.0439
n-Butane (C_4H_{10})	0.01 - 0.3	0.0799	0.0719	0.0020	0.0531
iso-Pentane (C_5H_{12})	trace - 0.04	0.0277	0.0179	0.0008	0.0132
normal-Pentane (C_5H_{12})	trace - 0.04	0.0240	0.0163	0.0008	0.0091
Hexanes (C_6H_{14})	trace - 0.06	0.0269	0.0000	0.0010	0.0249
Carbon Dioxide (CO_2)	0.05 - 1.0	0.5281	0.4152	0.1592	0.2982
Nitrogen (N_2)	0.2 - 5.5	0.6209	0.7197	0.8440	0.1801
Hydrogen Sulphide (H_2S)	trace to 0.02	0.0000	0.0000	0.0000	0.0000
Moisture (ppm)	trace to 5.00	0.9192	0.0000	0.0000	11.08
Specific Gravity	0.57 to 0.62	0.5850	0.5729	0.5607	0.56
Gross Heating Value (MJ/m^3)	36.0 to 40.2	38.20	38.0040	39.4745	38.104

Source: www.uniongas.com, Songas, TPDC and M&P

4.2 Natural Gas transmission pipeline infrastructure

During the period under review, there were no new additional transmission pipelines. Therefore, the existing three (3) natural gas transmission pipelines continued to transit natural gas from the processing plants to distribution networks located in Mtwara, Lindi, Pwani, and Dar es Salaam regions. The details of the installed natural gas transmission lines, including their capacity and the respective operators are provided in **Annex 5**.

The existing natural gas transmission pipelines have a total length of 793km and a combined capacity of 969 MMscfd. There are 26 isolation valves, commonly referred to as Block Valve Stations (BVS) or Main Line Valve (MLV), installed along the pipelines to control natural gas flow, future connection, and emergency shutdown. Among them, 16 are installed along the TPDC pipeline, 9 along Songas's pipeline, and one along the M&P pipeline. The length of each transmission pipeline is specified in **Table 9**.

Table 9: Transmission pipeline length

S/N	Owner	Pipeline Length (km)	Number of Valve Stations	% Contribution
1.	TPDC	533.5	16	67.3
2.	Songas	232.0	9	29.3
3.	Maurel & Prom (M&P)	27.5	1	3.4
Total		**793**	26	100

Source: TPDC, Songas & M&P

4.2.1 Natural Gas transmission technical performance

The Authority analysed the technical performance of transmission pipelines based on service availability, percentage utilization, number of outages, way-leave clearance, and pipeline integrity management. The Authority uses the daily and monthly reports submitted by regulated entities to assess the technical performance of these pipelines.

4.2.1.1 Transmission pipeline availability, utilization and outages

Throughout the year under review, there was no interruption on the natural gas transmission pipelines, hence the availability was 100% for the three (3) natural gas transmission pipelines. However, the capacity of these pipelines during the period continued to be underutilized whereby the utilization of the TPDC line stood at 17%, 69% for Songa's line, and only 3% for the M&P line. Over the past four consecutive years, there has been a consistently slight increase in capacity utilization for the TPDC transmission pipeline contrary to Songas and M&P. The reasons for such trends are similar to those provided in the natural processing plants utilization sub-section.

The capacity utilization of the transmission pipeline for each service provider for four consecutive years, including the year under review is shown in **Table 10** whereas the monthly average utilization for each transmission pipeline in FY 2023/24 is illustrated in **Figure 7, Figure 8,** and **Figure 9**.

Table 10: Transmission Pipeline Availability against Capacity Utilization

S/N	Name	Installed capacity (MMscfd)	Availability (%)	Capacity Utilization (%) for FY 2020/21	Capacity Utilization (%) for FY 2021/22	Capacity Utilization (%) for FY 2022/23	Capacity Utilization (%) for FY 2023/24
1.	TPDC	784	100	13	15	16	17
2.	SONGAS	105	100	60	71	99	69
3.	M&P	80	100	3	4	4	3

Source: TPDC, Songas and M&P

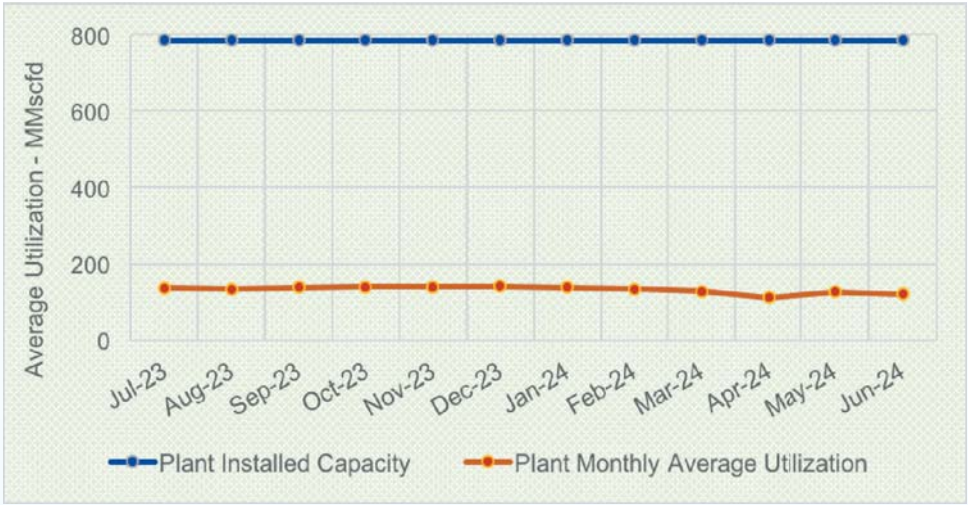


Figure 7: TPDC pipeline capacity utilization

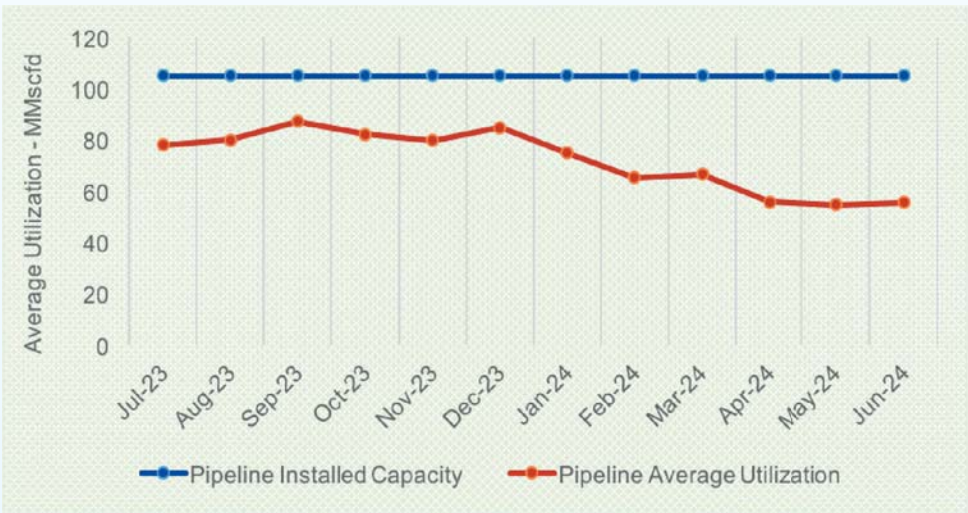


Figure 8: Songas pipeline capacity utilization

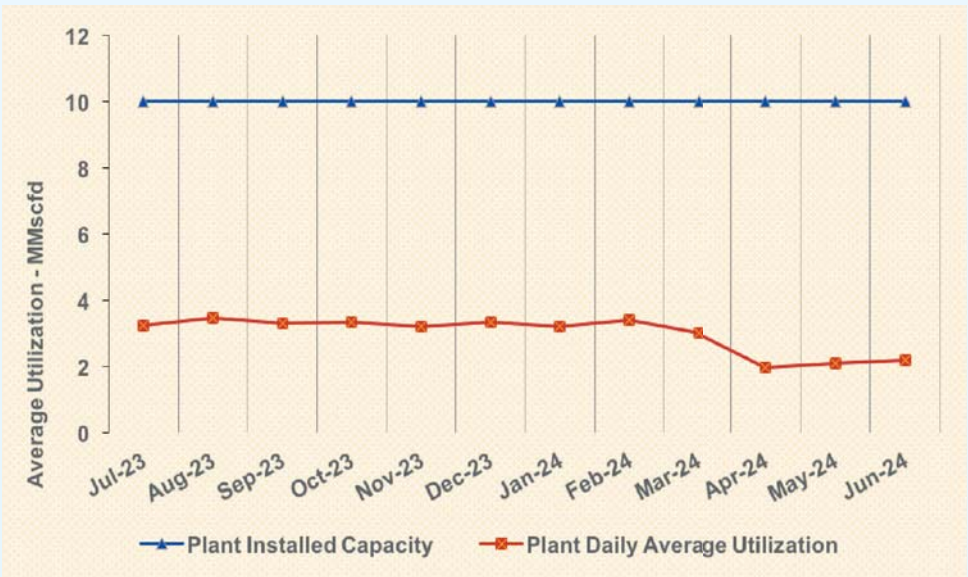


Figure 9: M&P pipeline capacity utilization

4.2.1.2 Transmission pipeline integrity management

To ensure that operators implement the pipeline integrity management plan, the Authority assessed the operations, maintenance, and repair records for transmission infrastructure's accessories including Pressure Safety Valves (PSVs), export meters, cathodic protection systems, pipeline pigging, and wayleave management. The integrity plan is monitored to ensure the smooth functioning of the natural gas transmission infrastructure and safety standards adhered to during operation.

(a) PSV and Meter Device's Integrity

In accordance with Integrity Management Plan, the regulated entities calibrated their PSVs and meters to ensure their functioning and accuracy during measurements. By design, the TPDC transmission pipeline has both PSV and metering devices, the M&P transmission pipeline has only metering device, while Songa's transmission pipeline has neither PSV nor metering device. During the period of review, only M&P planned and calibrated its meter. **Table 11** provides a summary of the performance of PSV and export meters with their integrity plans.

Table 11: PSV and Meter Device's Integrity

Sn	Operator	Type of devices	No. of devices available	Planned calibration	Device re-calibrated	Calibration in %	Target %
1.	TPDC	PSV	10	0	0	N/A	N/A
		Meter	6	0	0	N/A	N/A
2.	M&P	PSV	0	0	0	N/A	N/A
		Meter	1	1	1	100	100
3.	SONGAS	PSV	0	0	0	N/A	N/A
		Meter	0	0	0	N/A	N/A

Source: TPDC, Songas and M&P

(b) Pipeline Cathodic Protection

During the period under review, regulated entities continued to control corrosion by ensuring that the electrical potential difference between the pipeline and anodes were within the required range. **Table 12** and Annex 6 show the distance covered by Cathodic Protection and the number of cathodic protection test points checked for functionality along the existing transmission pipeline, respectively.

Table 12: Corrosion Protection System (Cathodic Protection)

S/N	Pipeline Name 1	Total pipeline Length (km)	CP covered Length (km)	Available CP units	Default CP units
1.	TPDC	533.5	533.5	8	0
2.	Songas	232.0	232.0	7	0
3.	M&P	27.86	27.86	4	0

Source: TPDC, Songas and M&P

(c) Pipeline pigging

During the period under review, M&P carried out intelligent pigging on its pipeline and the results showed that the pipe was in good condition except for a few identified points that needed repair. The repair works for those points were scheduled in the FY 2024/25 maintenance plan. TPDCs pipeline is scheduled to undergo pigging in the coming FY 2024/25. **Table 13** presents a summary of the previous pipeline pigging, including the length that was pigged.

Table 13: Pipeline pigging

SN	Name	Pipeline Length (km)	Date of last pigging	Length of PIG run (km)	Identified defects	Identified defects repaired
1.	TPDC	533	Not due	0	0	0
2.	SONGAS	232.0	Not due	0	0	0
3.	M&P	27.865	September 2023	27.865	1	0

Source: TPDC, SONGAS and M&P

(d) Transmission pipeline Wayleave Management

The Authority continued to monitor wayleave management for transmission pipelines quarterly, based on the operator's wayleave management plans. The plans included wayleave patrols to identify encroachments and soil erosion. In FY2023/24 Songas was 100% compliant with its plan while TPDC and M&P were 83% and 75%, respectively.

Wayleave patrols by regulated entities and site inspections by the EWURA revealed soil erosion in 35 areas within the transmission pipeline rights-of-way. Operators of the respective pipelines were directed to rectify the observed anomalies accordingly. The implementation of these plans during the period under review is illustrated in **Table 14**.

Table 14: Transmission pipelines Wayleave Management

SN	Name of operator	Planned wayleave patrol	Performed wayleave patrols	wayleave patrols Compliance	Number of interruptions/ erosions affected pipeline	Number of encroachments within the way leave
1.	TPDC	6	5	83%	29	2
2.	SONGAS	4	4	100%	5	0
3.	M&P	12	9	75%	1	0
Total		**22**	**18**	**-**	**35**	**2**

Source: TPDC, Songas and M&P

4.3 Natural Gas distribution infrastructure

The Natural Gas distribution infrastructure experienced steady growth in the past year, particularly an expansion of the distribution networks in Dar es Salaam, Pwani, Mtwara, and Lindi regions. These networks are managed by two operators; namely, PAET and GASCO. Furthermore, there are five (5) operational CNG filling stations owned and operated by PAET, Dangote, TAQA, and ANRIC Gas.
During the period under review, the Authority actively monitored those infrastructure to ensure their compliance with regulatory requirements.

4.3.1 Natural Gas distribution pipeline network

The Authority monitored the performance of natural gas distribution pipelines based on pipeline length, number of connected customers, quality of service, consumption, wayleave clearance, and pipeline integrity management.

As of June 2024, TPDC constructed a total distribution network of 181.67 km and PAET constructed a total network of 59.91 km, which makes a total length of the distribution network of 241.58km. Comparing to 220.5km recorded in the previous financial year, the distribution network has increased by 21.08km, equivalent to 9.56% in FY 2023/24. The increase has been contributed by new customers of power plants, CNG filling stations and industries. **Table 15** provides detailed information on the existing natural gas distribution pipeline network.

Table 15: Existing Natural Gas distribution pipeline network

Sn	Distribution Network	Capacity (MMscfd)	Length (km)	Location
A: GASCO Network				
1.	From Kinyerezi Gas Receiving Terminal to Kinyerezi I Power Plant	70	1.1	Dar es Salaam
2.	From Kinyerezi Gas Receiving Terminal to Kinyerezi II Power Plant	48	1.4	Dar es Salaam
3.	From Terminal Station (BVS-17) PRS to Tegeta 45 Power Plant	24	4.7	Dar es Salaam
4.	From BVS-15 PRS (Ubungo) to Mikocheni Industrial area, UDSM, Sinza and Mbezi trunkline	15	101.67	Dar es Salaam
5.	From BVS-1 PRS (Hiari village) to Dangote Cement Factory	55	2.64	Mtwara
6.	From BVS-15 PRS (Ubungo) to TANESCO Ubungo Power Plant	86	0.5	Dar es Salaam
7.	From GRF – PRS (Mtwara town) to Mtwara residential houses	10	25.3	Mtwara
8.	From BVS-12 PRS (Mkiu Village) to Goodwill Ceramic factory and Saphire Factory	15	5.65	Pwani Region
9.	From Mwanambaya PRS to Mkuranga Industries Industrial area and Dangote CNG station	10	7.938	Pwani Region
10.	From BVS-3 PRS (Ruaha village) to Mnazi Mmoja residential houses	10	28.125	Lindi
11.	From BVS-13 PRS (Msufini Village) to Keda Factory	25	2.648	Pwani region
	TPDC total distribution network (km)		**181.671**	
B: PAET Network (Also known as Dar es Salaam Ring Main)				
12.	Connection from Ubungo PRS to TBL and Kioo Ltd via Buguruni	10.5	20.5	Dar es Salaam
13.	Connection from Gongo la Mboto PRS to Kurasini and KTM via Buguruni	10.5	35.9	
14.	Connection from Wazo Hill PRS to Wazo Hill factory	16	0.5	
15.	Connection from MLV 210 to TANESCO Ubungo III	86	3.01	
	PAET total distribution network (km)		**59.91**	
TOTAL LENGTH (km)			**241.581**	

4.3.1.1 Connected Customers to Natural Gas supply services

During the FY 2023/24, the connection rate for natural gas end-user customers gradually increased whereby eight (8) new customers were connected. The connected customers were three (3) industries, four (4) commercial customers, and one (1) power plant located in Mtwara. **Table 16** summarizes the number of customers connected by TPDC and PAET in the FY 2023/24. The list of connected customers is shown in **Annex 7**, **Annex 8**, **Annex 9**, and **Annex 10**.

Table 16: Application and connection of natural gas supply

Service Provider	Number and category of connected customers in FY 2023/24					
	Power	Industries	Commercial	Institution	CNG Station	Household
TPDC	1	2	4	0	0	0
PAET	0	1	0	0	0	0
Total	**1**	**3**	**4**	**0**	**0**	**0**

4.3.1.2 Distribution network wayleave management

During the period under review, the Authority monitored the performance of regulated entities based on the number of wayleave patrols planned against performance, interruption of third-party activities, and erosion and encroachment mitigation measures. TPDC and PAET conducted wayleave patrols as per their plans whereby four (4) encroached areas and two (2) soil erosion-affected areas were identified. **Table 17** shows the details of pipeline wayleave management and Annex 12 shows the list of pipeline wayleave interference.

Table 17: Distribution Pipeline Wayleave Management

S/N	Name of operator	No. of wayleave patrol planned	No. of Wayleave patrols performed	% compliance wayleave patrol	Interruptions erosion-affected pipeline	Encroached areas
1.	TPDC	12	12	100	2	0
2.	PAET	265	265	100	0	4

Source: TPDC & PAET

4.3.1.3 Distribution infrastructure integrity management

In the Financial Year 2023/24, the Authority monitored the performance and integrity of the natural gas distribution infrastructure based on the mandatory calibrations of pressure safety valves (PSV), flow meters, and gas leakage surveys. As shown in **Annex 13**, regulated entities complied with the planned integrity activities except two (2) out of 123 PSVs will be calibrated in FY2024/25.

