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THIRTEENTH PARLIAMENT – SECOND SESSION – 2023

DEPARTMENTAL COMMITTEE ON ENERGY

REPORT ON:


THE STUDY VISIT TO THE ENERGY SECTOR ACTORS IN GHANA HELD FROM 3<sup>RD</sup> TO 9<sup>TH</sup> OCTOBER, 2023

CLERK'S CHAMBERS

DIRECTORATE OF DEPARTMENTAL COMMITTEES

PARLIAMENT BUILDINGS

NAIROBI

 <b>THE NATIONAL ASSEMBLY</b> OCTOBER 2023 PAPERS LAYED	
DATE: 28 NOV 2023	DAY: Tuesday
TABLED BY:	Hon. Vincent Musyoka (Chairperson, Energy Committee)
CLERK-AT-THE-TABLE:	Inzofu Mwale

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## ABBREVIATIONS AND ACRONYMS

BOT	-	Build-Operate-Transfer
BPA	-	Bui Power Authority
DISCOs	-	Electricity Distribution Companies
ECG	-	Electricity Company of Ghana
GRIDco	-	Grid Distribution Company
IPPs	-	Independent Power Producers
MoEn	-	Ministry of Energy
MW	-	Mega Watts
OGW	-	Order of the Grand Warrior
PPA	-	Power Purchase Agreement
PSP	-	Private Support Programme
PURC	-	Public Utilities and Regulatory Commission
RE	-	Renewable Energy
VRA	-	Volta River Authority

### **CHAIRPERSON'S FOREWORD**

This report entails the study visit to the Energy Sector actors in Ghana. The Member for Laikipia County, Hon. Jane Kagiri, OGW, MP on Wednesday 22<sup>nd</sup> March 2023, moved a motion on Reduction of Cost of Electricity in the Country pursuant to the National Assembly Standing Order 47. On Wednesday 22<sup>nd</sup> April, 2023, pursuant to the provisions of Standing Order 53, the House resolved *inter alia* that the Departmental Committee on Energy undertakes an inquiry into the operations of Kenya Power in relation to agreements entered into with IPPs, factors affecting the cost of electricity, including over-reliance on IPPs against available renewable and other energy sources, and measures to reduce it and submits a report to the House within one hundred and twenty (120) days.

The Departmental Committee on Energy is conducting the inquiry and has prepared a draft report on the same after receiving views from a wide variety of stakeholders including Government agencies, independent power producers, sector experts and the academia, industry players, workers and employer representatives, professional bodies, civil society and religious leaders. In light of this, the Committee resolved to undertake a study visit to the energy actors in Ghana.

The five-day visit was influenced by the very vibrant energy industry in Ghana, with public and private companies involved in it. The energy sector of Ghana plays an important role in the national economy, contributing significantly to industrialization, employment and livelihoods. A review of existing literature on the best practices on the management of PPAs reveals that Ghana has had similar experiences as Kenya, but have managed to radically remodel the system to the advantage of consumers. The visit was therefore aimed at highlighting and educating the delegation on Ghana's success in this sector especially on renegotiation of PPAs.

The program included visits to different energy sector utilities and companies, which enabled the delegation to learn the best practices in the energy sector. The delegation was also able to examine the advantages and disadvantages of investing and putting more focus and effort to Kenya's energy sector as a country. Through the visit, the delegation was able to understand more about energy industry and its impact to the economy. Further, the delegation deliberated on best practices, which as a country, we can adopt from Ghana to grow Kenya's economy through the energy sector.

The Committee sincerely thanks the Offices of the Speaker and the Clerk of the National Assembly for the immense and timely technical and logistical support accorded to it in the participation of this visit. I further thank all the Members of the Committee for their commitment and cooperation.

The Committee is also grateful to the Ministry of Energy in Ghana and its agencies and to the Kenya High Commission in Ghana for the support and assistance accorded to the delegation. Their guidance and dedication in advancement of the Committee work has been extraordinary.

On behalf of the Departmental Committee on Energy and pursuant to provisions of Standing Order 199 (6) it is my pleasant privilege and honour to present to this House the Report of the Committee on its participation in the study visit to the Energy Sector Actors in Ghana.

**Hon. (Eng.) Vincent Musyoka Musau, MP**  
**Chairperson, Departmental Committee on Energy**

## CHAPTER ONE

### PREFACE

1. The Departmental Committee on Energy is conducting an inquiry on the cost of electricity in the country. The Committee has prepared a draft Report on the same after receiving views from a wide variety of stakeholders including Government agencies, independent power producers, sector experts and the academia, industry players, workers and employer representatives, professional bodies, civil society and religious leaders.
2. In relation to the above, the Honourable Speaker of Parliament granted permission to the Honourable Vice Chairperson, three (3) Energy Committee Members and a Research Officer to undertake a study visit to the Republic of Ghana. The visit took place from 3<sup>rd</sup> to 9<sup>th</sup> October, 2023. It is noted that benchmarking is one of the most efficient tools democratic legislatures and organizations such as parliaments can adopt with specific focus on identifying, analysing and adopting best practices and implementing the best results to improve their operations and performance.

#### 1.1 Establishment of the Committee

3. The Departmental Committee on Energy is one of the fifteen Departmental Committees of the National Assembly established under **Standing Order 216** whose mandates pursuant to the **Standing Order 216 (5)** are as follows:
  - (a) *To investigate, inquire into, and report on all matters relating to the mandate, management, activities, administration, operations and estimates of the assigned ministries and departments;*
  - (b) *To study the programme and policy objectives of ministries and departments and the effectiveness of the implementation;*
  - (c) *on a quarterly basis, monitor and report on the implementation of the national budget in respect of its mandate;*
  - (d) *To study and review all legislation referred to it;*
  - (e) *To study, assess and analyse the relative success of the ministries and departments as measured by the results obtained as compared with their stated objectives;*
  - (f) ***To investigate and inquire into all matters relating to the assigned ministries and departments as they may deem necessary, and as may be referred to them by the House;***
  - (g) *To vet and report on all appointments where the Constitution or any law requires the National Assembly to approve, except those under Standing Order 204 (Committee on Appointments);*
  - (h) *To examine treaties, agreements and conventions;*
  - (i) *To make reports and recommendations to the House as often as possible, including recommendation of proposed legislation;*
  - (j) *To consider reports of Commissions and Independent Offices submitted to the House pursuant to the provisions of Article 254 of the Constitution; and*
  - (k) *To examine any questions raised by Members on a matter within its mandate.*

## **1.2 Subjects of the Committee**

4. In accordance with the Second Schedule of the National Assembly Standing Orders, the Committee is mandated to consider, fossil fuel exploration, development, production, maintenance and distribution, nuclear energy, clean energy, and regulation of energy.
5. In executing its mandate, the Committee oversees the following State Departments:
  - a. The State Department for Energy and
  - b. The State Department for Petroleum.

## **1.3 Committee Membership**

6. The Committee was constituted by the House on 27<sup>th</sup> October, 2022 and comprises the following Members of Parliament:

### **Chairperson**

Hon. (Eng.) Vincent Musyoka Musau, MP  
Mwala Constituency

### **UDA Party**

### **Vice-Chairperson**

Hon. Lemanken Aramat, MP  
Narok East Constituency

### **UDA Party**

## Members

Hon. Charles Gimose, MP  
Hamisi Constituency  
**ANC Party**

Hon. Musili Mawathe, MP  
Embakasi South Constituency  
**WDM - K Party**

Hon. Ken Chonga, MP  
Kilifi South Constituency  
**ODM Party**

Hon. Walter Owino, MP  
Awendo Constituency  
**ODM Party**

Hon. Elisha Odhiambo, MP  
Gem Constituency  
**ODM Party**

Hon. Tom Mboya Odege, MP  
Nyatike Constituency  
**ODM Party**

Hon. Simon King'ara, MP  
Ruiru Constituency  
**UDA Party**

Hon. George Aladwa Omwera, MP  
Makadara Constituency  
**ODM Party**

Hon. Mwafrika Augustine Kamande, MP  
Roysambu Constituency  
**UDA Party**

Hon. Victor Koech Kipngetich  
Chepalungu Constituency  
**CCM Party**

Hon. Geoffrey Ekesa Mulanya, MP  
Nambale Constituency  
**Independent**

Hon. Cecilia Asinyen Ng'itit, MP  
Turkana County  
**UDA Party**

Hon. Barongo Nolfason Obadiah., MP  
Bomachoge Borabu Constituency  
**ODM Party**

7. The Committee is facilitated by the following staff:

Mr. Adan Gindicha  
**Principal Clerk Assistant**  
**Lead Clerk/Head of Secretariat**

Ms. Mary Lemerelle  
**Second Clerk Assistant**

Mr. Robert Langat  
**Research Officer III**

Mr. Salim Athuman  
**Third Clerk Assistant**

Ms. Lorraine Onyiego  
**Research Officer III**

Ms. Jemimah Waigwa  
**Senior Legal Counsel**

Ms. Mercy Mayende  
**Media Relations Officer III**

Mr. Joseph Bundotich  
**Senior Sergeant-At-Arms**

Ms. Carolyne Musyoka  
**Hansard Reporter III**

Mr. David Ngeno  
**Research Officer II**

Ms. Briquette  
**Legal Counsel**

Mr. Brian Njeru  
**Fiscal Analyst III**

Mrs. Rehema Koech  
**Audio Officer III**

Ms. Eva Kaare  
**Sergeant-At-Arms**

## CHAPTER TWO

### 2.1 Introduction

8. The Departmental committee on Energy at its meeting held on Friday 1<sup>st</sup>, September 2023 resolved to send delegation to the Republic of Ghana in order to get a clearer understanding of the workings of the energy sector. The Committee agreed to conduct the study visit during the week of 3<sup>rd</sup> to 9<sup>th</sup> October 2023. The Ministry of Energy of Ghana through the PURC hosted the delegation.
9. The Committee delegation comprised the following Members:

S/NO.	NAME	DESIGNATION	ROLE
1	Hon. Lemanken Aramat, MP	MP - Narok East Constituency	Head of Delegation and <b>Vice Chairperson of the Departmental Committee on Energy</b>
2	Hon. Hon. Simon King'ara, MP	MP - Ruiru Constituency	Member of the Departmental Committee on Energy
3	Hon. Hon. Mwafrika Augustine Kamande, MP	MP - Roysambu Constituency	Member of the Departmental Committee on Energy
4	Hon. Hon. Geoffrey Ekesa Mulanya, MP	MP – Nambale Constituency	Member of the Departmental Committee on Energy]
5	Robert Kibet Langat (Mr.)	Research Officer	<b>Secretary to the delegation</b>

### 2.2 Rationale for the Study Visit to Ghana by the Departmental Committee on Energy

10. The electricity sub-sector plays a critical role in the country's economy given its trickle-down effect on all the other economic sectors. At the core of electricity pricing in the country is the issue of management of Power Purchase Agreements (PPAs) and the whole spectrum of Independent Power Producers. A review of existing literature on the best practices on the management of PPAs reveals that Ghana has had similar experiences as Kenya, but has managed to radically remodel her systems to the advantage of her electricity consumers.

11. The Committee undertook a study visit to Ghana, in order to appraise itself with the measures Ghana took to address the rising cost of electricity, among other issues.
12. The Committee was keen to learn from Ghana, considering that it was reported that Ghana had successfully renegotiated contracts with six (6) PPAs with IPPs for the relief of her electricity consumers.
13. The visit provided a learning environment for the Committee Members on thematic areas and areas of engagement, which will help, improve on its operations and support it in strengthening its oversight role.

### 2.3 Objectives of the Visit

14. The general objective of the study visit was to enhance knowledge and understanding of the operations of the Energy Actors in Ghana. Specifically, the management of PPAs with a clear focus on learning from the various processes in making such structures more functional and incorporating the best practices to make sure our energy sector becomes more efficient and able to maintain acceptable standards.
15. The study visit realized the under-mentioned specific objectives:
  - a) Reviewed the different measures that Ghana undertook to have the cost of electricity tariffs comparatively lower than Kenya's;
  - b) Learnt how she successfully managed to renegotiate PPAs with some IPPs;
  - c) Learnt from the efforts she took to integrate the private sector in the electricity generation market, notably to support the development of a renewables industry;
  - d) Learnt about how Ghana managed development of a suitable strategy for engagement with the IPPs and lenders, in order to achieve relief for electricity consumers and ensure the long-term viability and sustainability of the energy sector; and
  - e) Looked at how the Government of Ghana is building its energy sector and its contribution so far to the economic growth.

### 2.4 Methodology

16. During the visit, the delegation:
  - i) Met and held a briefing meeting with the Ministry of Energy officials including Eng. Solomon Adjetey, Director Power, Eng. Suleiman, Electrical Engineer, Ing. Zeneti, Renewable Energy, Ing. Daniel, Programme Officer in charge of Transmission;
  - ii) Held meetings with representatives of the Public Utilities Regulatory Commission (PURC) including Dr. Ishmael Ackah, Executive Secretary, Ing. Emmanuel Fati,

Director Water and Performance Management, Mrs. Nancy Atiemo, Director Legal Services, Alhaji Jabaru, Director Regional Operations and Consumer Services, Ing. Fredrick Oblitey, Director Energy Services and Performance Monitoring among others;

- iii) Held a meeting with the representatives of the Electrical Company of Ghana (ECG) including Mr. Kwechu Obed, Deputy Director and Mr. John Mensah, Director Energy Consulting and Telco Services among others;
- iv) Held a meeting with representatives of Ghana Grid Company Limited (Gridco) including Mr. Mark Awuah Baah, Director Southern Network Department, Frank Otchere, Director System Operations, Mrs. Monica N. A. Senamu, Director Legal, Richard Ntim, Director Internal Audit, Ing. Benard Gyan, Director Technical Services and Mr. Sam Kow Acquah, representative of the Office of the Chief Executive Officer among others. The team later visited the National Grid Control Centre;
- vi) Embarked on a guided tour to Akosombo Hydro Electric Power Plant.

## **2.5 The Programme Visit**

### **2.6 Meeting with the Ministry of Energy officials:**

17. During that meeting, information was provided on the brief history of the Ministry of Energy with the Cabinet decision to reform the power sector in 1994, leading to the initiation of the Power Sector Reforms Programme (PSRP). This resulted in the creation of three (3) power generation firms, transmission and distribution utilities and two (2) regulators.
18. Further, the reforms ended up splitting of VRA into hydro and thermal entities and implementation of Government's decision to adopt the Single Concession option as the preferred option for Private Sector Participation in the Electricity Distribution Sector. This was in line with the Millennium Challenge Compact (MCC) Compact II programme (a partnership between the MCC and the Government of Ghana to strengthen the country's power sector).
19. The delegation was further informed that;
  - i) There are two (2) key Utilities regulating the Energy Sector: The Energy Commission (EC) and the Public Utilities Regulatory Commission (PURC), others include the Environmental Protection Agency (EPA) and the Nuclear Regulatory Authority (NRA). Similarly, the Petroleum Sector has two regulators;
  - ii) The Energy Commission Act, 1997, (Act 541) to manage the development and utilisation of energy resources of Ghana established the Energy Commission (EC). The Act also provides the legal, regulatory and supervisory framework for the granting of licenses for the transmission, wholesale, supply, distribution and sale of electricity and natural gas and related matters. The Act further mandates the EC to promote the efficient use of energy;
  - iii) The Public Utilities Regulatory Commission (PURC) was set up under the Public Utilities Regulatory Act, 1997 (Act 538) as part of the utility sector reform process, an

equivalent of Kenya's regulatory utility, the Energy and Petroleum Regulatory Authority (EPRA);