4.3.2 Compressed Natural Gas (CNG)

In FY 2023/24 the Authority issued two (2) new licenses to operate CNG filling stations to Dangote at Mkuranga in Pwani region and TAQA at Kipawa (Airport) in Dar es Salaam region. Therefore, the number of CNG filling stations increased from three (3) recorded in FY 2022/23 to five (5). Further to CNG filling stations, there were three (3) virtual pipelines, commonly referred to as CNG daughter stations, which supply natural gas to Serena Hotel, the Mikoani Edible Oil industry, and the Global Aluminum industry. The operators of CNG stations are as follows:

(a) Three (3) CNG filling stations for public use in Dar es Salaam are operated by PAET at Ubungo, TAQA at Kipawa (Airport), and ANRIC Gas at TAZARA.

(b) Two (2) CNG filling stations for own use are operated by DANGOTE Cement, one located in the Mtwara region and one at Mkuranga in the Pwani region.

(c) Three (3) CNG daughter stations, two are operated by PAET for supplying gas to Serena Hotel and Mikoani Edible Oil Industry, and one daughter station is operated by ANRIC Gas for supplying gas to Global Aluminum factory at Kibaha.

4.3.3 Integrity of CNG stations

The Authority continued to monitor the performance and integrity of CNG facilities based on the operation and maintenance of PSV, meters, dispensers, compressors, and CNG cylinders certification. The performance of CNG facilities was also reviewed by checking the CNG vehicle fueling procedure, gas leak survey, and HSE requirements. During the period under review, the CNG station's operators complied with the standards and integrity management plans. However, during the period, there are records of compressor downtimes for 128 hours for PAET – Ubungo and 32 hours for TAQA – Kipawa leading to compressor availability of 97.95% and 98.18%, respectively. These downtimes were due to planned maintenance. **Table 18, Table 19,** and **Table 20** show the performance of CNG filling stations on PSV, Meter, Dispenser, cylinders, and compressors.

Table 18: PSV, meter and CNG dispenser calibration

S/N	Operator	Type of devices	No. of devices available	No. of device re-calibrated	Calibration in %	Target %
1.	PAET	PSV	5	5	100	100
		Meter	3	3	100	100
		Dispenser	1	1	100	100
2.	DANGOTE-MTWARA	PSV	24	24	100	100
		Meter	2	2	100	100
		Dispenser	2	2	100	100
	DANGOTE-MWANAMBAYA	PSV	20	20	100	100
		Meter	1	1	100	100
		Dispenser	2	2	100	100
3.	ANRIC -Gas	PSV	1	1	100	100
		Meter	1	1	100	100
		Dispenser	1	1	100	100
4.	TAQA	PSV	4	4	100	100
		Meter	3	3	100	100
		Dispenser	3	3	100	100

Table 19: CNG cylinders integrity compliance

S/n	Operator	No of cylinders	No. of storage cylinders inspected	Condemned cylinders
1.	PAET	142	142	0
2.	ANRIC	50	50	0
3.	DANGOTE - Mtwara	3	3	0
4.	TAQA	40	40	0
5.	DANGOTE - Mkuranga	6	6	0

Table 20: Compressor operation and maintenance

Operator	Total running hours for FY 2023/24	Running hours for maintenance	Uptime hours	Downtime hours	Compressor availability
PAET-Ubungo	6,249.63	5,000	6,249.63	128	97.95%
DANGOTE-Mtwara	Comp. 1: 1,218hrs Comp. 2: 1,127hrs	2,000	1,999	0	100%
DANGOTE-Mkuranga	Comp. 1: 86hrs Comp. 2: 99hrs	2,000	1,999	0	100%
TAQA - Kipawa	1,734	4,000	1,734	32	98.18%

Note: Comp. means CNG Compressor.

4.3.4 CNG Register

The Authority continued to maintain the lists of registered CNG-Vehicle Workshops, certified CNG Fuel System Inspectors (CNG-FSI), and CNG-Vehicles as per Regulation 20 of the Petroleum (Natural Gas Midstream and Downstream) General Regulations, 2020. During the period under review, four new CNG-V Workshops were registered, namely, Hope Car Service Co Ltd, Diamond Motors Ltd, Milo Security Company Ltd, and TAQA Dalbit.

As of June 2024, 12 recognized CNG-V Conversion Workshops were registered in the National Petroleum and Gas Information System (NPGIS) after meeting the standards and requirements, including having qualified manpower. The name and location of the registered Conversion Workshop are shown in **Table 21**. The public is urged to use the registered conversion workshop to avoid inconvenience from unscrupulous and unprofessional individuals.

Table 21: EWURA's registered CNG conversion workshop

S/N	CNG-V workshop	Location	Region
1.	ANRIC	TAZARA	Dar es Salaam
2.	BQ Contractor	Mbezi Juu	Dar es Salaam
3.	Dangote	Hiari	Mtwara
4.	DIT	Dar es Salaam	Dar es Salaam
5.	Kleenair	Kigamboni	Dar es Salaam
6.	MOL	Keko Mwanga	Dar es Salaam
7.	NK	Mbezi beach shule	Dar es Salaam
8.	Triangle	UDSM	Dar es Salaam
9.	Hope Car Service Co Ltd	Sinza	Dar es Salaam
10.	Diamond Motors Ltd	Vingunguti	Dar es Salaam
11.	Milo Security Company Ltd	Mbezi beach	Dar es Salaam
12.	TAQA Dalbit.	Kipawa	Dar es Salaam

Similarly, up to 30th June 2024, the number of CNG Vehicles and Three-Wheel Motorcycles increased significantly from 3,100 reported in the previous Financial Year to 7,000, equivalent to an increase of 126%. The rapid increase is attributed to the imported ready-made three-wheel motorcycles retrofitted by CNG cylinders. **Table 22** shows the number of CNG-V by category and CNG three-wheel motorcycles.

Table 22. CNG-V by category and CNG Three-Wheel Motorcycles

Sn	Vehicle Category	Total No.
1.	Sedan & Hatchback	2,812
2.	Truck	445
3.	SUV & Wagon	295
4.	Van & Mini-Van	207
5.	Bus	7
	Sub-Total CNG-Vehicle	**3,766**
6.	Three-Wheels Motorcycle	3,234
	Sub-Total CNG-Motorcycle	**3,234**
	Total CNG Vehicle and 3-Wheels Motorcycle	**7,000**

In the Financial Year 2023/24, five (5) new CNG-FSI were approved by the Tanzania Bureau of Standards (TBS) and registered in the NPGIS. This is equivalent to a 71% increase compared to seven (7) registered CNG-FSI in the previous financial year. Therefore, as of June 2024, there were 12 registered CNG-FSI. **Table 22** shows the list of CNG Fuel System Inspectors and Certifiers.

Table 23: List of CNG Fuel System Certifiers (CNG-FSI)

Sn	CNG-FSI/C	Certification No	Location	Contact
1.	Dr. Rajab Hassan	U10343A	DSM	hmrajabu@gmail.com
2.	Godwin Kulinga	U11771A	Arusha	godwinnkulinga@gmail.com
3.	Paul Makoye	U11646A	Arusha	makoyepaul2000@gmail.com
4.	Baraka Majengo	U11067A	DSM	barakagimajengo@gmail.com
5.	Samson M Saidow	U11076A	Arusha	samsonsaidow@gmail.com
6.	John Msyani	U12155A	DSM	johnenock95@gmail.com
7.	Brayson Lema	U12141A	DSM	brysn.lema47@gmail.com
8.	Maisarah Massawe	U12267	KAHAMA	massawemaisarah70@gmail.com
9.	Nuru Miraji	U12304A	DSM	mirajiidrissa123@gmail.com
10.	Nicholaus Tungu	U12694A	MTWARA	Nicholaus.Tungu@DANGOTE.COM
11.	Vitus Kulamamba	U12711A	MTWARA	vitusylvester@gmail.com
12.	Genes Njau	U12923A	DSM	genesgenui@gmail.com

Sn	CNG-FSI/C	Certification No	Location	Contact
13.	Fimbo Paul	U11646A	DSM	makoyepaul2000@gmail.com
14.	Abednego Mbilinyi	U13042A	DSM	abednegosamwel@gmail.com

Source: CSA GROUP (https://www.csagroup.org)

4.4 Natural Gas quality of service

The Authority monitored the Natural Gas quality of service through the operator's reliability on the natural gas supply to their customers. During the reporting period, the service interruption was caused by planned maintenance as explained in Section 4.3.5 (Integrity of CNG Stations), and power supply interruption. The total unplanned service interruption was 550 hours for the three CNG stations, TAQA, PAET, and ANRIC. TAQA was the most affected station with 540 hours of service interruption due to power cuts, followed by eight (8) hours for PAET due to emergency repairs after dispenser breakdown and ANRIC with two (2) hours due to changing of filling horse.

Furthermore, during the period under review, the Songas natural gas transmission pipeline experienced eight (8) hours of interruption due to heavy rain, which caused flooding at the MLV 20 station located at Somanga Fungu. The flooding water caused a short circuit of electronic gadgets which led to the valve closing and stopping the gas flow to the Songas power plant in Dar es Salaam.

4.5 Health, Safety and Environment

During the reporting period, the Authority continued to monitor the regulated entities' Health, Safety, and Environmental (HSE) performance. The HSE indicators comprises of number of near misses, incidents, accidents, lost-time injuries, hydrocarbon spillage, effluents discharged into water bodies, and flared gas released into the environment. During the period under review, the regulated entities reported no significant HSE issues. This underscores the regulated entities' commitment to maintaining high standards of safety and environmental issues.

4.5.1 Near miss, incidents, accidents and Lost Time Injury

Based on the analysis of the HSE performance of regulated entities, it was found that there were no fatalities or lost workday cases resulting in Lost Time Injury (LTI) in FY 2023/24. It is worth noting that the regulated entities' HSE performance improved compared to the previous year, as illustrated in **Table 24.** During the period under review, heavy rains led to flooding, causing a short circuit at the MLV 20 station, after which a valve closed automatically.

Table 24 shows Near Miss, incidents, accidents and Lost Time Injury

Facility	Near miss	Incidents	Accidents	Lost Time Injury	Injuries Occurred	Target Set
Gas Plants						
TPDC - Madimba	3	4	0	0	0	0
TPDC – Songosongo	5	3	1	1	1	0
SONGAS	0	0	0	0	0	0
M&P	1	8	0	0	0	0
Transmission Pipelines						
TPDC	16	1	0	0	0	0
SONGAS	0	1	0	0	0	0
M&P	0	0	0	0	0	0
Distribution Pipelines						
TPDC	3	1	1	0	0	0
PAET	0	0	0	0	0	0

Facility	Near miss	Incidents	Accidents	Lost Time Injury	Injuries Occurred	Target Set
Filling Station						
PAET	0	0	0	0	0	0
Anric CNG	0	1	1	0	0	0
Dangote CNG Mtwara	0	0	0	0	0	0
TAQA	0	0	0	0	0	0
Dangote CNG Mkuranga	0	0	0	0	0	0
Total FY 2021/22	**52**	**37**	**12**	**0**	**1**	**0**
Total FY 2022/23	**26**	**18**	**3**	**0**	**0**	**0**
Total FY 2023/24	**32**	**17**	**3**	**0**	**0**	**0**

Source: M&P, SONGAS, PAET & TPDC

4.5.2 Emergency Response Plan Performance

The Authority continued to monitor the performance of regulated entities based on planned HSE drills, performed HSE drills within a set time, and performed against plan and response rate. In FY 2023/24, the Authority observed an improvement in the regulated entities' performance in this area compared to the previous Financial Year as shown in **Table 25.**

Table 25: Emergency Response Plan Performance

Facility	Planned HSE Drills	Performed HSE Drills	Performed within a set time	Performance against Plan in %	Response Rate (%)	Set target in %	Actual accident occurred
Gas Processing Plant							
TPDC-Madimba	4	4	4	100	100	100	0
TPDC - Songo Songo	4	4	4	100	100	100	0
SONGAS	12	18	18	62.5	100	100	0
M&P	18	11	11	61	100	100	0
Transmission Pipelines							
TPDC	4	4	4	100	100	100	0
SONGAS	2	1	1	50	100	100	0
M&P	2	2	2	100	100	100	0
Distribution Pipelines							
TPDC	4	4	4	100	100	100	0
PAET	4	0	0	0	0	100	0
Filling Station							
PAET	0	0	0	0	0	100	0
Anric CNG	1	1	1	100	100	100	0
Dangote CNG Mtwara	4	3	3	100	100	100	0
TAQA	4	3	3	75	100	100	0
Dangote CNG Mkuranga	1	1	0	100	100	100	0
Total/Average FY 2023/24	**25**	**20**	**17**	**91**	**100**	**100**	**0**
Total/Average FY 2021/22	**64**	**59**	**57**	**92**	**97**	**100**	**0**
Total/Average FY 2020/21	**109**	**98**	**96**	**90**	**98**	**100**	**0**

Source: M&P, SONGAS, PAET & TPDC

4.5.3 Environment performance indicators

The Authority monitored the regulated entities concerning hydrocarbon spillage, effluent discharge to water bodies, and flared gas released into the environment. In the FY 2023/24 the compliance level of each regulated entity is shown in **Table 26.**

Furthermore, the Authority monitored the number of gas leak survey plans against the number of gas leak surveys conducted. TPDC SSI gas processing plant observed frequent unplanned gas releases due to gas engine and gas well tripping. PAET CNG station had a significant gas release in order to allow maintenance on the compressor and dispenser due to worn-out seals. Based on data analysis, the natural gas facilities have complied with the regulated requirements as shown in **Table 27.**

Table 26: Environment performance indicators

Environmental Parameters	Standard (UNEP technical publication)	TPDC MADIMBA	TPDC SONGO SONGO	SONGAS	M&P
Hydrocarbon spills into the environment (g/kg)	100g/kg	0	0	0	0
Effluents discharge to water bodies (mg/L)	40mg/L	0	0	2	0
Flared Gas (MMscf)		0.6845	2.15	2.61	1.72

Source: M&P, Songas, PAET & TPDC

Table 27: Natural Gas leak monitoring

Facility	Planned gas leak survey	Conducted gas leak survey	Significant gas leaks occurred	Unplanned gas release	Planned gas release
Gas Plants					
TPDC – M	48	48	0	0	0
TPDC – S	365	365	0	18	0
SONGAS	365	365	0	0	1
M&P	24	48	0	8	36
Transmission Pipelines					
TPDC-BVS	12	12	0	0	0
TPDC-GRFs	365	365	0	0	0
SONGAS	4	4	0	0	0
M&P	12	12	0	0	0
Distribution Pipelines					
TPDC - PRS	52	52	0	0	4
PAET	265	265	0	0	0
CNG Filling Station					
PAET	365	365	2	2	2
Anric Gas	365	365	0	0	0
Dangote Mtwara	12	6	0	0	3
TAQA	12	12	0	0	0
Dangote Mkuranga	12	6	0	0	1

Source: M&P, SONGAS, PAET & TPDC

5. NATURAL GAS SUPPLY AND DEMAND BALANCE

The country's natural gas supply and demand balance, among other factors, is mainly influenced by field production capacities, processing and transmission infrastructure, as well as coverage of the distribution networks. This chapter focuses on matching the quantity of natural gas supplied against the consumed quantity, with a touch on the produced quantity.

During FY 2023/24, natural gas supply and consumption increased compared to the previous Financial Year due to an increased connection to new customers including households, industries, CNG filling stations, and power generation plants.

5.1 Produced Natural Gas

Similar to previous years, the country's natural gas continued to be produced from the existing two fields, Songo Songo and Mnazi Bay gas fields located in the Lindi and Mtwara regions, respectively. In FY2023/24 a total of 82,912.62 MMscf of natural gas were produced whereby 41,643.02 MMscf, equivalent to 50.2% were from the Songo Songo gas field and the remaining 41,269.60 were from the Mnazi Bay gas field. **Table 28** shows the details of the produced natural gas in FY 2023/24.

Table 28. Produced Natural Gas in FY 2023/24

Name of Gas Field	Location	Produced Gas (MMscf)	% share
Songo Songo Field	Lindi	41,643.02	50.2%
Mnazi Bay Field	Mtwara	41,269.61	49.8%
Total		**82,912.62**	

5.2 Natural Gas Supply

In FY 2023/24, the overall natural gas supply, which is also termed as "exported gas" and measured at the entry of the transmission pipeline, just after processing plants, increased by 1% from 81.067.16 MMscf reported in FY 2022/23 to 81,868.86 MMscf. Despite the overall increase, the natural gas supply from individual plants decreased except for the TPDC Madimba processing plant, which increased by 22% as shown in **Table 29**. **Figure 10** shows the trend of natural gas supply from FY 2020/21.

Table 29: Comparison of Natural Gas Supply for Three Financial Years

Processing Plant	Supplied Natural Gas (MMscf)				% Variance between FY 2022/23 and 2023/24
	2020/21	2021/22	2022/23	2023/24	
TPDC Madimba	26,919.20	30,798.15	32,636.11	39,805.80	22%
TPDC Songo Songo	8,842.10	12,249.00	13,039.68	8,661.86	-34%
Songas	23,978.40	28,440.94	34,220.40	32,335.60	-6%
Maurel and Prom (M&P)	879.5	1,045.48	1,170.97	1,065.63	-9%
TOTAL	**60,619.20**	**72,533.57**	**81,067.16**	**81,868.86**	1%

Source: TPDC, Songas & M&P

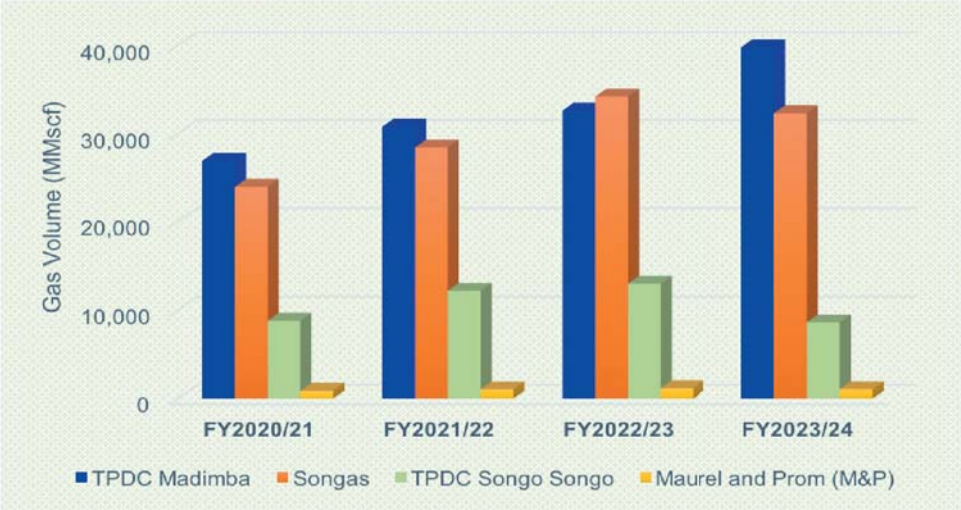


Figure 10: Yearly Natural Gas Supply Trend

5.3 Natural Gas Consumption

For four consecutive financial years, from 2020/21 to 2023/24, there was an increased trend of natural gas consumption for power generation, CNG-V, and domestic customers as shown in **Figure 11** and detailed in **Annex 11**. In 2023/24, 82,025.03 MMscf of natural gas was consumed compared to 63,273.06 MMscf used in the previous financial year, equivalent to a 29.6% increase. TPDC was the main supplier, contributing 75.52% of the total consumed natural gas, followed by PAET with 23.14% while M&P contributed only 1.34% as presented in **Table 30**. **Figure 11** shows the natural gas consumption trend from FY2020/21 to FY2023/24.

Comparing the amount of supplied natural gas, 81,868.86 MMscf, and the consumed natural gas in FY2023/24, it is evident that there was a constrained demand for natural gas, of which about 150 MMscf of gas was extracted from the line park.

Table 30. Service Provider share of consumed gas

	Service Provider/ Gas Sellers			Grand Total
	TPDC	PAET	M&P	
Gas Consumption (MMscf)	61,947.30	18,982.10	1,095.63	**82,025.03**
Gas supplier share	75.52%	23.14%	1.34%	

Figure 11. Natural gas consumption trend from FY2020/21 to FY2023/24

5.3.1 Natural Gas consumers

Compared to the previous financial year, the number of households connected to the natural gas distribution networks increased by 49.4%, from 1,514 to 2,262. In contrast, the number of commercial customers jumped from one (1) to five (5). The number of natural gas customers per category is provided in **Table 31**.

Table 31: Natural Gas Customer Categories

FY	Power Plants	Industries	Households	Commercial	Institution	CNG Filling Stations
2020/21	9	48	437	1	8	1
2021/22	11	52	970	1	8	3
2022/23	11	54	1,514	1	8	3
2023/24	12	58	2,262	5	8	5

5.3.2 Consumption of Natural Gas by categories

Natural gas was supplied to users in the categories of power generation, industries, CNG-V, commercial, institutions, and household customers. Power generation which was the largest end-user customer of natural gas, consumed 85.41%, followed by the industrial sector at 14.19%, and CNG vehicles at 0.38%, whereas commercial, institution and household customers collectively consumed just 0.02%. Institutions were the least consumer of natural gas with 0.002%. **Table 32** and **Figure 12** show the quantity and percentage share of gas consumption across customer categories, while **Table 33** shows the largest 10 consumers of Natural Gas in FY 2023/24.

Table 32: Natural Gas Consumption by Categories

Sn	Customer Category	Consumed Volume for FY2023/24 (MMscf)				% Consumption
		TPDC	PAET	M&P	Total	
1.	Power	54,958.10	14,007.72	1,095.63	**70,061.45**	85.41%
2.	Industries	6,513.68	4,719.01	-	**11,639.30**	14.19%
3.	CNG Vehicles	271.88	246.47	-	**308.72**	0.38%
4.	Commercial	-	8.90	-	**8.90**	0.011%
5.	Households	5.03	-	-	**5.03**	0.007%
6.	Institutions	1.63	-	-	**1.63**	0.002%
TOTAL		**61,947.30**	**18,982.10**	**1,095.63**	**82,025.03**	

Table 33: Largest Consumer of Natural Gas in FY 2023/24

Sn	Customer Name	Consumption (MMscf)	% share
1.	TANESCO	70,061.45	85.41%
2.	Dangote Cement Ltd	3400.06	4.15%
3.	SBC (T) Ltd	3149.34	3.84%
4.	ALAF	3047.80	3.72%
5.	Wazo	2504.87	3.05%
6.	Goodwill Ceramic	2052.61	2.50%
7.	Sapphire Float Glass	1120.73	1.37%
8.	Kioo Limited	540.46	0.66%
9.	Tanruss Investment Limited (Serena Hotel)	389.45	0.47%
10.	Knauf Gypsum (T) Limited	187.78	0.23%

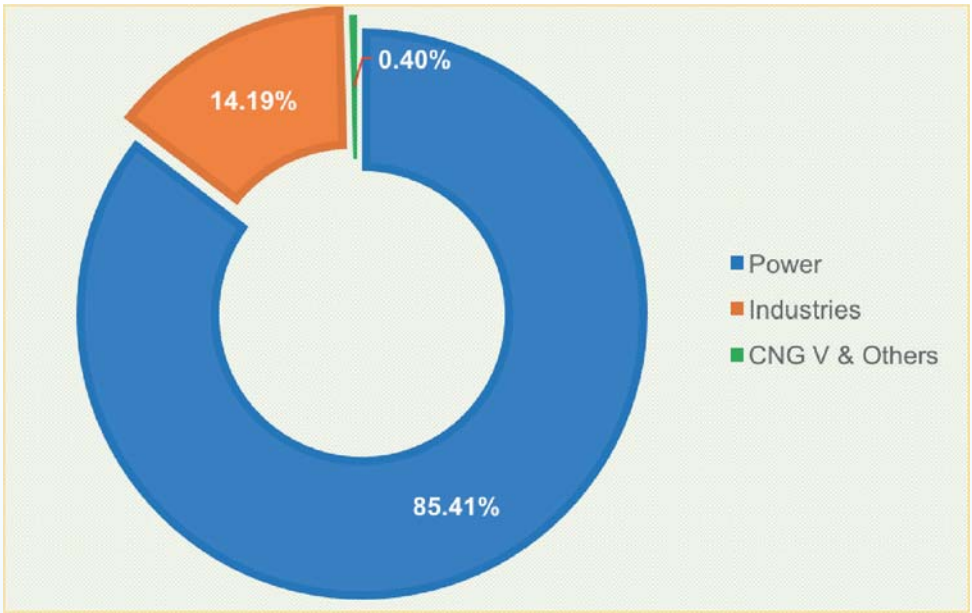


Figure 12. Share of Natural Gas Consumption per Category in FY 2023/24

Figure 13 and **Figure 14** show the monthly and annual natural gas consumption for each customer category for FY 2023/24. Generally, in the reporting period, the sector witnessed a significant decrease in natural gas consumption for power generation compared to the previous financial year. During the period under review, the share of natural gas in the power generation mix dropped from 70% to 67.1%. The main reason for this significant decrease was the commissioning of two out of nine Julius Nyerere Hydro-Power Plant (JNHPP) turbines, which injected 470 MW into the National Grid effectively from the third quarter of FY2023/24. However, this creates an opportunity and availability of natural gas for other beneficial economic activities including industrial, transport, commercial, and household.

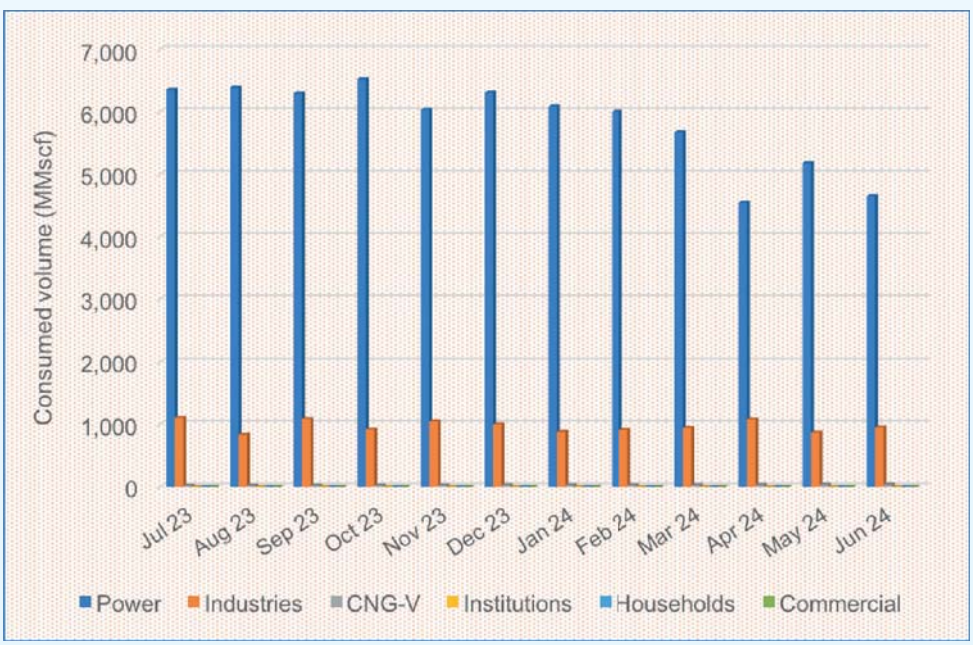


Figure 13. Monthly natural gas consumption trend per category

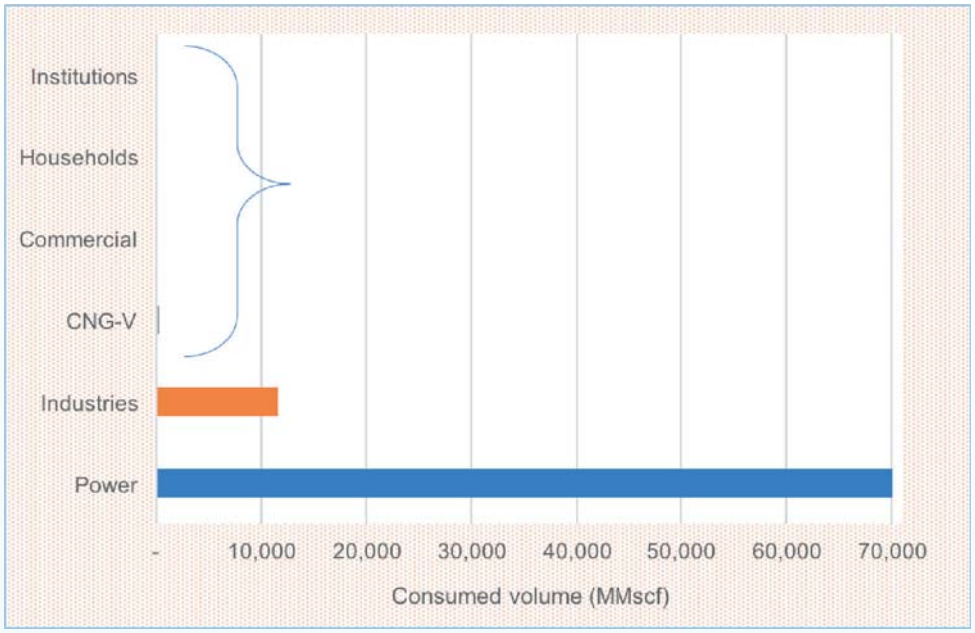


Figure 14. Total Natural Gas Consumption per Category in FY 2023/24

5.3.3 CO_2 emission reduction

In FY2023/24, power generated from natural gas amount to 7,023,843,162 kWh (23,966,353 MMBtu). Comparing with the CO2 emission factors of 52.91 kg per MMBtu for natural gas and 93.24 kg per MMBtu for Heavy Fuel Oil (HFO) as provided by the United States (US) Energy Information Administration (EIA), there was a saving of 44% of CO2 emission when the same amount of power was generated by using HFO.

5.3.4 Clean cooking initiative

As provided in **Table 31**, natural gas is currently used for cooking by 2,262 households, five (5) commercial settings and eight (8) institutions located in Mtwara, Lindi and Dar es Salaam. Commercial settings are mainly hotels, whereas institutions include prisons and cafeterias at the University of Dar es Salaam and Mtwara Technical Colleges. The use of natural gas for cooking directly supports national gaenda of clean cooking initiative.

5.4 Compressed Natural Gas (CNG) supply and consumption

5.4.1 CNG production

The CNG production increased significantly from 4,984,986.57kg in FY 2022/23 to 7,268,161.87kg in FY 2023/24, equivalent to a 46% increase. The increase was due to the growing demand for natural gas for vehicles and industries whereby virtual pipelines became an option for supplying gas to industrial customers away from the natural gas distribution networks. Another reason for the increase in CNG production was the increase of CNG mother stations from two (2), PAET Ubungo and Dangote Mtwara, to four (4), whereby the two additional stations, Dangote Mkuranga and TAQA Airport were licensed and became operational in FY2023/24.

Figure 17 shows the CNG production from each service provider in FY 2023/24 and **Table 34** shows the trend of CNG production for FY 2022/23 and 2023/24. The CNG production at Dangote in Mtwara, decreased by 31% compared to the previous financial fear, the reason being the commissioning of the new Dangote CNG station at Mkuranga which complement each other.

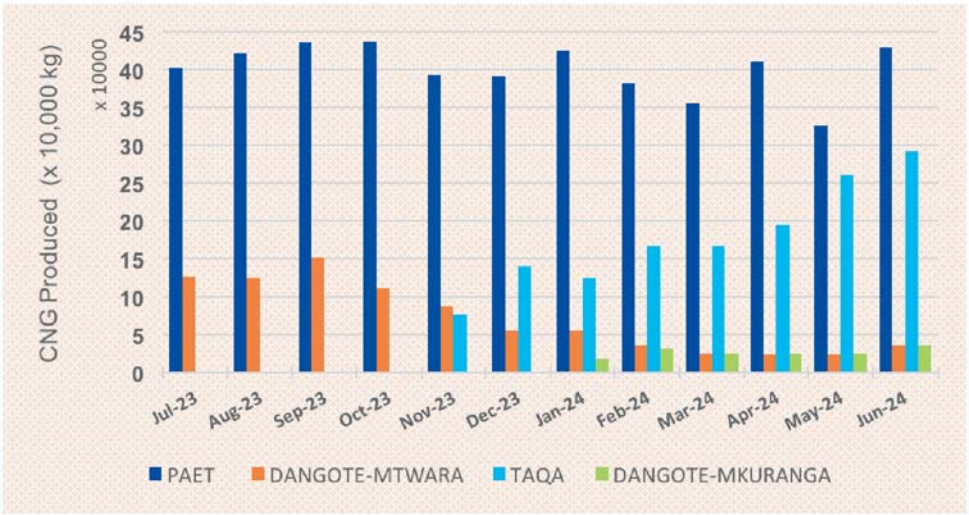


Figure 15: CNG Production in FY 2023/24

Table 34: The CNG production from FY 2022/23 to FY 2023/24

Operator	FY 2022/23	FY 2023/24	% Increment
PAET – Ubungo, Dar es Salaam	3,734,245.82	4,815,397.57	29%
DANGOTE - Mtwara	1,250,740.74	863,134.00	-31%
DANGOTE – Mkuranga, Pwani		162,796.00	0%
TAQA – Airport, Dar es Salaam		1,426,834.30	0%
TOTAL	**4,984,986.56**	**7,268,161.87**	**46%**

Figure 18 represents the CNG production trend for four consecutive years from FY 2020/21, while **Table 35** shows the percentage increase of CNG production in the four successive financial years.

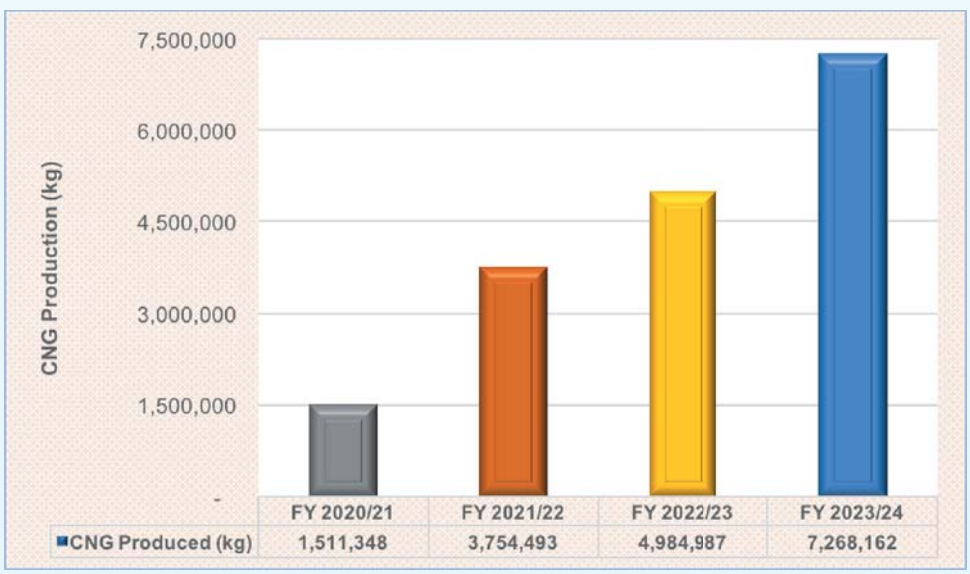


Figure 16: Trend of CNG production from FY 2020/21 to FY 2023/24

Table 35: Annual Percentage increment of CNG production

Financial Year	Produced CNG (Kg)	% Yearly Increment	% Increment Compared to FY 2023/24
FY 2020/21	1,511,347.85		381%
FY 2021/22	3,754,493.30	148%	94%
FY 2022/23	4,984,986.56	33%	46%
FY 2023/24	7,268,161.87	46%	

5.4.2 CNG consumption

In FY 2023/24, CNG vehicles consumed a total of 5,662,448.20 kg, equivalent to 78% of the total produced CNG. This is equivalent to a 75% increase compared to 3,239,873.03 kg of CNG dispensed into CNG vehicles in the previous financial year. The remaining 22% of the produced CNG in FY2023/24 was supplied to industries and commercial customers through the virtual pipelines whereby 20% went to industries whereas commercial customers consumed only 2%. **Table 36** shows the details of CNG customer categories and consumption patterns.