- iv) It is the economic or fiscal regulator of utility services in the electricity and water sectors. PURC is also responsible for setting tariffs for the supply, transportation and distribution of natural gas services for power generation;
- v) The generation and wholesale supply of electricity is liberalized and undertaken by state owned and privately-owned entities usually referred to as Independent Power Producers (IPPs);
- vi) The Volta River Authority (VRA) is a state-owned generation agency established under the Volta River Development Act 1961, (Act 46) with the core mandate of developing and generating electrical power by such means as the Authority deems fit for industrial, commercial and domestic users in Ghana and neighbouring countries;
- vii) An Act of Parliament established the Bui Power Authority; the Bui Power Authority Act 2007 (Act 740), with the mandate to plan, execute and manage the Bui Hydro Electric Project. The BPA amended Act 2020 (Act 1046), mandates BPA to develop renewable and other clean energy alternatives sources;
- viii) Nuclear Power Ghana (NPG) Limited was approved by Cabinet to be the Owner-Operator of the first Nuclear Power plant in Ghana and was subsequently incorporated in 2018. Stakeholders of NPG Limited were the VRA, BPA and the Ghana Atomic Energy Commission (GAEC);
- ix) There were Independent Power Producers (IPPs) licensed to build, own and operate power plants. As of 2020, IPPs accounted for 46% of the total installed capacity;
- x) The IPPs feed-in-tariff was negotiated between IPPs and the off taker but PURC gave a **10 USD cents ceiling**;
- xi) There existed a Power Auction where all PPAs go through;
- xii) Few IPPs were on Take-and-Pay model with new ones required to adopt the Take-and-Pay model;
- xiii) The total installed capacity was **5,686MW** with a dependable capacity of 3,662 MW while peak demand is **3,561MW**. Thermal generation accounts for the largest share of Ghana's power generation, representing 72 per cent, with hydro accounting for 27 per cent and the rest being marginal renewables (solar, wind and biomass) as at October 2023;
- xiv) Ghana's thermal dependency is due to high demand, unpredictable water levels, the discovery of indigenous oil and gas, and the introduction of the West African Gas Pipeline;
- xv) The national electrification **access rate** increased from 85% by the end of 2019 to **88.8%** at the end of 2022 with about 1,021 additional communities being connected to the national grid as part of the rural electrification programme. The population access

rate at the end of 2021 was 100% in urban localities as compared to 72.9% in rural localities. Per government policy, the nation expects to achieve **universal electricity access by 2025**;

- xvi) To ensure the achievement of the 2025 national access rate target, GoG participated in the World Bank-funded Ghana Energy Development and Access Project (GEDAP). The GEDAP project is tailored to expand electricity access to geographical locations such as island communities and those Volta Lakeside communities where the level of electricity demand is low;

**Table 1: Total Installed and Dependable Capacity (MW) by Technology**

	2019		2020		2022	
	Installed	Dependable	Installed	Dependable	Installed	Dependable
Hydro	1,584	1,365	1,584	1,400	1,584	1,400
Thermal	3,682	3,296	3,694	3,435	3,753	3,482
RE sources	43	34	59	47	144.05	94.65
<b>Total</b>	<b>5,309</b>	<b>4,695</b>	<b>5,337</b>	<b>4,882</b>	<b>5,481</b>	<b>4,975</b>

*Source: Energy Commission's National Energy Statistics, 2023*

- xvii) In 2019, the country had a net import of electricity of 127 GWh. That decreased significantly to 58 GWh in 2020 and 37 GWh in 2022. This is in line with government policy to decrease electricity imports but rather increase electricity exports to become a major net electricity exporter in the sub-region. In 2022, the country had a net export of 2,178 GWh of electricity;

**Table 2: Electricity Imports and Exports from 2019 to 2022 in GWh**

	2020	2021	2022
<b>Imports</b>	58	44	37
<b>Exports</b>	1,855	1,734	2,215
<b>Net</b>	1,797	1,690	2,178

*Source: Energy Commission's National Energy Statistics, 2023*

- xviii) The Renewable Act (832) did not originally consider hydro projects over 100MW – including Akosombo (1020MW), Bui (400) or Kpong (160) – as renewable. Ghana's thermal dependency was due to high demand, unpredictable water levels, discovery of indigenous oil and gas and the introduction of the West African Gas Pipeline;
- xix) The Natural Gas supplies for electricity generation in the country are met by Ghana's domestic gas fields (Jubilee, TEN and Sankofa) and supplemented by imports from Nigeria through the West African Gas Pipeline (WAGP);
- xx) The distribution function is liberalized in the country. There exist three (3) distribution companies: - The Electricity Company of Ghana (ECG), Northern Electricity Distribution (NEDCo), and Enclave Power Company (EPC). In 2019, the total amount

of electricity distributed in the country was 9,924 GWh. In 2022, the total amount of electricity distributed was 11,808 GWh, which was 4% more than the previous year;