Table 36: CNG supplied to customers for FY 2023/24

CNG Customer Categories	Amount Consumed (Kg)	% Consumption
CNG Vehicles	5,662,448.20	78%
Industrial	1,426,950.88	20%
Commercial	178,762.78	2%
TOTAL	**7,268,161.87**	

5.4.2.1 Dispensed CNG at filling station

During the period under review, the total refueling frequency was 700,389 CNG vehicles compared to 178,773 vehicles in FY 2022/23 and 73,659 vehicles in the year before. This current refueling frequency translates to about 1,919 CNG vehicles per day, about quadruple compared to 490 CNG vehicles refueled per day in the previous year. The increase in refueling frequency was attributed to the growing number of CNG-Vehicles, imported CNG–tricycles (Bajaj), and CNG filling stations. The monthly dispensing frequency of CNG from each CNG filling station is shown in **Figure 19.**

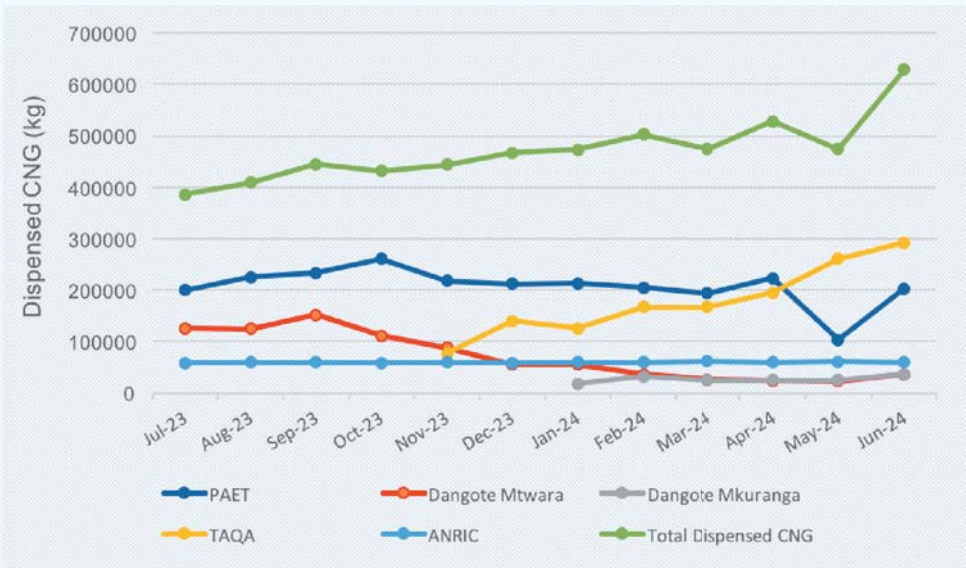


Figure 17. Monthly Dispensed CNG in kg

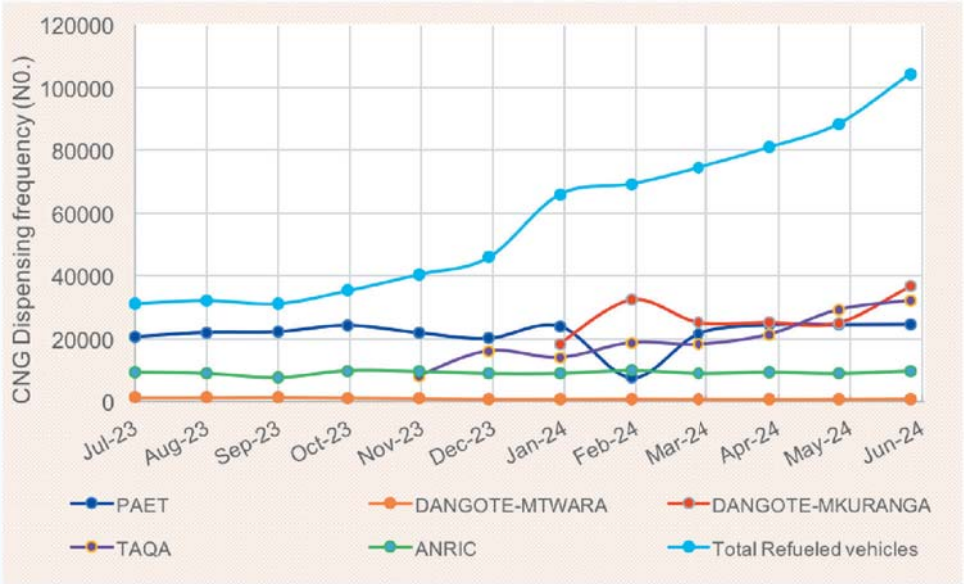


Figure 18: CNG-average daily refilling frequency

5.4.2.2 Non-Vehicle CNG consumption

Apart from CNG filling stations, CNG is also supplied to Serena Hotel and the Mikoani Edible Oil industry both located in Dar es Salaam, and the Global Aluminum industry located at Kibaha in Pwani region. This model of natural gas supply is referred to as virtual pipelines. CNG supply to Global Aluminum by ANRIC started in January 2024.

During the period under review, the CNG supplied to non-vehicles was 1,605,713.66 kg, equivalent to 22% of the total produced CNG. **Figure 19** shows a trend of CNG supply to non-vehicles customers in FY 2023/24.

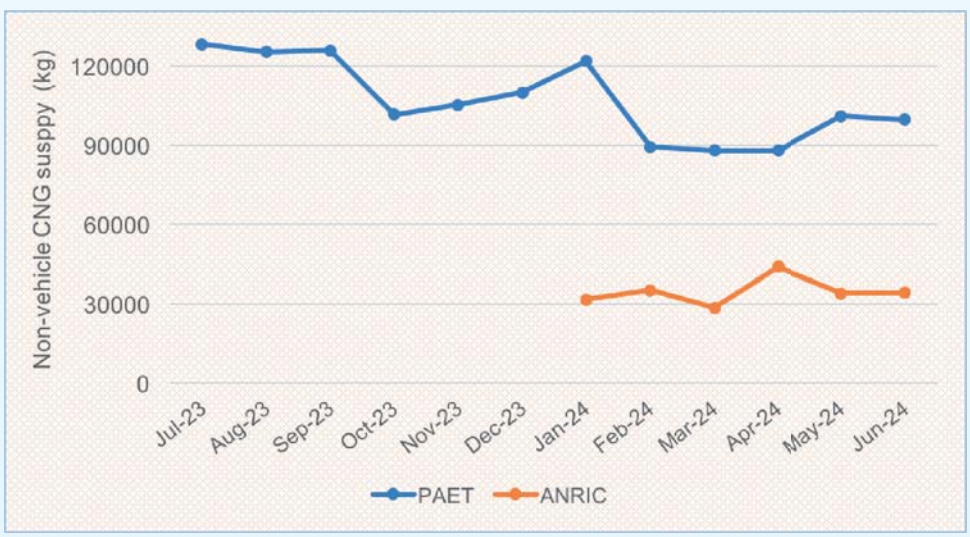


Figure 19. The trend of CNG supply to Non-vehicles

5.4.3 Cost Saving on Using CNG as fuel in vehicles

Various studies regarding cost saving from using CNG as fuel has shown that, using CNG as fuel in vehicles can result in cost savings of 40% to 60% compared to conventional fuels like gasoline or diesel.

5.5 Market share of Natural Gas operators

The natural gas market share is monitored in two aspects; the overall supplied natural gas and the sales to individual market segments, specifically power generation, industries, and dispensed CNG for the transportation sector.

5.5.1 Market share for overall supplied natural gas

In FY2023/24, GASCO, the subsidiary company of TPDC was an overall leading natural gas supplier with a market share of 75.52%, followed by PAET and M&P with an overall market share of 23.14% and 1.34%; respectively. The higher rate of GASCO market share is due to GASCO's distribution network which is connected and supplies natural gas to eight (8) out of eleven gas-fired power plants. **Table 37** shows the overall market shares of natural gas suppliers in FY 2023/24.

Table 37: Natural Gas supplier overall market shares in FY 2023/24

Natural Gas Supplier	Supplied volume (MMscf)	% Market Share
GASCO/TPDC	61,947.30	75.52%
PAET	18,982.10	23.14%
M&P	1,095.63	1.34%
Total Supplied Gas	**82,025.03**	

5.5.2 Market share of natural gas supply to power generation

Similar to the overall supply of natural gas, GASCO was also leading the market share for the natural gas supplied to power generation, with a 78.4% share. PAET and M&P contributed 20% and 1.6% shares respectively. **Table 38** indicates the market share of natural gas suppliers for power generation.

Table 38: Market share of natural gas suppliers for power generation

Supplier	Supplied volume (MMscf)	% Market Share
GASCO/TPDC	54,958.10	78.4%
PAET	14,007.72	20.0%
M&P	1,095.63	1.6%
Total	**70,061.45**	

5.5.3 Market share of natural gas supply to industries

PAET and GASCO were the only suppliers of piped natural gas to industries at a market share of 59% and 41% respectively. In January 2024, Anric Gas Technology Tanzania Company Limited started supplying natural gas to industry in the form of CNG via a virtual pipeline. However, the quantity of the CNG supplied was insignificant compared to the volume supplied through piped gas, hence not counted in the market share. **Table 39** shows the market share of natural gas supplies to the industries in FY 2023/24.

Table 39: Market share for industries supplies in FY 2023/24

Gas Supplier	Supplied volume (MMscf)	% Market Share
PAET	6,920.30	59%
GASCO/TPDC	4,719.01	41%
Total	**11,639.30**	

5.5.4 Market share of dispensed CNG at refueling stations

Out of the existing five CNG filling stations, PAET, which is the oldest station, was leading with a market share of 44%. Although operated for only eight months in FY 2023/24, starting from November 2023, TAQA Dalbit was the second-leading CNG filling station with a market share of 25.2%. Dangote Mtwara, ANRIC, and Dangote Mkuranga had a market share of 15.2%, 12.7%, and 2.9%; respectively.

However, Dangote Mkuranga operated for only six (6) months, and like Dangote Mtwara, is for Dangote trucks only. **Table 40** shows the total market share for each CNG dispensing station

Table 40. Market share of the Dispensed CNG

CNG Station	Dispensed CNG (kg)	% Market Share
PAET – Ubungo (Dar)	2,491,604.90	44.0%
TAQA – Kipawa (Dar)	1,426,834.30	25.2%
Dangote - Mtwara	863,134.00	15.2%
ANRIC – TAZARA (Dar)	718,079.00	12.7%
Dangote - Mkuranga	162,796.00	2.9%
Total dispensed CNG (kg)	**5,662,448.20**	

6. LOCAL CONTENT

In the Financial Year 2023/24, the EWURA monitored local content requirements by regulated entities in the midstream and downstream natural gas sub-sector. The compliance of regulated entities was observed to be in line with the Petroleum (Local Content) Regulations, 2017.

6.1 Local Content performance

The Authority monitored the local content performance of the regulated entities by assessing the number of local employees, trained local staff, utilization of local financial services, local insurance policies, and the allocation of local procurements in compliance with their local content and procurement plans. The regulated entities complied with local content requirements as shown in **Annex 14**. It was clear that regulated entities sourced most of materials, goods, and services locally except some goods that could not be sourced domestically with the Authority's approvals.

6.2 Local Suppliers and Service Providers Database

During the Financial Year 2023/24, 212 new companies were registered in the Local Suppliers and Service Providers (LSSP) database, equivalent to an 11% increase compared to the previous financial year. The total number of local companies registered with EWURA LSSP database amounted to 2,132, up from 1,920 registered in FY 2022/23. This was attributed to increased awareness on advantages of local participation in implementing oil and gas projects, such as the EACOP and natural gas projects.

7. FINANCIAL PERFORMANCE

This section highlights the financial performance of the four (4) natural gas-regulated entities during the FY 2023/24 compared to the previous three financial years. Financial performance was assessed based on revenue generation and costs incurred in natural gas processing, transmission, and distribution. The financial performance of PAET, TPDC, M&P and Songas Limited was analysed.

7.1 Revenue Generation

During the period under review, total revenue generated from the sale of natural gas increased by 21% from TZS 862 billion recorded in FY 2022/23 to TZS 1,040 billion in FY 2023/24. The revenue for TPDC increased by 25%, Songas by 20% and PAET by 10%. The revenue from M&P decreased by 19% due to decreased natural gas demand from M&P. **Figure 20** shows revenue generation by companies for four Financial Years.

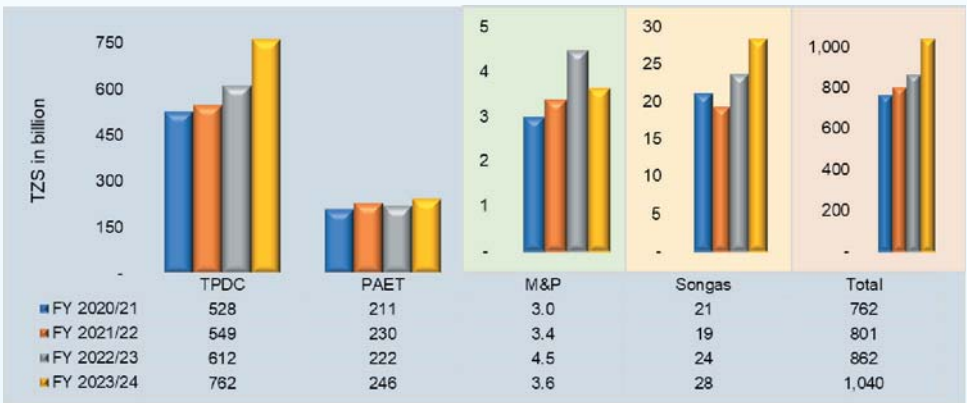


Figure 20: Revenue generation

The increase in revenue generation was attributed to the new gas-fired power plant located at Mtwara (BVS No. 1), the increased use of natural gas for gas-fired power plants to offset the deficit from hydropower plants due to inadequate rainfalls as well as the connection of new industries and other commercial customers.

7.2 The Natural Gas operation costs

In FY 2023/24, total operational costs for natural gas increased by 21% from TZS 234 billion recorded in FY 2022/23 to TZS 284 billion in FY 2023/24. The overall operational costs for TPDC increased by 26%, PAET by 6%, M&P by 7% and Songas by 7%. **Figure 21** shows a four-year trend of operational costs by companies.

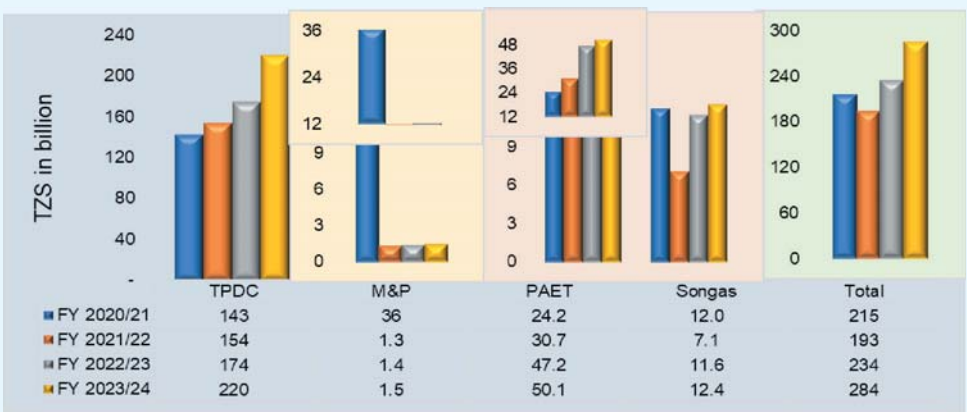
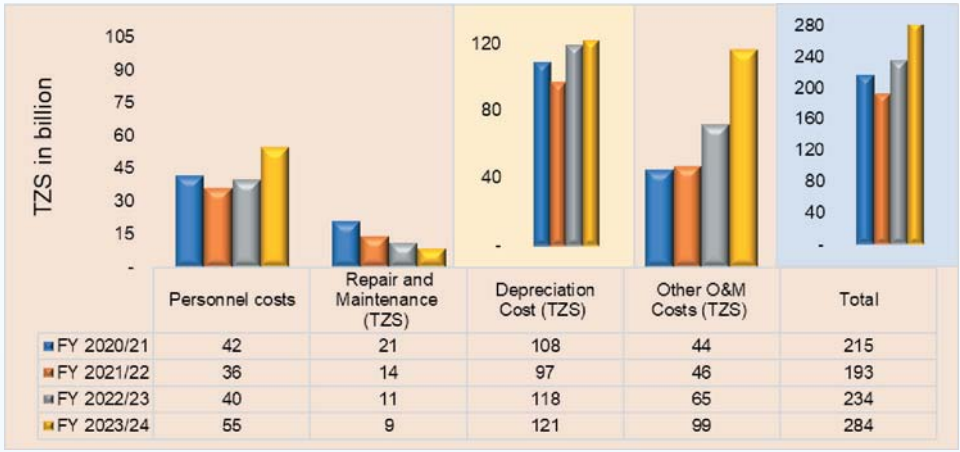


Figure 21: Total Natural Gas operation costs by utilities

In FY 2023/24, the major cost item in natural gas operational costs was depreciation which amounted to 43%. The staff costs amounted to 19%, repair and maintenance 3% and other costs 35% of all-natural gas operational costs. In FY 2023/24, the staff costs increased by 38% due to recruitment of new staff and improved scheme of services. The repair and maintenance costs decreased by 23% due to heavy maintenance conducted in the previous year. Depreciation costs increased by 3% and other costs increased by 53%. **Figure 22** shows a four-year trend of operational costs by companies.



	Personnel costs	Repair and Maintenance (TZS)	Depreciation Cost (TZS)	Other O&M Costs (TZS)	Total
FY 2020/21	42	21	108	44	215
FY 2021/22	36	14	97	46	193
FY 2022/23	40	11	118	65	234
FY 2023/24	55	9	121	99	284

Figure 22: Total Natural Gas operational costs by categories

7.2.1 Processing costs

During the reporting period, total costs for natural gas processing increased by 15% from TZS 84 billion in FY 2022/23 to TZS 97 billion in FY 2023/24. In general, processing costs increased due to the growing natural gas production and consumption. **Figure 23** shows the trend of natural gas processing costs for three years from FY 2020/21 to FY 2023/24.

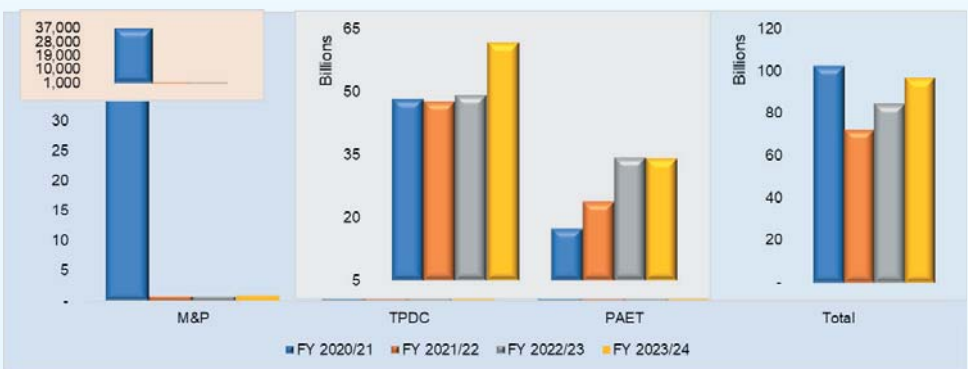
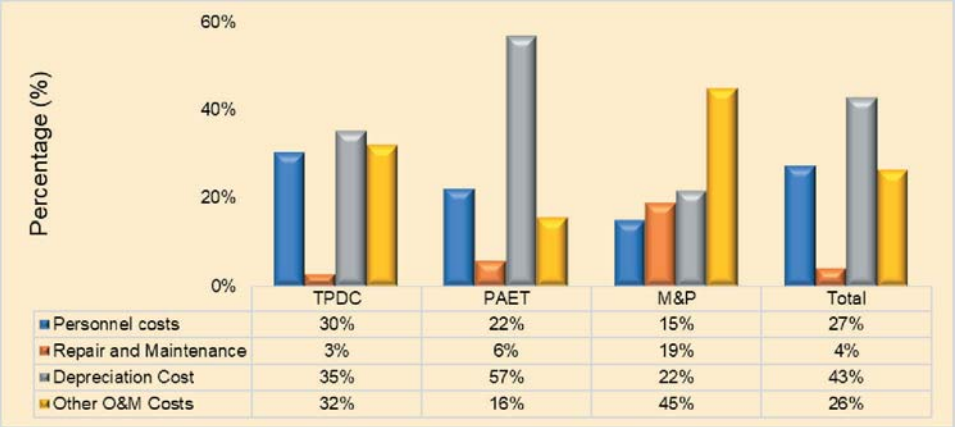


Figure 23: Processing cost of M&P, TPDC and PAET

Based on the analysis made, the major cost item in natural gas processing for TPDC and PAET was depreciation while M&P was other O&M Costs. **Figure 24** the processing costs structure of TPDC, PAET and M&P in FY 2023/24.

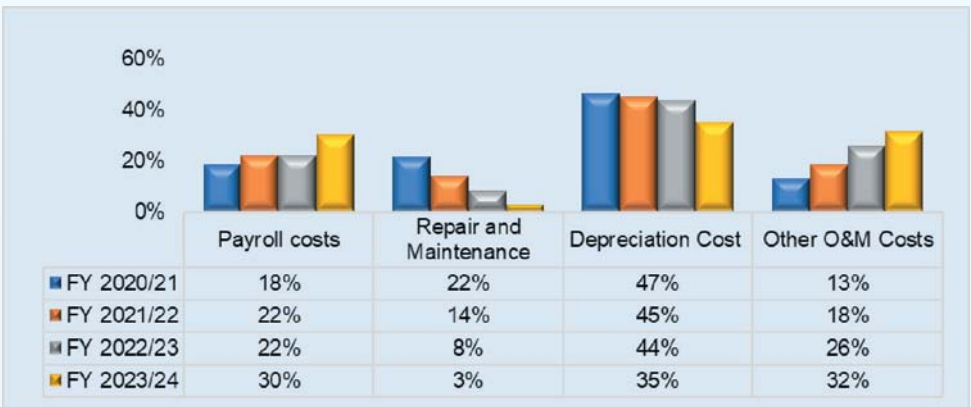


	TPDC	PAET	M&P	Total
Personnel costs	30%	22%	15%	27%
Repair and Maintenance	3%	6%	19%	4%
Depreciation Cost	35%	57%	22%	43%
Other O&M Costs	32%	16%	45%	26%

Figure 24: Processing cost of TPDC, PAET and M&P in FY 2023/24

7.2.2 TPDC processing costs

The natural gas processing costs for TPDC increased by 26% from TZS 49 billion in FY 2022/23 to TZS 62 billion in FY 2023/24. The major cost item was depreciation, which was 35% of total natural gas processing costs. The repair and maintenance cost dropped significantly due to the major overhaul of four gas engines located at Madimba and Songo Songo. **Figure 25** shows TPDC's processing cost structure by percentage for four years.

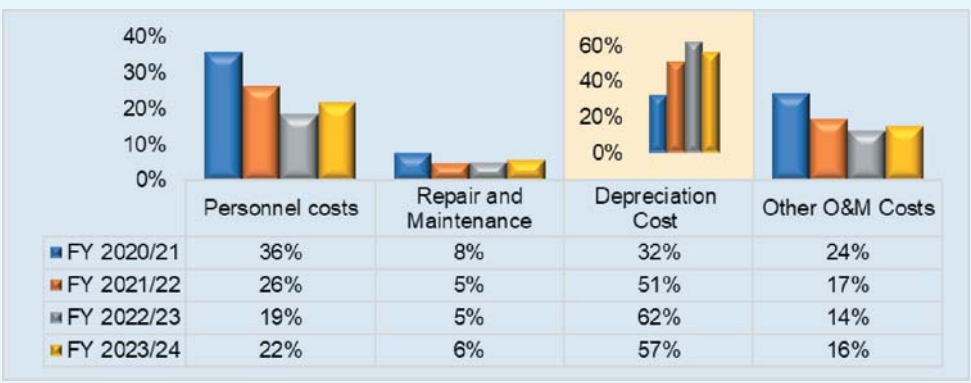


	Payroll costs	Repair and Maintenance	Depreciation Cost	Other O&M Costs
FY 2020/21	18%	22%	47%	13%
FY 2021/22	22%	14%	45%	18%
FY 2022/23	22%	8%	44%	26%
FY 2023/24	30%	3%	35%	32%

Figure 25: TPDC's processing cost structure by Percentage

7.2.3 PAET processing costs

During the period under review, the natural gas processing cost for PAET decreased by 0.5% from TZS 34.3 billion in FY 2022/23 to TZS 34.1 billion in FY 2023/24. The major cost item was depreciation, which was 57% of total natural gas processing costs. **Figure 26** shows PAET's processing cost structure by percentage for four years.

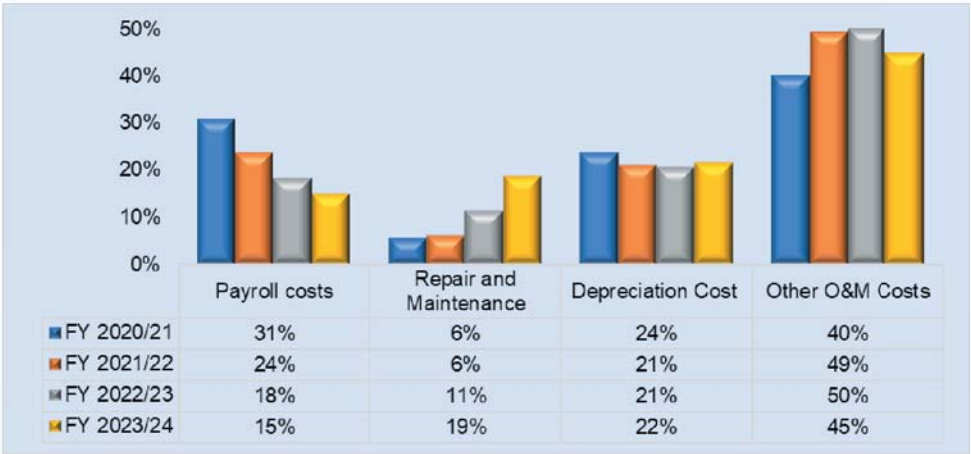


	Personnel costs	Repair and Maintenance	Depreciation Cost	Other O&M Costs
FY 2020/21	36%	8%	32%	24%
FY 2021/22	26%	5%	51%	17%
FY 2022/23	19%	5%	62%	14%
FY 2023/24	22%	6%	57%	16%

Figure 26: PAET's processing cost structure by Percentage

7.2.4 M&P processing costs

In the reporting period, the natural gas processing costs for M&P increased by 7% from TZS 723 million in FY 2022/23 to TZS 826 million. The major item was other O&M which was 45% of total natural gas processing costs. **Figure 27** shows M&P's processing cost structure by percentage for four years.



	Payroll costs	Repair and Maintenance	Depreciation Cost	Other O&M Costs
FY 2020/21	31%	6%	24%	40%
FY 2021/22	24%	6%	21%	49%
FY 2022/23	18%	11%	21%	50%
FY 2023/24	15%	19%	22%	45%

Figure 27: M&Ps' processing cost structure by Percentage

7.3 Transmission costs

During the period under review, natural gas transmission costs increased by 16% from TZS 86 billion recorded in FY 2022/23 to TZS 99 billion. Generally, the transmission costs for both utilities increased compared to the previous year and the major item in the period under review was depreciation cost amounting to 67% of all transmission costs. **Figure 28** and **Figure 29** show transmission costs for four years from FY 2020/21 to FY 2023/24 by values and percentage, respectively.

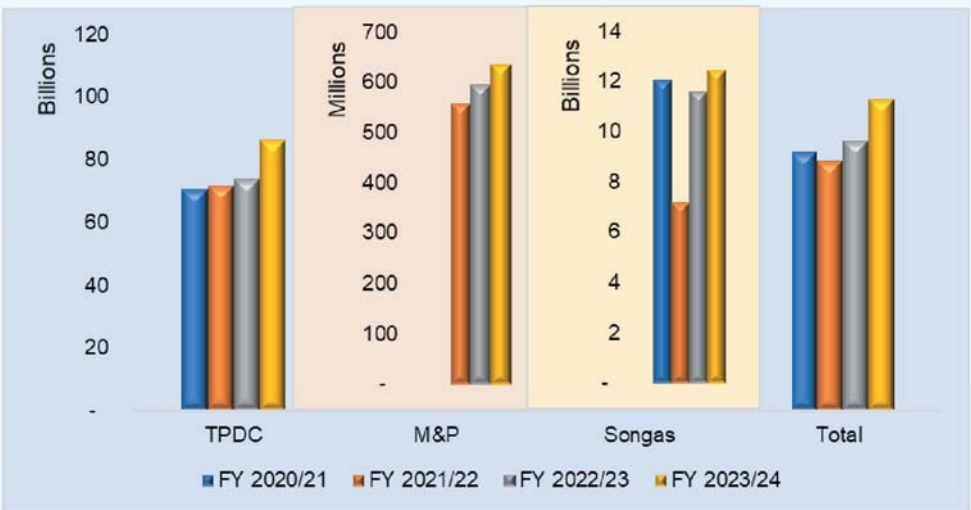
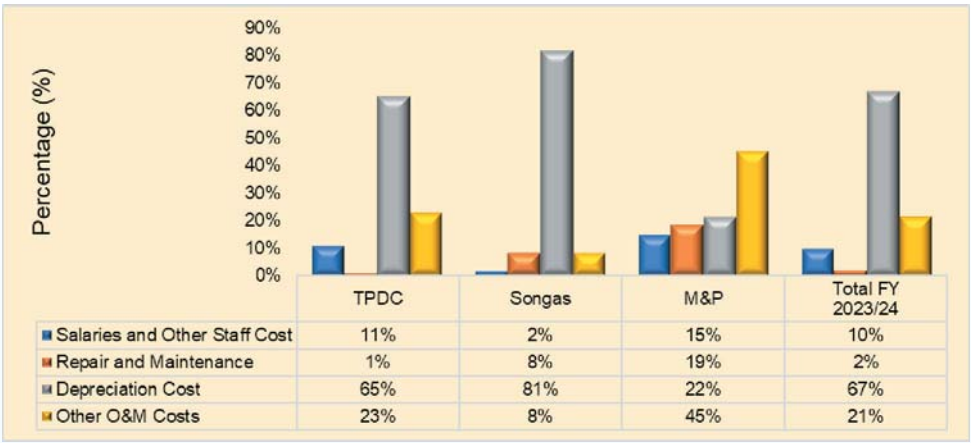


Figure 28: Transmission cost of TPDC, M&P and Songas by Values



	TPDC	Songas	M&P	Total FY 2023/24
Salaries and Other Staff Cost	11%	2%	15%	10%
Repair and Maintenance	1%	8%	19%	2%
Depreciation Cost	65%	81%	22%	67%
Other O&M Costs	23%	8%	45%	21%

Figure 29: Transmission cost of TPDC, M&P and Songas by Percentage

7.3.1 TPDC transmission costs

During the year under review, natural gas transmission cost for TPDC increased by 17% from TZS 74 billion in FY 2022/23 to TZS 86 billion in FY 2023/24. The major item in the period under review was depreciation cost amounting to 65% of all transmission costs. The substantial depreciation cost was due to a high regulatory asset base. **Figure 30** shows the trend of TPDC's natural gas transmission costs for four years.

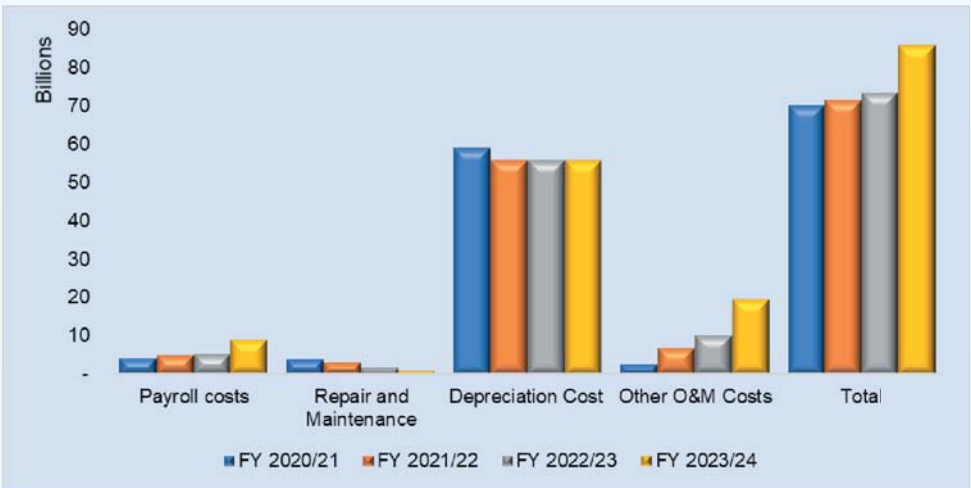


Figure 30: TPDCs' transmission costs

7.3.2 M&P transmission costs

During the year under review, natural gas transmission cost for M&P increased by 7% from TZS 593 million in the preceding year to TZS 634 million in FY 2023/24, major factor being other O&M amounting to 45% of all transmission costs. **Figure 31** shows the trend of M&P's natural gas transmission costs for four years.

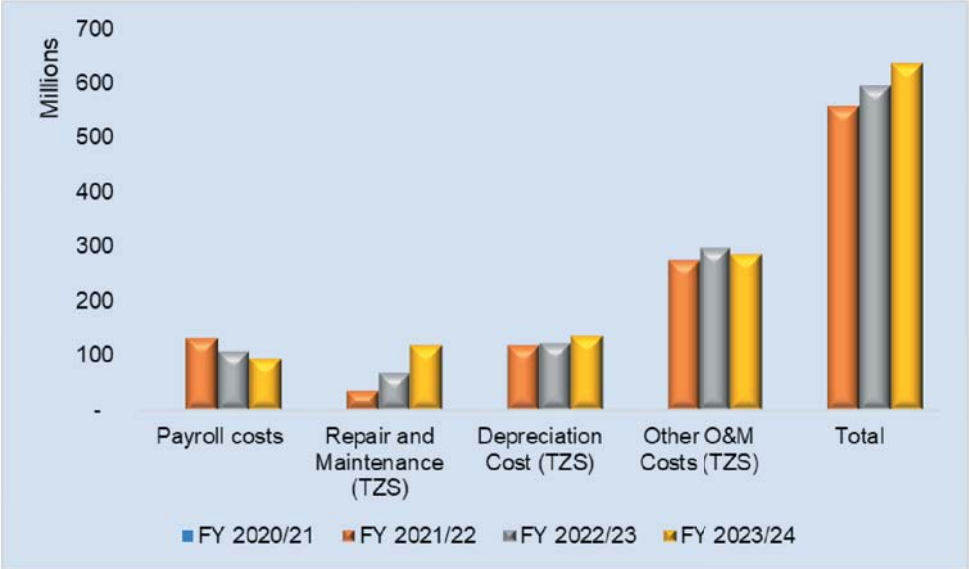


Figure 31: M&Ps' transmission costs

7.3.3 Songas transmission costs

In FY 2023/24, natural gas transmission costs for Songas increased by 7% from TZS 11.6 billion in FY 2022/23 to TZS 12.4 billion. The increase of transmission costs was caused by depreciation cost amounting to 80% of all transmission costs. **Figure 32** shows the trend of Songas' natural gas transmission costs for four years.

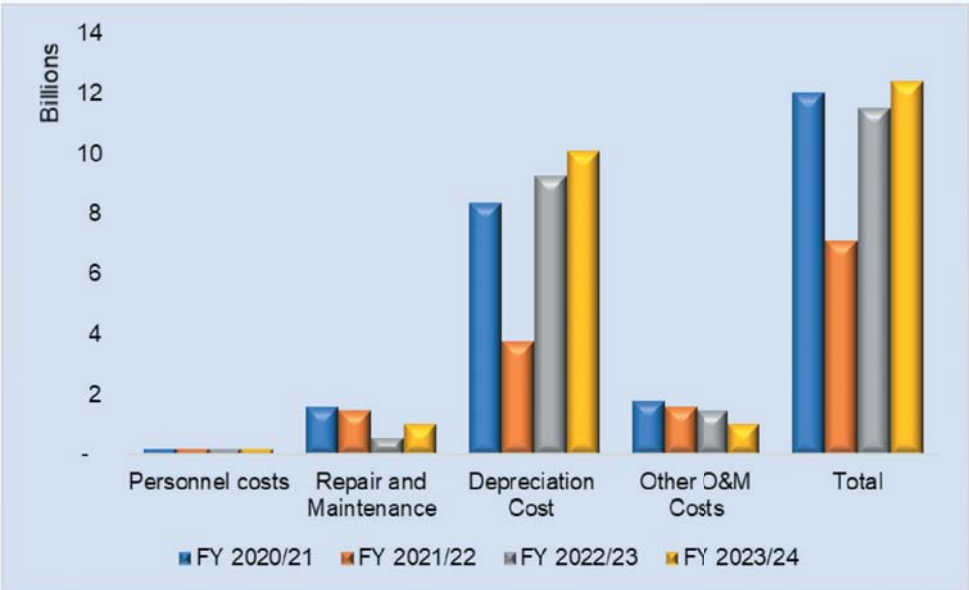


Figure 32: Songas' transmission cost

7.4 Distribution costs

During FY 2023/24, total natural gas distribution costs increased by 37% from TZS 65 billion in FY 2022/23 to TZS 88 billion. The increase was a result of other O&M amounting to 60% of all distribution costs. **Figure 33** and **Figure 34** show the trend of distribution costs for four years from FY 2020/21 to FY 2023/24 by values and percentages, respectively.