**Table 3: Electricity Distribution in Ghana in GWh**

	2019	2020	2021	2022
<b>ECG</b>	8,685	9,333	9884	10,274
<b>NEDCo</b>	1,010	1,148	1,281	1,307
<b>EPC</b>	229	237	230	227
<b>Total</b>	9,924	10,718	11,395	11,808

*Source: National Energy Statistics of Ghana, 2023*

- xxi) It can be observed in **Table 3** that ECG account for 87.1% of the total electricity distributed in the country from 2019 to 2022. This was followed by NEDCo, which accounted for about 10.8% of the total electricity distributed, with EPC accounting for about 2.1%;
- xxii) The residential sector was the largest consumer of electricity in Ghana from 2019 to 2022, accounting for 43% to 41% of total electricity consumption. The industrial sector was the second-largest consumer, accounting for 36% to 42% of total consumption over the same period;

**Table 4: Electricity consumption by Sectors**

	2019		2020		2021		2022	
	GWh	%	GWh	%	GWh	%	GWh	%
Residential	6,078	43	6,829	44	6,959	41	7,111	41
Industry	5,081	36	6,226	40	7,130	42	7,428	42
Service	3,081	22	2,355	15	2,773	16	2,965	17
Agriculture	11	0	17	0	25	0	33	0
Transport	10	0	7	0	10	0	11	0
<b>Total</b>	<b>14,261</b>	<b>100</b>	<b>15,434</b>	<b>100</b>	<b>16,898</b>	<b>100</b>	<b>17,547</b>	<b>100</b>

*Source: National Energy Statistics of Ghana, 2023*

- xxiii) The total amount of **electricity lost** (i.e., both technical and commercial) was 4,809 GWh and 5,055Ghw which was about **29.7%** and **29.98%** of the total electricity purchased in 2021 and 2022. However, the total distribution loss is expected to reduce due to interventions such as the ongoing network improvements, installation of smart prepaid meters, and revenue mobilization exercise being carried out<sup>1</sup>;
- xxiv) Those high levels of electricity distribution losses coupled with non-payment of bills and poor tariff structure, have led to a mounting power sector debt and poor financial health. To curtail the mounting power sector debt and poor financial health and thereby increase their revenues, the Utilities have been installing prepaid electricity metering systems for both the private sector and government agencies. The sector was also pursuing other solutions and approaches including the implementation of Energy Efficiency (EE) and Demand Side Management (DSM) measures and reforms in the

<sup>1</sup> Integrated Power Sector Master Plan for Ghana, 2023

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distribution sector to address the financial health challenges faced by the distribution utilities.

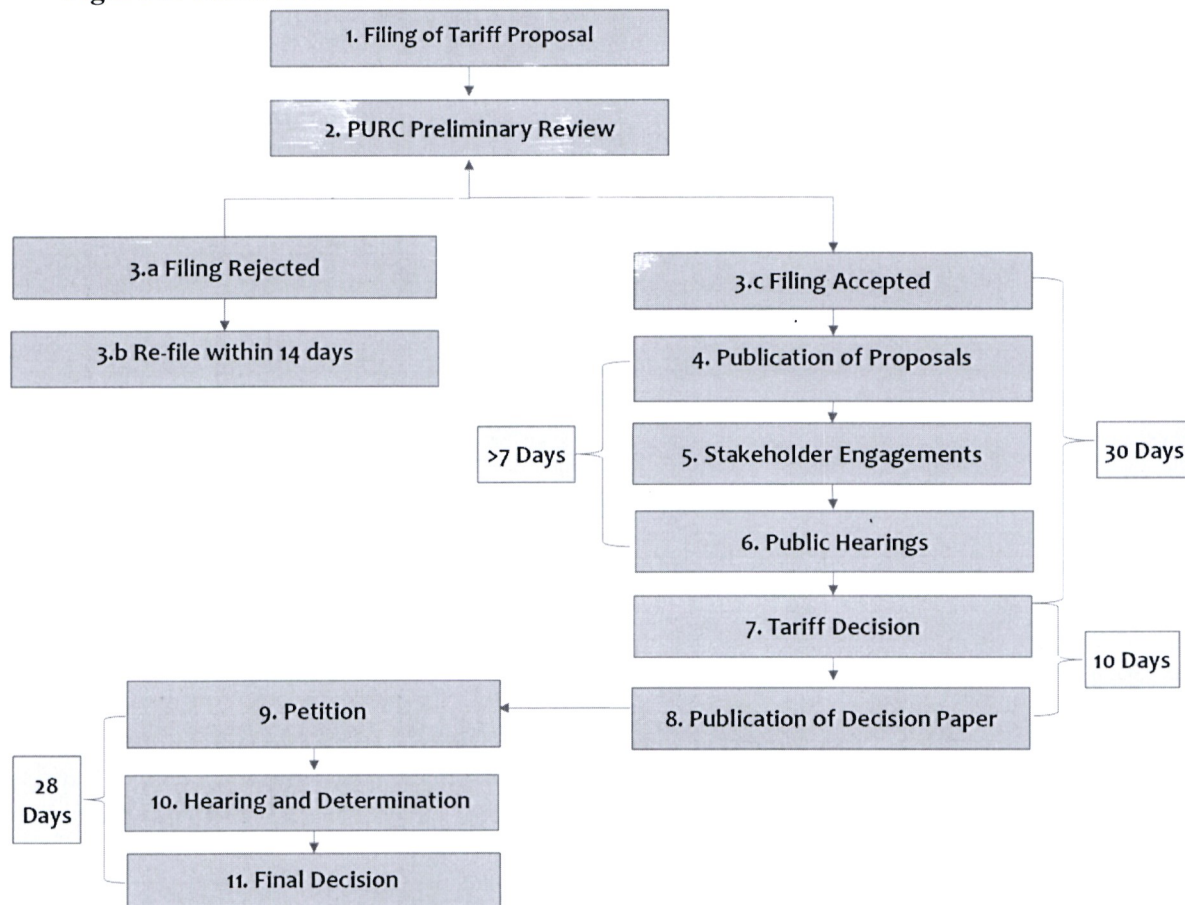
- xxv) To deal with **illegal connections**, the government came up with **special law courts**;
- xxvi) In August 2007, the MoEn launched the National Compact Fluorescent Exchange Programme (CFLs) at the peak of the nation's power crisis. The programme **saved** the nation about **140MW** of peak electricity supply;
- xxvii) It was observed that the sector is keen on supporting industrialization by introducing a relatively lower power tariff for industries and commercial consumers. It was evident that public participation contributed immensely to the great electricity coverage in Ghana.