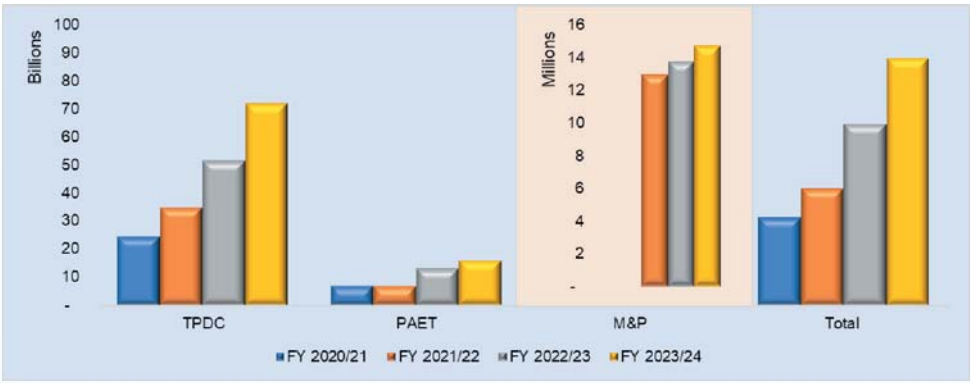
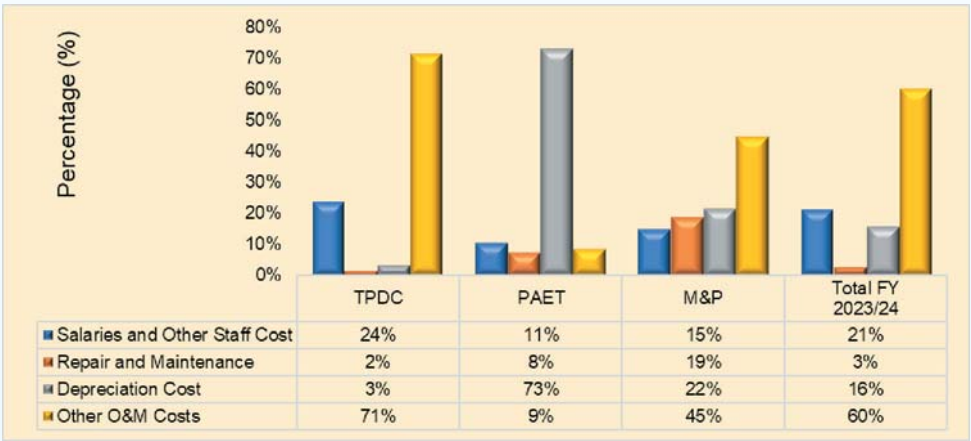


Figure 33: Total distribution costs of TPDC, PAET and M&P by values



	TPDC	PAET	M&P	Total FY 2023/24
Salaries and Other Staff Cost	24%	11%	15%	21%
Repair and Maintenance	2%	8%	19%	3%
Depreciation Cost	3%	73%	22%	16%
Other O&M Costs	71%	9%	45%	60%

Figure 34: Distribution costs of TPDC, PAET and M&P by Percentage.

7.4.1 TPDC distribution costs

Natural gas distribution cost for TPDC increased by 40% from TZS 52 billion in FY 2022/23 to TZS 72 billion in FY 2023/24. The major item in the period under review was other O&M costs amounting to 71% of all distribution costs. **Figure 35** shows the trend of TPDC's distribution costs for four years.

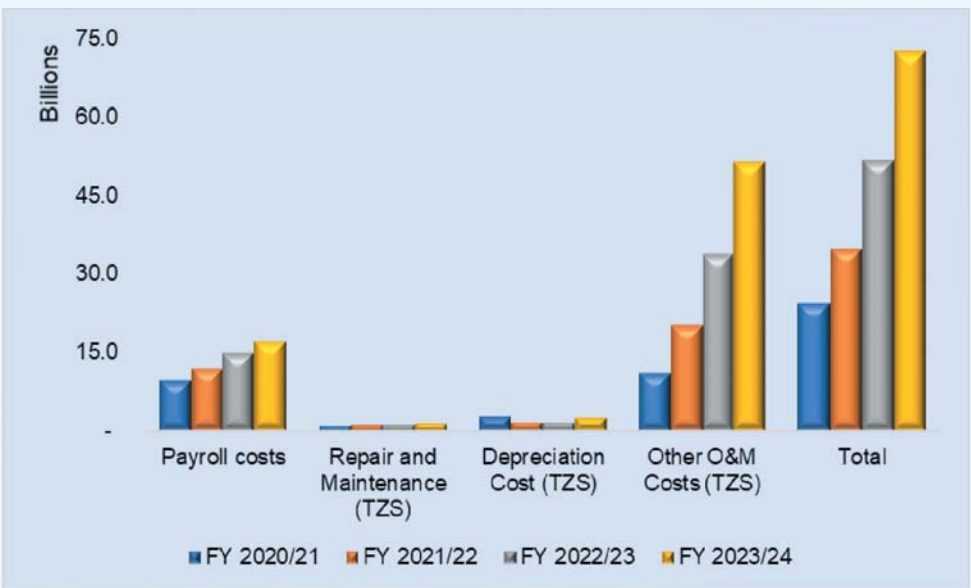


Figure 35: TPDCs' distribution costs

7.4.2 PAET distribution costs

Natural gas distribution cost for PAET increased by 24% from TZS 13 billion in FY 2022/23 to TZS 16 billion in FY 2023/24. The major item in the period under review was depreciation cost amounting to 73% of all distribution costs. The substantial amount of depreciation was due to an increase in additional gas sold (depreciation by depletion method) **Figure 36** shows the trend of PAET's distribution costs for four years.

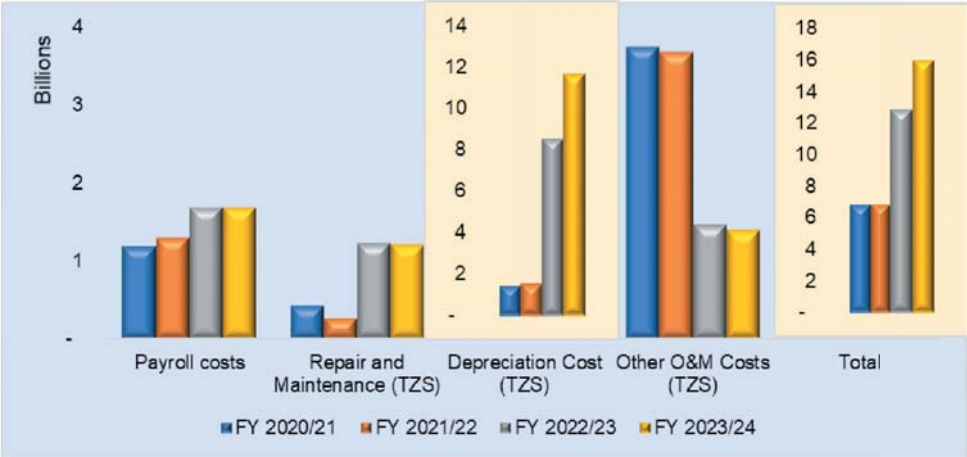


Figure 36: PAET's distribution costs

7.4.3 M&P distribution costs

During the year under review, natural gas distribution cost for M&P increased by 7% from TZS 13.8 billion in FY 2022/23 to TZS 14.8 billion in FY 2023/24. The major item in the period under review was other O&M costs which amounted to 45% of all distribution costs. **Figure 37** shows the trend of M&P's distribution costs for four years.

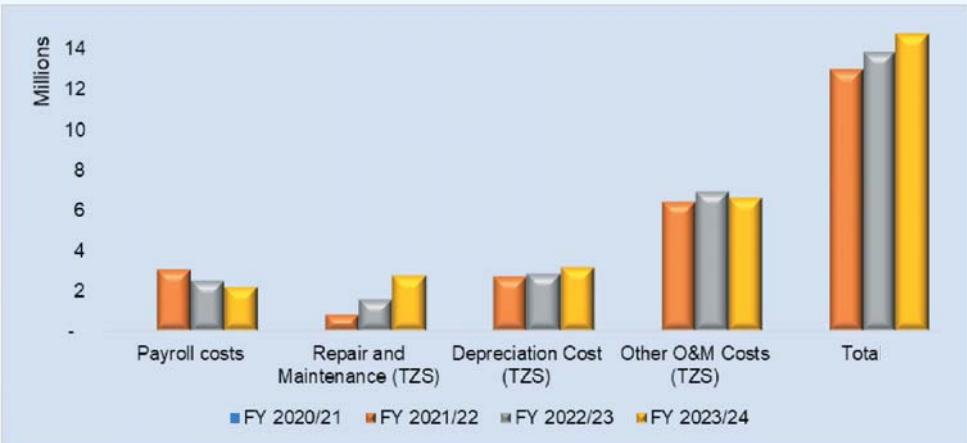


Figure 37: M&P's distribution costs

7.5 Ratio Analysis

A financial ratio analysis was made to assess the overall financial performance of regulated utilities. Financial performance analysis of regulated entities considered current ratio, net profit margin and return on assets.

7.5.1 Current Ratio

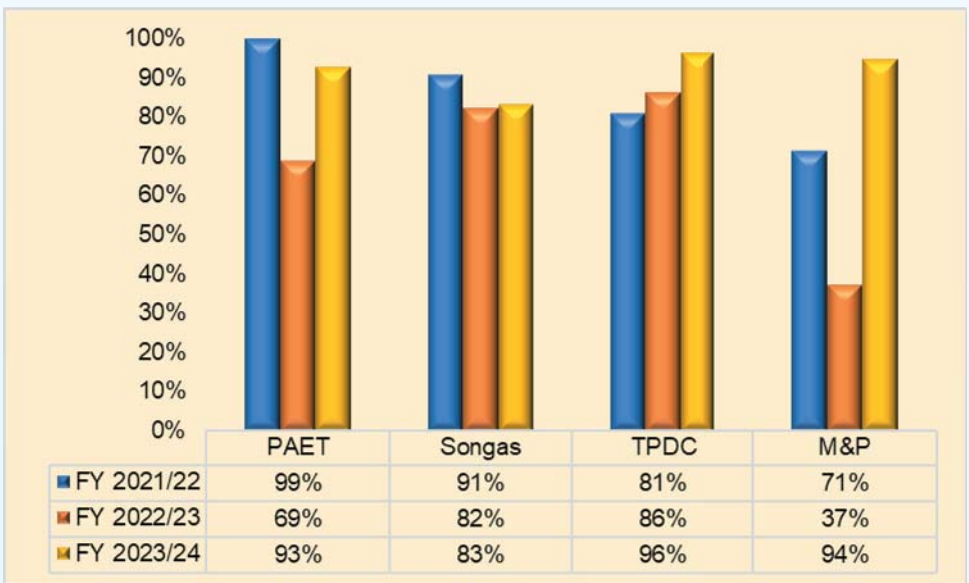
During the period under review, both utilities recorded a current ratio of one and above, implying that they were in a good position to meet short-term obligations. **Figure 38** shows the trend of the current ratio for four Financial Years.

	PAET	Songas	TPDC	M&P
FY 2020/21	0.7	1.5	1.6	0.9
FY 2021/22	0.8	1.6	1.2	1.1
FY 2022/23	1.2	1.2	5.5	1.6
FY 2023/24	1.4	1.7	1.7	1.3

Figure 38: Current Ratios

7.5.2 Collection Efficiency

During the year under review, TPDC recorded a higher collection efficiency of 96% compared to other utilities. It is also an improvement compared to FY 2022/23 whereby it recorded an efficiency of 86%. In FY 2023/24, the lowest collection efficiency of 83% was recorded by Songas. This is also an improvement compared to 82% recorded in FY 2022/23. **Figure 39** shows a trend of three years of collection efficiency by utilities.

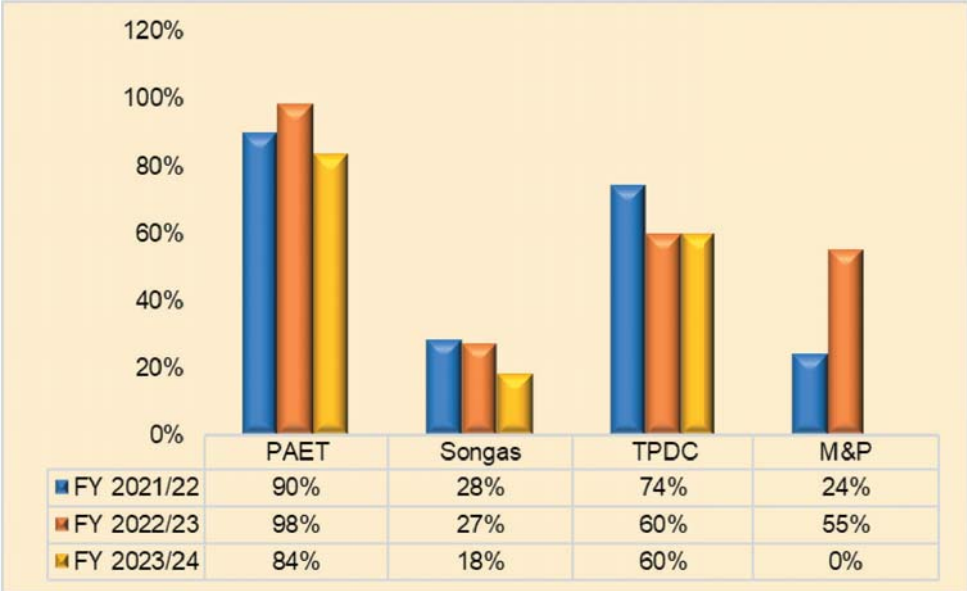


	PAET	Songas	TPDC	M&P
FY 2021/22	99%	91%	81%	71%
FY 2022/23	69%	82%	86%	37%
FY 2023/24	93%	83%	96%	94%

Figure 39: Collection efficiency by utilities

7.5.3 Accounts Receivables lasted for more than 90 days

During the year under review, accounts receivables that lasted for more than 90 days were substantial for PAET, Songas and TPDC. M&P had zero receivables that lasted for more than 90 days. However, PAET recorded 84%, TPDC 60% and Songas 18%. In principle, the accounts receivable should not last for more than 90 days (three months) to reduce the inefficiency of cash flow and the possibility of bad debts. **Figure 40** shows a three-year trend of accounts receivables that lasted for more than 60 days by utilities.



	PAET	Songas	TPDC	M&P
FY 2021/22	90%	28%	74%	24%
FY 2022/23	98%	27%	60%	55%
FY 2023/24	84%	18%	60%	0%

Figure 40: Accounts Receivables that lasted for more than 60 days

8. REGULATORY IMPACT ON THE NATURAL GAS SUB-SECTOR

In the previous financial year, the focus remained on improving the reliability and security of natural gas supply, enhancing safety, promoting local participation, and investing in the mid and downstream natural gas sub-sector. The Authority's efforts included monitoring compliance and enforcing regulatory tools to ensure positive impacts in the sub-sector in FY 2023/24 in the following apsects:

(a) Reliability and security of Natural Gas supply

The Authority monitors performance of the regulated entities, resulting into enhanced natural gas processing plants, transmission and distribution pipeline's reliability. The facilities' reliability played an important role in ensuring natural gas reliability throughout the year for power generation, CNG-Vs, industries, commercial, institutions and households.

(b) Compliance with Health, Safety, and Environmental protection (HSE):

Natural gas infrastructure, if not managed properly, can potentially endanger human health, safety, the environment, and property. Therefore, it is crucial to prioritize "health, safety, security of supply, and environment protection (HSSE)" in natural gas operations. To ensure the natural gas infrastructure's integrity is upheld, the Authority conducts regular statutory compliance monitoring and inspections every three months. As a result of these quarterly inspections, operators in the sub-sector were vigilant in maintaining operational standards, ensuring the safe operation of the facilities.

(c) Participation of Tanzanians

In the Fiscal Year FY2023/24, there was a noticeable increase in the involvement of Tanzanians and local companies in the mid and downstream operations. It was observed that all facilities were operated by Tanzanians, reflecting a positive trend towards local participation. Additionally, the number of professionals and local companies registered in the Common Qualification System (CQS) continued to increase, as outlined in the Local Content Chapter. The Authority's ongoing efforts to monitor and ensure compliance with the local content requirement in the mid and downstream natural gas sub-sector, as stipulated in the Local Content Regulations, are commendable.

(d) Online service delivery

Deployment of an online application system (The Licensing and Order Information System - LOIS) has simplified access and processing of applications for Construction Approvals and Operational Licences, as prospective investors can easily submit applications online at any time, from anywhere in the world. In FY2023/2024, the Authority continued to receive and evaluate online applications, and no single application was processed outside the system.

(e) Attracting investment

The intervention of the Authority, which involved raising awareness and coordinating efforts among key stakeholders, led to a notable increase in the number of participants in the mid and downstream natural gas sub-sector. These participants encompassed CNG filling station operators, CNG vehicle conversion workshops, CNG vehicle certifiers, and industrial, commercial, and institutional CNG customers. In FY2023/24, the Authority continued with its coordination role, uniting both government institutions and private companies in the mid and downstream natural gas sub-sector to establish a shared agenda aimed at fostering an inviting environment for attracting additional investors to the natural gas sub-sector.

(f) Information and Data Hub

Throughout FY2023/24, NPGIS, LOIS, and CQS continued to play a pivotal role in performing regulatory activities in the mid and downstream natural gas sub-sector. The Authority places great emphasis on the significance of maintaining records and disseminating data and information about the natural gas sub-sector.

9. FUTURE OUTLOOK OF THE NATURAL GAS SUB-SECTOR

Since its commercialization n in 2004, the Natural Gas has played an important role in Tanzania's energy supply balance and in achieving social-economic and environmental transformation. This is attributed to the fact that natural gas is locally available and has proven to be a reliable and efficient energy source that burns much cleaner than other fossil fuels.