## **2.7 Meeting with representatives of the Public Utilities Regulatory Commission (PURC):**

17. During this engagement, the delegation got insight of the operations of PURC, with an overview of its establishment and mandate, governance and appointment, institutional framework, Procurement and Supply of Electricity Generation Capacity and Energy for the Regulated Electricity Market and PPAs Approval Process. The delegation was further provided the following information:
  - i) The PURC was established through the Public Utilities Regulatory Commission Act, 1997 (Act 538) which was further amended in 2010 to include independent financing;
  - ii) PURC is an independent economic and quality of service regulatory body established to regulate Electricity, Water and Natural Gas utility services in Ghana;
  - iii) The Commission consists of a 9-Member Board: A Chairman, one person nominated by the Trades Union Congress (TUC), one person nominated by the Association of Ghana Industries (AGI), one representative of domestic consumers, the Executive Secretary appointed under Section 33, and four (4) other persons with knowledge in the functions of the Commission. The Commissioners have a 5 years renewable tenure except for Executive Secretary;
  - iv) The President appoints Members of the Commission. However, Labour and Industry Members are selected by TUC and AGI to represent them on the Commission with the Domestic Consumers' representative being a person associated with a known Consumer Group or a known consumer advocate. The Executive Secretary is appointed through the Public Services Commission process;
  - v) Act 538 gave independence to the Commission. Section 4 states that the Commission was not subject to the direction or control of a person or an authority in the performance of its functions. However, it submitted its annual operational and financial reports to Parliament;
  - vi) The Commission was mandated to grant regulatory approval on the components that make up the tariff in Power Purchase Agreements (PPAs) as they pertain to the purchase and supply of electricity;
  - vii) Ghana's electricity supply industry has an unbundled structure, with power generation, transmission and distribution carried out by separate entities. The market is made up of a regulated sector and a deregulated sector;

viii) It was quite revealing to know that the utility was greatly independent and that the tariff structure setting in Ghana is quite consultative, with public hearings normally done and the electorates required to make buy-in into the process. The tariff review process commences with the receipt of proposals from Utility Service Providers/Stakeholders. PURC then undertakes extensive stakeholder consultations, which affords the utility service providers the opportunity to explain their proposals to the general public and key interest groups.

**Figure 1: Tariff Review Process in Ghana**



Source: PURC 2023

**2.8 Meeting with the representatives of the Electrical Company of Ghana (ECG):**

18. The delegation was taken through the overview of ECG, the Distribution and Supply of Electricity in Ghana, PPA Project Finance Structure, as well as approaches to renegotiating PPAs.

19. The delegation was further informed the following;

- i) The ECG distribute and supply electricity to the Southern part of Ghana covering eight (8) of the sixteen (16) political regions;
- ii) Prior to the years 2017 and 2020 the electricity sector in Ghana experienced an overcapacity, liquidity flow challenges, lack of transparency in the upstream operations

which lead to the introduction of reforms in the Energy sector to introduce Private Sector Participation. This resulted in the need to renegotiate PPAs;

- iii) The outcome of those reforms were renegotiations of some PPAs, restructuring of some PPAs, and termination of others;
- iv) Currently 40% of the PPAs adopted the Take-and-Pay model;
- v) The Ministry of Energy in Ghana has introduced prepaid meters and mobile meter readers to reduce commercial losses;
- vi) The government of Ghana successfully terminated four (4) PPAs and went to court with one IPP where ECG was fined;
- vii) There were three (3) consumer categories: Residential customers, Non-residential customers and special load tariff (SLT) customers.

## 2.9 Meeting with the representatives of the GRIDco:

20. The delegation was taken through the overview of GRIDco, the Electricity Sector role in Ghana, Ghana's NITS, as well as the operations of the National Grid Control Centre.

21. The delegation was further informed the following;

- i) GRIDco was established in accordance with the Energy Commission Act, 1997 (Act 541) and the Volta River Development (Amendment) Act, 2005 (Act 692) which provided for the establishment and exclusion of the National Interconnected Transmission System (NITS) by an independent Utility and the separation of the transmission functions of the Volta River Authority (VRA) from its other activities within the framework of the Power Sector Reforms;
- ii) The utility has the mandate to carry out transmission of electricity from generators to bulk customers, operate the Wholesale Electricity Market and provide telecommunications services;
- iii) Ghana's NITS had thirty-one (31) bulk customers, ten (10) IPPs, 5,231MW of installed capacity with a peak demand of 3,561MW and 6,472.23 km circuit of transmission lines;
- iv) It was noted that NITS has an **Automatic Generation Control (AGC) system** that allows adjusting of the power output of multiple generators at different power plants, in response to changes in the load. Where the grid has tie interconnections to adjacent control areas, automatic generation control helps maintain the power interchanges over the tie lines at the scheduled levels;
- v) It was noted that NITS has an **Islanding Scheme** that allows for intentional isolation of parts of the power system during external widespread grid disturbance;
- vi) The last total **NITS collapse (National power outage) was experienced in 2021** and the whole NITS system was **restored in under 3 hours** due to the **good black start capability** at Akosombo Hydro Power Plant.
- vii) PURC allowed recovery of 4.1% technical losses at the transmission in tariff but in case of a difference GRIDco pays or holds the surplus in mitigation of future losses;
- viii) It was revealing that the creation of the utility has led to open access to the NITS for all participants in the power market; particularly, power generators and bulk consumers.
- ix) The country's national grid is interconnected with the following three neighbouring countries: Togo/Bénin (CEB) at 161 and 330 kV, Cote d'Ivoire (CIE) at 225 kV, and Burkina Faso (SONABEL) at 225 kV. There were a number of other cross-border connections at 33kV for some mines and border communities of Cote d'Ivoire, Togo and

Burkina Faso. The total amount of electricity transmitted and the losses on the transmission system are presented in the table below;

**Table 5: Total Energy and Transmission losses**

	2019	2020	2021	2022
<b>Transmitted (GWh)</b>	17,887	19,717	21,466	22,478
<b>Losses on transmission (GWh)</b>	843	888	1,076	922
<b>% Losses on transmission</b>	4.7	4.5	5.0	4.1

*Source: National Energy Statistics of Ghana, 2022*

## 2.10 Guided tour to Akosombo Hydro Electric Power Plant:

22. The delegation later embarked on a guided tour of Akosombo Hydro Electric Power Plant where it had an opportunity to observe power generation. The delegation was received by the Chief Engineer and made the following observations during the tour;

- i) The Akosombo Dam, rock-fill dam on the Volta River, near Akosombo, Ghana, was completed in 1965 as part of the Volta River Project. The government of Ghana, the World Bank, the United States, and the United Kingdom jointly financed its construction. The dam rose 141m above ground level and had a crest 600 m wide and a volume of 10,451,000 cubic yards (7,991,000 cubic m);
- ii) The large electric-power-generating capacity (**1,020 MW**) of the Akosombo Dam meets Ghana's needs and provides a surplus for sale to neighbouring countries;
- iii) The power plant has an installed standby generator with ample capacity to provide black start for the NITS in the event of total system collapse;
- iv) The Akosombo area was extremely clean with proper sanitation conditions within the facilities and very much friendly. With a staff capacity of 204 dedicated employees, the facilities were well maintained and the entire atmosphere was work friendly, with decorum always maintained to a reasonable level;
- v) The site was fully operational and the human resources personnel very much professional in the discharge of their duties;
- vi) The confines of the plant were well secured and therefore one could not see any peddlers trading within.

## CHAPTER THREE

### 3.0 Committee Observations

23. Comparison of the Energy Sector between Kenya and Ghana.

24. The following table contains a comparison between the energy sector in Kenya and Ghana;

S/NO.	PARAMETER	KENYA	GHANA	REMARKS
1	Area of the country (Km <sup>2</sup> )	580,000	239,000	Kenya is about 2.4 times larger than Ghana;
2	Population in the year 2022 (million)	54	33	Kenya is about 1.6 times populated than Ghana;
3	Electricity access as at 2020	Over 75%	Around 86.6%	Ghana has fair spatial electricity access rate. Ghana's high rate has been attributed to its <b>zero-connection fee policy</b> ;
4	Power generation capacity	3,283MW	5,231MW	Industry consumes 42% of the total production in Ghana;  Ghana's electricity market is composed of a deregulated and a regulated market;
5	Energy mix	Relies heavily on renewable sources (geothermal, hydro, wind & solar)	Fossil fuels (oil and gas) and renewables (hydro and solar)	Ghana relies heavily on Thermal constituting 69%, Hydro 29.9% and Solar at 1.1% as at 2021;
6	Energy infrastructure	Robust transmission and distribution infrastructure	The country has made significant investments in transmission and distribution infrastructure	Ghana's commercial losses account for about 32% while technical losses stands at 9% similar to Kenya's 10%;
7	Legal regime	Constitution of Kenya 2010, the Energy Act 2019 and its subsidiary legislation, FiT Policy 2012, Energy (Liquefied Petroleum Gas) Regulations 2019, Public Private Partnerships Act 2013 (PPP Act), Public Procurement and Asset Disposal Act 2005	Petroleum Commission Act, 2011 (Act 821), the Petroleum Revenue Management Act, 2011 (Act 815), as amended (Act 893), Local Content and Local Participation Regulations, 2013 (L.I.2204) and the Renewable Energy Act 2011 (Act 832), as amended Act 2020 (Act	Ghana has a robust legal framework to promote local content and local participation in the power sector;  Ghanaians have a great influence in policy making processes;