Like other countries with natural gas reserves, Tanzania is determined to diversify and expand the utilization of natural gas in various economic sectors, including power generation, industrial, transportation, commercial, institutional, and residential settings. Moreover, the increasing popularity of CNG vehicles is spurring investments in CNG refilling stations. To meet the rising demand, the following multiple natural gas projects are at various stages of development and are expected to become operational soon: -

(a) The projects to enhance natural gas production capacity. These projects include the repair of existing wells to improve their output (wells workover) at the Songo Songo gas field; the planned program for the drilling of additional wells within the current producing fields, Mnazi Bay and Songo Songo; and the development of the new Ntorya gas field that will be connected to the existing main gas infrastructure at Mtwara. These initiatives are projected to become operational within a two-year timeframe starting in 2023;

(b) The construction of CNG stations in Dar es Salaam and Pwani regions, aimed at supplying natural gas to industries, institutions, and CNG filling stations for vehicles through a virtual pipeline system. As a result, a rapid increase in the number of industries using natural gas, CNG filling stations, as well as an expansion of CNG vehicle conversion workshops is expected;

(c) The projects for the expansion of natural gas distribution networks to connect new industries, hotels, institutions, and households in Pwani, Mtwara, Lindi, and Dar es Salaam regions;

(d) Emerging trans-border natural gas transmission pipeline projects. These projects aim to supply natural gas to Kenya and Uganda where engagement between the Government of Tanzania and the Governments of Kenya and Uganda are underway. The Expression of Interest (EOI) for the consultancy service to conduct a detailed feasibility study for the development of a natural gas transmission pipeline from Tanzania to Uganda was published on 19th April 2024;

(e) The Mini-LNG project targeting domestic markets and neighbouring countries and the Liquefied Natural Gas (LNG) project for export. These projects are currently under negotiation between the Government and investors and once successfully implemented will boost natural gas supply and consumption in the local market; and

The implementation of the above-mentioned projects will significantly improve the availability and consumption of natural gas for domestic and export markets. This will also enhance Tanzania's energy sector, reduce the dependence on imported fuels and carbon footprint, and stimulate socio-economic activities and development.

10. ACHIEVEMENTS, CHALLENGES AND RECOMMENDATIONS

Achievements, challenges, and recommendations for improvement of the mid and downstream natural gas sub-sector for FY 2023/24 are as follows:

10.1 Achievements

(a) Increase of 1.30% in Natural Gas processed from 81,849.40 MMscf in FY 2022/23 to 82,912.62 MMscf and an increase of 29.6% in natural gas consumption from 63,273.06 MMscf in FY 2022/23 to 82,025.03 MMscf in FY 2023/24 due to growing demand for industries, and the use of CNG vehicles and households for both existing and new customers;

(b) Natural gas contributed 67.1% of the total power generated and supplied to the National Grid;

(c) Increase of CNG-V refueling frequency from 490 CNG vehicles being refueling per day in the previous year to 1,919 CNG vehicles per day in the FY 2023/24;

(d) Registration of 212 new local companies in the Local Suppliers and Service Providers (LSSP) database which is equivalent to an increase of 11%;

(e) Increased regulated entities' revenues by 21% due to growing consumption of natural gas-fired power plants to offset hydropower plants during the dry season;

(f) Issuance of nine (9) construction approvals for natural gas supply lines to industries and CNG filling stations in Dar es Salaam and Pwani regions;

(g) Issuance of three (3) operational licenses for CNG activities in Dar es Salaam and Pwani regions;

(h) Regulated entities' increased compliance with safety and technical requirements as per good industries practice from 95% to 96%; and

(i) Use of Information Systems for regulatory data management.

10.2 Key Challenges and Recommendations

Key challenges observed in the mid and downstream natural gas sub-sector during the Financial Year 2022/23 and the recommendations thereof are as follows: -

(a) The demand for natural gas surpassed available production capacity, hence constrained demand for natural gas due to limited production from gas wells and declining field pressure of the Songo Songo gas field. The licensed upstream operators, including the recently issued development license over Ntorya Gas Field, were urged to fast-track and facilitate the advancement of petroleum operations in the new and existing natural gas fields;

(b) The current scenario sees over 80% of the natural gas produced being utilized for power generation, leading to a heavy reliance on limited natural gas resources. This is exacerbated by the reduced power output from hydroelectric plants due to low water levels in dams. Consequently, there is a pressing need to prioritize a more balanced energy mix. Exploring alternative renewable energy sources such as geothermal, wind and solar power for electricity generation can help alleviate the dependence on natural gas and hydro. Moreover, redirecting natural gas for use as raw materials and vehicle fuels, as well as in industrial operations, could yield even greater benefits; and

(c) The scarcity of CNG stations has led to prolonged waiting times and vehicle congestion. The price volatility of traditional liquid fuels, specifically petrol and diesel, primarily drives the increasing adoption of Compressed Natural Gas as vehicle fuel. As a result, there is a pressing need for additional CNG mother stations and filling stations to cater to the rising demand for CNG vehicle refueling. Collaborative efforts involving EWURA and other pertinent stakeholders are being made to stimulate investments in CNG infrastructure, including providing incentives to attract private capital.

ANNEXES

Annex 1: Natural Gas Regulatory Tools

S/N	Citation / Title	GN Number	Date Published
1.	The Petroleum (Local Content) Regulations, 2017	GN 197/2017	May 5, 2017
2.	Petroleum (Natural Gas) (Transmission and Distribution Activities) Rules, 2018	GN 176/2018	May 4, 2018
3.	The Petroleum (Natural Gas) (Storage) Rules, 2019	GN 182/2019	March 15, 2019
4.	The Petroleum (Natural Gas) (Regulatory Accounting and Reporting Standards) Rules, 2019	GN 183/2019	March 15, 2019
5.	The National (Petroleum and Natural Gas) (Information System) Rules, 2019	GN 184/2019	March 15, 2019
6.	Petroleum (Natural Gas) (Supply and Marketing Services) Rules, 2019	GN 219/2019	March 25, 2019
7.	Petroleum (Compressed Natural Gas) (Supply and Marketing Services) Rules, 2019	GN 220/2019	March 22, 2019
8.	Petroleum (Natural Gas) (Processing) Rules, 2019	GN 221/2019	March 22, 2019
9.	The Petroleum (Corporate Integrity Pledge) Regulations, 2019	GN 782/2020	Nov 1, 2019
10.	Petroleum (Natural Gas) Customer Services Charter Guidelines, 2019	N/A	2019
11.	The Petroleum (Natural Gas Midstream and Downstream) General Regulations, 2020	GN 270/2020	April, 17 2020
12.	Petroleum (Natural Gas) (Licensing Fees) Rules, 2020	GN 301/2020	May 1, 2020
13.	Petroleum (Natural Gas Pricing) Regulations, 2020	GN 353/2020	May 15, 2020
14.	The Energy and Water Utilities Regulatory Authority (Compounding of Offences) Regulations, 2020	GN 397/2020	May 29, 2020
15.	The EWURA Consumer Complaints Settlement Rules, 2020	GN 428/2020	June 5, 2020
16.	The Energy and Water Utilities Regulatory Authority (Electricity and Natural Gas) (Tariff Application and Rate Setting) Rules, 2021	GN 396/2021	May 21, 2021
17.	The developed tools include the Petroleum (Natural Gas) Midstream and Downstream Investment Guidelines 2022	N/A	2022
18.	Protection of Underground Infrastructure in Shared Wayleave Guidelines, 2022	N/A	2022

Annex 2: Natural Gas TBS Standards

S/N	CITATION / TITLE	STATUS	APPLICATION
1.	TZS 2255:2018 (1st Ed) Petroleum and natural gas industries	Published	Steel pipe for pipeline transportation systems
2.	TZS 1792: 2016 (1st Ed) Safety and control devices for gas burners and gas\-burning appliance — Particular requirements — Part 3	Published	Gas/air ratio controls, pneumatic type
3.	TZS 1970: 2017 – ISO 15649: 2001 (1st ed) Petroleum and natural gas industries	Published	Piping
4.	TZS 1790:2016 – ISO 23550:2011 (1st ed) Safety and control devices for gas burners and gas\-burning appliances	Published	General requirements
5.	TZS 1791:2016-ISO 23551-1:2012 Safety and control devices for gas burners and gas\-burning appliances — Particular requirements — Part 1	Published	Automatic and semi\-automatic valves
6.	TZS 1790:2016-ISO 23550:2011 Safety and control devices for gas burners and gas\-burning appliances	Published	General requirements
7.	TZS 1920-5:2016-ISO 1042-5:2004 Petroleum and natural gas industries — Cement and materials for well cementing — Part 5	Published	Shrinkage and expansion of well cement formulations at atmospheric pressure
8.	TZS 1920-4:2016-ISO 1042-4:2004 Petroleum and natural gas industries — Cement and materials for well cementing — Part 4	Published	Preparation and testing of foamed cement slurries at atmospheric pressure
9.	TZS 1920-3:2016-ISO 1042-3:2003 Petroleum and natural gas industries — Cement and materials for well cementing —Part 3	Published	Testing of deep water well cement formulations
10.	TZS 1920-1:2016-ISO 1042-1:2009 Petroleum and natural gas industries — Cement and materials for well cementing — Part 1	Published	Specification
11.	TZS 1307: 2010 ISO 11439: 2000 Gas cylinders	Published	High-pressure cylinders for the on\- board storage of natural gas as a fuel for automotive vehicles
12.	TZS 1187 (Part 5): 2010(1st Ed) Road vehicles\-Compressed Natural Gas \(CNG\) fuel system components Part 5	Published	Manual cylinder valve
13.	TZS 1187 (Part 1): 2010 (1st Ed) Road vehicles\-Compressed Natural Gas \(CNG\) fuel system components part 1	Published	General requirements and definitions
14.	TZS 1187 (Part 17): 2010(1st Ed) Road vehicles\-Compressed Natural Gas \(CNG\) fuel system components Part 17	Published	Flexible fuel line
15.	TZS 1187 (Part 16): 2010 (1st Ed) Road vehicles\-Compressed Natural Gas \(CNG\) fuel system components Part 16	Published	Rigid fuel line
16.	TZS 1187 (Part 2): 2010 (1st Ed) Road vehicles\-Compressed Natural Gas \(CNG\) fuel system components Part 2	Published	Performance and general test method
17.	TZS 1187 (Part 11): 2010 Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components part 11	Published	Gas/ air mixer

S/N	CITATION / TITLE	STATUS	APPLICATION
18.	TZS 1187 (Part 10): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components part 10	Published	Gas\- flow adjuster
19.	TZS 1187 (Part 12): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components Part 12	Published	Pressure relief valve \ (PRV\)
20.	TZS 1187 (Part 8): 2010 Road vehicles \- Compressed Natural Gas \(CNG\) fuel system components part 8	Published	Pressure indicator
21.	TZS 1187 (Part 9): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components Part 9	Published	Pressure regulator
22.	TZS 1187 (Part 15): 2010 Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components part 15	Published	Gas\- tight housing and ventilation hose
23.	TZS 1187 (Part 13): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components Part 13	Published	Pressure relief device \ (PRD\)
24.	TZS 1187 (Part 14): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components Part 14	Published	Excess flow valve
25.	TZS valve187 (Part 6): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components Part 6	Published	Automatic valve
26.	TZS 1187 (Part 3): 2010 (1st Ed) Road vehicles\- Compressed Natural Gas \(CNG\) fuel system components Part 3	Published	Check valve
27.	(TBS) standards (ISO 11439:2013) Gas cylinders- High-pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles and conversion components	Published	Gas Cylinders
28.	TZS 1307: 2010-ISO 11439: 2000 - Gas cylinders – high-pressure cylinders for the on-board storage of natural gas as a fuel automotive vehicle	Published	Gas Cylinders
29.	TBS standards (TZS 1187:2010-1/ISO 15500-1) – Converted CNG vehicle safety requirements	Published	General Requirements and definitions
30.	TZS 2672:2021/ISO 16440:2016 - Petroleum and natural gas industries — Pipeline transportation systems — Design, construction and maintenance of steel-cased pipelines	Published	General Requirements
31.	TZS 2275: 2020- ISO 23874: 2006 - Natural gas — Gas chromatographic requirements for hydrocarbon dew point calculation	Published	Performance Requirements

Annex 3: Natural Gas Construction Approvals

SN.	Applicant Name and Address	Approval No.	Date of Issue	Type of Construction Approval
1.	Tanzania Petroleum Development Corporation	NGCA-2018-01	31-May-18	Connection of natural gas supply for Coca-Cola and BIDCO to National Natural Gas Infrastructure in Dar es Salaam Region
2.	Dangote Cement Limited Tanzania	NGCA-2018-02	9-Nov-18	Connection of natural gas supply for Compressed Natural Gas Mother Station, CNG Storage Cylinders, and CNG Dispensing facilities to National Natural Gas Infrastructure at Dangote Cement Factory in Mtwara Region
3.	Tanzania Petroleum Development Corporation	NGCA-2018-03	9-Nov-18	Connection of natural gas supply for Lodhia Steel Industry to National Natural Gas Infrastructure at Mwanambaya in Mkuranga, Coastal Region.
4.	Tanzania Petroleum Development Corporation	NGCA-2019-01	3-Apr-19	Connection of natural gas supply for University of Dar es Salaam households and cafeteria to National Natural Gas Infrastructure
5.	Tanzania Petroleum Development Corporation	NGCA-2019-02	3-Apr-19	Connection of natural gas supply for University of Dar es Salaam, Lufungila, and Mlalakuwa households to National Natural Gas Infrastructure
6.	Tanzania Petroleum Development Corporation	NGCA-2019-03	22-Jun-19	Connection of natural gas supply for Mtwara households and institutions to National Natural Gas Infrastructure Mtwara Region
7.	Pan African Energy (T) Limited	NGCA-2020-01	4-Mar-20	Connection of natural gas supply to Pasta Industries Limited, Vingunguti within Dar es Salaam
8.	Pan African Energy (T) Limited	NGCA-2020-02	4-Mar-20	Connection of natural gas supply by virtual pipeline (Compressed Natural Gas) to Mikoani Edible Oil in Mbagala, Dar es Salaam
9.	Anric Gas Technology Tanzania Company Limited	NGCA-2021-01	30-Mar-21	Constructing of containerized mobile natural gas filling Station, storage facility, compression facility, dispensing facility and mobile CNG trailer at Temeke
10.	Tanzania Petroleum Development Corporation	NGCA-2021-02	17-May-21	Construction of natural gas distribution facilities for supplying gas to LN Future Industries and Balochistan Group of Industries at Kisemvule, Mkuranga in the Coastal region

SN.	Applicant Name and Address	Approval No.	Date of Issue	Type of Construction Approval
11.	Tanzania Petroleum Development Corporation	NGCA-2021-03	17-May-21	Construction of natural gas distribution facilities for supplying natural gas to customers at Nzasa Street, Sinza in Kinondoni municipality
12.	Tanzania Petroleum Development Corporation	NGCA-2021-04	17-May-21	Construction of natural gas distribution facilities for supplying natural gas to customers at police barracks, Kilwa road, in Temeke municipality
13.	Tanzania Petroleum Development Corporation	NGCA-2021-05	31-May-21	Construction of natural gas distribution facilities for supplying natural gas to customers at Mnazi Mmoja in Lindi municipality
14.	PanAfrican Energy (T) Limited	NGCA-2021-06	16-Aug-21	Construction of distribution facilities for supplying natural gas to Tanga Pharmaceuticals and Plastics Limited at the Vingunguti area in Ilala city
15.	Tanzania Petroleum Development Corporation	NGCA-2021-07	30-Nov-21	Construction of natural gas distribution facilities for supplying natural gas to Raddy Fiber Manufacturing (T) Limited located along Njia Panda ya Kibamba area at Mkuranga in Pwani Region
16.	PanAfrican Energy (T) Limited	NGCA-2021-08	21-Dec-21	Construction of distribution facility for supplying natural gas to Quaim Steel Mills Limited located at Chang'ombe area in Temeke District
17.	PanAfrican Energy (T) Limited	NGCA-2021-09	21-Dec-21	Construction of distribution facility for supplying natural gas to Urafiki Textile Mills located in Ubungo municipality
18.	PanAfrican Energy (T) Limited	NGCA-2022-01	05-Jul-22	Relocation of the distribution facility supplying natural gas to Urafiki Textile Mills
19.	PanAfrican Energy (T) Limited	NGCA-2022-02	26-Aug-22	Construction of distribution facility for supplying natural gas to Creative Packages (T) Limited
20.	PanAfrican Energy (T) Limited	NGCA-2022-03	29-Dec-22	Construction of distribution facility (pipeline and its accessories) for supplying natural gas to Ocean Aluminium Limited
21.	TAQA Dalbit (T) Limited	NGCA-2022-04	29-Dec-22	Construction of compressed natural gas (CNG) gas filling station
22.	Tanzania Petroleum Development Corporation	NGCA-2023-01	26-Jan-23	Construction of natural gas distribution facility (pipeline and its accessories) for supplying natural gas to household customers

SN.	Applicant Name and Address	Approval No.	Date of Issue	Type of Construction Approval
23.	Dangote Cement Limited Tanzania	NGCA-2023-02	26-Jan-23	Construction of compressed natural gas (CNG) filling station for own use
24.	Tanzania Petroleum Development Corporation	NGCA-2023-03	18-Feb-23	Construction of natural gas distribution facility (pipeline and its accessories) for supplying natural gas to hotel and industrial customers
25.	TP Company Limited	NGCA-2023-04	03-Apr-23	Construction of compressed natural gas (CNG) filling station
26.	Tanzania Petroleum Development Corporation	NGCA-2023-05	27-Apr-23	Construction of natural gas distribution facility (pipeline and its accessories) for supplying natural gas to Sapphire Float Glass Factory
27.	TAQA Dalbit (T) Limited	NGCA-2023-06	19-May-23	Construction of compressed natural gas (CNG) gas filling station
28.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-07	29-Sep-23	Construction of natural gas distribution facility for supplying natural gas to Dangote Cement (T) Limited CNG Station at Mwanambaya Area in Mkuranga District
29.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-08	29-Sep-23	Construction of Compressed Natural Gas Daughter Station for supplying natural gas to Kairuki Pharmaceutical Industries Limited at Zegereni Industrial Area in Kibaha District
30.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-09	29-Sep-23	Construction of Compressed Natural Gas Daughter Station for supplying natural gas to Muhimbili National Hospital in Ilala District
31.	Pan-African Energy (T) Limited - P. O. Box 80139 Dar es Salaam	NGCA-2023-10	29-Sep-23	Construction of natural gas distribution facility for supplying natural gas to TAQA Dalbit (T) Limited CNG Filling Station at Kipawa Area in Ilala District
32.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2023-11	29-Sep-23	Construction of a Compressed Natural Gas Mother Station for supplying natural gas to Daughter Stations in Dar es Salaam and Pwani Regions
33.	Tanzania Petroleum Development Corporation - P. O. Box 1191 Dodoma	NGCA-2024-01	02-Feb-24	Construction of natural gas distribution facility for supplying natural gas to KEDA Float Glass Factory located at Msufini Village, Mbezi Ward in Mkuranga District

SN.	Applicant Name and Address	Approval No.	Date of Issue	Type of Construction Approval
34.	Pan-African Energy (T) Limited P. O. Box 80139 Dar es Salaam	NGCA-2024-02	31-May-24	Construction of natural gas distribution facility for supplying natural gas to Tembo Energies CNG Mother and Filling Station at Tabata Mwananchi area, opposite to Nida Textile Mills, along Nelson Mandela Road, Ubungo
35.	Tembo Energies Limited, P. O. Box 21456 Dar es Salaam	NGCA-2024-03	31-May-24	Construction of a Compressed Natural Gas Mother and Filling Station for supplying natural gas to the public
36.	Global Aluminium Limited, P. O. Box 32080 Dar es Salaam	NGCA-2024-04	31-May-24	Construction of a Compressed Natural Gas Receiving Station for own use

Source: EWURA

Annex 4: Existing Natural Gas Licenses

No.	Licencee Name	Location	Type of license	Capacity (MMscfd)	Duration (Years)	License No.	Date of Issue	Date of Expiry	Remarks
1.	GASCO (TPDC)	Mtwara-Dar	Transmission	784	25	NGTL–2021–001	31st May 2021	31st Aug 2040	Active
2.	GASCO (TPDC)	Mtwara	Processing	210	25	NGPL–2021–001	31st May 2021	31st Aug 2040	Active
3.	GASCO (TPDC)	Songo-Songo	Processing	140	25	NGPL–2021–002	26th Jul 2021	15th Aug 2041	Active
4.	Anric Gas Technology (T) Co. Ltd	Dar	CNG Filling Station	1,000	5	CNGFSL–2021–001	30th Aug 2021	29th Aug 2026	Active
5.	TAQA Dalbit (T) Limited	Dar	CNG Filling Station	3,200	5	CNGFSL–2023–001	6th Nov 2023	5th Nov 2028	Active
6.	Anric Gas Technology (T) Co. Ltd	Dar	CNG Supply License	18	5	CNGSL–2024–001	30th May 2024	29th May 2029	Active
7.	Dangote Cement Limited	Mtwara	CNG Own Use	19.44m^3	5	CNGOL–2021–001	6th Jul 2021	5th Jul 2026	Active
8.	Dangote Cement Limited	Mkuranga	CNG Own Use	12m^3	5	CNGOL–2023– 001	1st Dec 2023	30th Nov 2028	Active

Annex 5: List of regulated entities and their scope of operations

Sn	Name	Scope of regulated service	Location	Year Started
1.	PAET	Distribution Network	Dar es Salaam	2004
2.	Songas Ltd	Processing Plant	Songosongo (Lindi)	2004
3.		Transmission Pipeline	Songosongo to Dar es Salaam	2004
4	M&P	Processing Plant	Mnazi Bay (Mtwara)	2009
5.		Transmission Pipeline	Mnazi Bay to TANESCO in Mtwara	2009
6.	TPDC	Processing Plant	Madimba (Mtwara)	2015
7.		Processing Plant	Songo Songo (Lindi)	2016
8.		Transmission Pipeline	Mtwara to Dar es Salaam	2015
9.		Marine Transmission Pipeline	Songo Songo to Somanga Fungu gas junction	2016
10.		Distribution Network	Mtwara, Lindi, Pwani and Dar es Salaam	2016
11.	GASCO	Operator on TPDC Natural gas Facilities (Processing Plant, Transmission pipeline and Distribution Network)	Mtwara, Lindi, Pwani and Dar es Salaam	2015
12.	PAET	CNG Filling Station	Ubungo, Dar es Salaam	2009
13.	Dangote Cement Factory	Compressed Natural Gas Operations and CNG Filling Station (Own Use)	Mtwara	2021
14.	Anric Gas Technology Limited	CNG Filling Station	Tazara area, Dar es Salaam	2021
15.	TAQA Dalbit (T) Limited	CNG Filling Station	Kipawa, Ilala, Dar ea Salaam.	2023

Annex 6: Capacity and length of the existing Natural Gas Transmission Pipelines

Sn	Pipeline Name	Pipeline Route	Length (km)	Diameter (inches)	Maximum Operating Pressure (Bar)	Capacity (MMscfd)	Network Operator
1.	National Natural Gas Pipeline Infrastructure (NNPI)	Madimba (Mtwara) to Kinyerezi (Dar es Salaam) via Somanga Fungu	477	36	80	784	GASCO
		Songo Songo Island to Somanga Fungu in Lindi	29	24	80		
		Kinyerezi to Tegeta in Dar es Salaam	27.5	16	80		
2.	Songas Pipeline	Songo Songo Island (Lindi) to Somanga Fungu	26	12	90	105	Songas
3.		Somanga Fungu (Lindi) to Ubungo (Dar es Salaam)	206	16	90		
4.		Ubungo to Wazo Hill in Dar es Salaam	15.6	8	55		
5.	M&P Pipeline	Mnazi Bay to TANESCO Power Plant in Mtwara	27.5	8	90	80	M&P
Total			**793**			**969**	

Annex 7: Number of installed and Tested Cathodic Protection (CP) Test Points

Transmission Pipeline Segment	Number of installed Cathodic Protection test points	CP test points planned for testing	Required range of Voltage reading	Tested CP test points	CP test points complied	Mal-functioned CP test points Reported	CP test points complied (%)	Target (%)
TPDC (From SS & Madimba to Wazo hill)	567	550	850mV - 1200mV	540	530	10	96.3	100
M&P	18	18	2.0mV - 2.5mV	18	18	0	100	100
SONGAS	228	228	850mV - 1200mV	7	7	0	3	100

Source: PAET & TPDC

Annex 8: List of Household customers connected with gas (TPDC)

SN	Gas Supply Region	Area	Date of installation (Year)	Number of Households connected	% Usage	Installed capacity of the network
1.	Mtwara	Bandari	2019	125	78.4	10
2.	Mtwara	Kiyangu, Lilungu,Mtwara Tech..	2021	300		10
3.	Dar es Salaam	Mikocheni	2013	70	81.94	15
4.	Dar es Salaam	Mikocheni, Mlalakua and UDSM	2019	140		15
5.	Lindi	Mnazimmoja	2020	209		15
6.	Dar es Salaam	UDSM	2022	100	6	15
		Sinza	2022	226	73	
		Kurasini	2022	344	87.8	
TOTAL				**1,514**		

Annex 9: List of commercial and institutional customers connected to the gas network

SN	Name of customer	Average consumption (MMscfd)	Annual consumption (MMscf)	Usage	Location	Supplier/ Operator
1.	Tanruss Investments Limited (Serena Hotel)	0.024	8.46	Boiler + Burner	Dar es Salaam	PAET
2.	Tanzania Prisons Services (Keko Prison)	0.003	1.04	Heating (Kitchen)	Dar es Salaam	PAET
3.	Mtwara tech			Cooking	Mtwara	TPDC/GASCO
4.	Mtwara college			Cooking	Mtwara	TPDC/GASCO
5.	Cafeteria 1			Cooking	Dar es Salaam	TPDC/GASCO
6.	Giraffe Beach Hotel		0.001	Cooking	Dar es Salaam	TPDC/GASCO
7.	Ramada Resort Hotel		0.001	Cooking	Dar es Salaam	TPDC/GASCO
8.	Jangwani Sea Breeze Resort		0.001	Cooking	Dar es Salaam	TPDC/GASCO
9.	Landmark Beach Resort		0.001	Cooking	Dar es Salaam	TPDC/GASCO
10.	Whitesand Beach Resort		0.001	Cooking	Dar es Salaam	TPDC/GASCO
11.	Serene Beach Resort		0.001	Cooking	Dar es Salaam	TPDC/GASCO

Annex 10: List of thermal power generation customers using natural gas

SN	Name of power generation customer	Year of installation	Installed capacity)	Maximum consumption (MMscfd)	Average consumption (MMscfd)	Gas odorization status	Location	Supplier
1.	Songas		180	46	7.90	Odorized	DSM	PAET
2.	KINYEREZI I	2015	150	30	13.26	Not odorized	DSM	TPDC/ GASCO
3.	KINYEREZI I EXTENSION	2015	185	37	NA	Not odorized	DSM	TPDC/ GASCO
4.	KINYEREZI II	2016	185	37	35	Not odorized	DSM	TPDC/ GASCO
5.	UBUNGO I		102	22	12.4	Odorized	DSM	PAET
6.	UBUNGO II	2015	129	30	25	Not odorized	DSM	TPDC/ GASCO
7.	UBUNGO IIIA		100	22	18.4	Odorized	DSM	PAET
8.	UBUNGO IIIB		20	4	2.5	Odorized	DSM	PAET
9.	TEGETA 45		45	10	5.6	Odorized	DSM	PAET
10.	TANESCO - Mtwara Plant	2006	24	2.4	2.4	Not odorized	Mtwara	M&P
11.	Somanga Fungu	2010	7.5	7.74	0.14	Odorized	DSM	SONGAS
12.	Mtwara Gas Power Plant II	2024	20	5	2.82	Not odorized	Mtwara	TPDC/ GASCO
Total Installed Capacity (MW)			**1,198.82**					

Annex 11: List of Industrial customers connected to the gas network

SN	Name of customer	Average consumption (MMscfd)	Usage	Location	Supplier/ Operator
1.	Aluminium Africa (ALAF)	0.39	Boiler & Power	Chang'ombe	PAET
2.	Azam Bakeries Co Ltd	0.06	Boiler	Kipawa	PAET
3.	Bautech Company Ltd 1	0	Boiler	Vingunguti	PAET
4.	Bora Industries	0.01	Boiler	Chang'ombe	PAET
5.	East Coast Oil & Fats Ltd	0.47	Boiler	Kurasini	PAET
6.	Iron and Steel Limited	0.11	Heating	Mikocheni	PAET
7.	Kamal Steel Ltd	0.14	Heating	Chan'ombe	PAET
8.	Kioo Glass	2.67	Heating	Chang'ombe	PAET
9.	MM Integrated Steel (MM1)	0.15	Heating	Mikocheni	PAET
10.	MM Integrated Steel -2	0.19	Heating	Mikochezi	PAET
11.	MM Integrated Steel (MM3)	0.14	Heating	Mikocheni	PAET
12.	Murzah Oil Mills Unit 1	-	Boiler	Vingunguti	PAET
13.	Murzah Oil Mills Unit 2	0.10	Boiler	Vingunguti	PAET
14.	Murzah Oil Unit Mills Unit 4	0.01	Boiler	Vingunguti	PAET
15.	Murzah Soap and Detergent Unit 3	0.21	Boiler	Buguruni	PAET
16.	Namera Group of Industries	0.06	Boiler	Gongo la Mboto	PAET
17.	Nampak (T) Ltd	0.01	Boiler	Ilala Bungoni	PAET
18.	Nida Textile Mills Ltd	0.46	Boiler	Tabata	PAET
19.	OK Plast Ltd	0.13	Boiler	Vingunguti	PAET
20.	SBC Tanzania - Pepsi	0.23	Boiler	Kiwalani	PAET
21.	Serengeti Breweries Ltd	0.10	Boiler	Chang'ombe	PAET
22.	SilAfrica Tanzania T Ltd	0.03	Boiler	Chang'ombe	PAET
23.	Steel Masters Ltd	0.10	Heating	Chang'ombe	PAET
24.	Tanpack Tissues Ltd	0.13	Boiler	Mikocheni	PAET
25.	Tanzania Breweries Ltd (TBL)	0.29	Boiler	Ilala Karume	PAET
26.	Tanzania Cigarette Company (TCC)	0.37	Boiler + Power	Chang'ombe	PAET
27.	Tanzania Cuttleries Manufacturer Ltd	0.02	Heating	Chang'ombe	PAET
28.	Tanzania-Chinese Textile (TCFT)	0.001	Boiler	Ubungo	PAET
29.	VOT Tanzania	0.02	Boiler	Kurasini	PAET
30.	Gaia Eco Solution	0.11	Boiler	Vingunguti	PAET
31.	Said S. Bakhresa & Co Ltd (SSB)	-	Boiler	Buguruni	PAET
32.	Soap & Allied Industries L	0.01	Boiler	Chang'ombe	PAET

33.	A-one	0.89	Boiler +Power	Kiwalani	PAET
34.	Royal Soap & Detergent Industry Ltd	0.31	Boiler	External - Ubungo	PAET
35.	Jumbo Packaging	0.02	Boiler	Vingunguti	PAET
36.	Mikoani Edible oil	0.17	Boiler	Mbagala	PAET
37.	Tanzania Pasta Industries	0.07	Boiler	Vingunguti	PAET
38.	Tanga Pharmaceutical	0.01	Boiler	Vingunguti	PAET
39.	Quaim Steel Industry	0.001	Boiler	Chang'ombe	PAET
40.	Tanzania Portland Cement Limited (AG)	5.46	Heating Kilns	Tegeta - Wazo	PAET
41.	Raddy Fiber Manufacturing	0.01	Power and Heating	Mkuranga	TPDC/ GASCO
42.	Dangote Cement factory	12.32	Power and Heating	Mtwara	TPDC/ GASCO
43.	Goodwill ceramic factory	3.90	Power and Heating	Mkuranga	TPDC/ GASCO
44.	Lodhia steel Ltd	0.26	Heating	Mkuranga	TPDC/ GASCO
45.	Knauf Gypsum factory	0.22	Heating	Mkuranga	TPDC/ GASCO
46.	Coca-Cola	0.09	Heating	Dar es Salaam	TPDC/ GASCO
47.	MM Integrated Steel Mills (MMI 2)	0.12	Heating	Dar es Salaam	PAET
48.	MM Integrated Steel Mills (MMI 3)	0.13	Heating	Dar es Salaam	PAET
49.	TAQA Dalbit Tanzania Ltd		Filling station	Dar es Salaam	PAET
50.	Sapphire Float Glass	4.05	Power and Heating	Mkuranga	TPDC/ GASCO
51.	Balochistan	0.1304	Heating	Mkuranga	TPDC/ GASCO
52.	LN Future	0.22	Heating	Mkuranga	TPDC/ GASCO
53.	Chemi & Cotex Industries Ltd (0.037)	0.037	Heating	Dar es Salaam	TPDC/ GASCO
54.	Cotex Industries Ltd (0.015)	0.015	heating	Dar es Salaam	TPDC/ GASCO

Annex 12: Natural Gas Consumption and Contribution per category from FY 2020/21 to 2023/34

Sn	Customer Category	Consumed Volume (MMscf)							
		FY2020/21		FY2021/22		FY2022/23		FY 2023/24	
		Volume (MMsfc)	% Share	Volume (MMsfc)	% Share	Volume (MMsfc)	% Share	Volume (MMsfc)	% Share
1.	Power	45,664.79	77.07%	49,875.96	79.17%	51,609.78	81.57%	70,061.45	85.41%
2.	Industries	11,321.24	19.11%	13,013.30	20.66%	11,540.83	18.24%	11,639.30	14.19%
3.	CNG Vehicles		0.00%	94.6	0.15%	104.42	0.17%	308.72	0.37%
4.	Households, Commercial and Institutions	2,267.85	3.83%	11.52	0.02%	18.02	0.03%	15.55	0.02%
	TOTAL	**59,253.88**		**62,995.38**		**63,273.06**		**82,025.03**	

Annex 13: List of Natural Gas Pipelines Wayleave Interferences

SN	Type of facility	Encroachment/ Erosion	Location	Wayleave owner	Marker posts visibility	Service provider
1.	Pipeline	Erosion	Ulongoni	TPDC	OK	GASCO
2.	Pipeline	Wayleave Encroachment	KP 21, Kilimahewa Street.	TPDC	OK	GASCO
3.	Pipeline	Excavation on wayleave	KP 26, Kisanga Street	TPDC	OK	GASCO
4.	FOC cut off	Wayleave Encroachment	Kisanga - Tegeta	TPDC	OK	GASCO
5.	Pipeline	Wayleave Encroachment	Makongo Juu	TPDC	OK	GASCO
6.	Pipeline	Wayleave enchronment	Songosongo Island	TPDC	OK	GASCO
7.	Main gas pipeline	Encroachment	Mikocheni Light Industries	TARURA	Visible	PAET
8.	Main gas pipeline	Encroachment	Buguruni kwa Mnyamani	TRC	Visible	PAET
9.	Main gas pipeline	Erosion	Mabibo bridge	TRC	Visible	PAET
10.	Main gas pipeline	Encroachment	Mwakalinga road	TARURA	Visible	PAET

Annex 14: Integrity of Distribution Network

Operator	Type of devices	No. of devices available	No. of device re-calibrated	No. of device re-calibrated in %	No. of Planned Functional Test	No. of Functional Test Conducted	Number of planned gas leak survey	Number of conducted gas leak	Target
PAET-Distribution	PSV	55	55	100%	1	1	263	263	100%
	Meter	54	54	100%	N/A	N/A	263	263	100%
TPDC-Distribution	PSV	68	64	94%	4	4	48	48	100%
	Meter	48	48	100%	N/A	N/A	48	48	100%

Annex 15: Table Local Content Performance

S/N	Requirements	TPDC		PAET		SONGAS		M&P		ANRIC CNG		DANGOTE CNG	
			%		%		%		%		%		%
1.	Number of local employees out of total employees	415/415	100	106/107	99	72/72	100	92/98	93.87	8/10	80	14/14	100
2.	Number of local staff trained out of total employees	294/415	71	36/36	100	2/6	33	89/98	90.81	10/10	100	10/14	71
4.	Number of local financial services utilized out of total financial services	10/12	83	2/2	100	3/3	100	3/3	100	3/5	75	3/4	75
5.	Number of local insurance services utilized out of all insurance services awarded	1/1 (NIC)	100	4/5	80	4/4	100	3/3	100	3/3	100	1/2	50
6	Number of procurements awarded to nationals out of the total number of procurements	38/40	93	40/48	55.6	5/6	83	44/44	100	4/6	66.67	0	0
Note: *x = Local element ; y + total*													

(Endnotes)

[1] *Gerutu, G.B.; Greyson, K.A.; Chombo, P.V. Compressed Natural Gas as an Alternative Vehicular Fuel in Tanzania: Implementation, Barriers, and Prospects. Methane* ***2023****, 2, 66–85.* https://doi.org/10.3390/methane2010006.