(PPADA) among others. 1045), the Energy Policy 2021 Previously, the sector was among others. guided by the Sessional Paper No. 4 of 2004 on Energy and governed by legislation primarily the Energy Act No. 12 of 2006

8	Energy sector reforms	Competitive bidding process for RE projects	Promoted private sector participation in the energy sector, particularly in the generation and distribution	Ghana has 3 distribution companies; ECG, NEDco and Enclave which is a privately-owned entity;
9	Electricity reliability	Limited reliability, general dissatisfaction among consumers	Improved reliability of 12 hours of power outage every 48 hours	During their stay the delegation didn't experience any power outage;
10	Average end-user tariff price	Kshs. 22.5 per kWh	Kshs. 15.3 per kWh	Cost of electricity in Kenya is higher than the global average of \$ 0.136 per kWh for households;
11	Salient features of PPAs	Most PPAs are on a Take-or-Pay model. Capacity charge by IPPs are more expensive than the energy charge	~PPAs are negotiated between IPPs and the off taker but PURC gave a 10 USD cents ceiling; ~ Old IPPs are on Take-or-Pay model with new ones required to adopt the Take-and-Pay basis; ~ Renegotiated 4 PPAs with IPPs for projects that had not commenced due to delays in reaching financial close; ~ It is proposed that going forward all new generation project to go through the Power Auction.	Ghana has been able to renegotiate some PPAs, restructured others and terminated some;  In some cases, the take-and-pay model changed to take-and-pay, which relieved the offtaker from the obligation to pay for unused capacity, tariffs were adjusted and some commercial operation dates were rescheduled;
13	Export of Power	Kenya has integrated its power lines with Uganda and Ethiopia	Integrated its power lines with Cote D' Ivoire, Togo, Burkina Faso and Benin	Ghana has made rapid progress to become the major exporter of power in the West African sub-region.

## CHAPTER FOUR

### 4.0 Committee Recommendations

25. Arising from the findings of the Study visit, the Committee made the following recommendations:

#### Management of PPAs

- i. The MoEP to commence the process to set the stage for the renegotiation of PPAs, including the pricing model with a view of upscaling the Take-and-Pay model as opposed to the Take-or-Pay model. This will go a long way to address escalating cost of electricity. All retired Power Plants to revert to Government of Kenya (GoK) upon their expiry of term limit. Kenya Power in collaboration the Office of the Auditor General to conduct assessment on the suitability and cost-effectiveness of the said plants;
- ii. The GoK as part of negotiations to audit all the IPPs in terms of their initial investments in those plants and the capital recoveries that have been accrued so far. This should provide the basis for renegotiation of PPAs;
- iii. The GoK to take a major step in building low-cost, competitive and sustainable power sector by committing to disclose future PPAs. This would reduce the governance and investment risks while building public confidence;
- iv. Launch of a public PPA register that shares information on all the country's active electricity contracts so as to increase oversight;
- v. EPRA should benchmark their feed-in-tariff ceiling to benchmark Ghana's 10 US cents ceiling;
- vi. The GoK to postpone all upcoming PPAs and ensure that all future PPAs are denominated in local currency and aligned to the LCPDP;

#### Scaling up of Peak Electricity Savings

- vii. MoEP to enforce policies and programmes that support the deployment of energy efficiency measures to reduce wastage. There is great potential for the implementation of energy efficiency and conservation measures in the country. The use of light-emitting diode (LED) lamps, more efficient air conditioners and fridges/deep freezers can decrease electricity consumption and the growth rate of electricity demand, keep carbon footprints down, and help businesses and homes to save money just as the CFL exchange programme carried out in Ghana in 2007 which saved the country about 124 MW;
- viii. The EPRA should facilitate and support distribution utilities to implement energy efficiency programmes that are revenue neutral;

#### Improving Efficiency of Power Supply

- ix. There is need to fast track the implementation of **High Grand Falls Hydro Electric Project** with the capacity similar to the Akosombo hydro plant in Ghana (**1020MW**)

so to give the Kenya Grid the much-needed Inertia and Regulating Reserves to improve grid stability, resilience and reliability with the high penetration of Variable Renewable Energy sources of wind and solar;

- x. MoEP to expedite plans to complete the 132kV 81km double circuit Narok-Bomet, 132kV Malindi-Weru, 132kV Sondu-Homabay-Ndiwa and 132kV Kabarnet-Rumuruti transmission lines. This will establish a more reliable power supply by providing alternative route to allow flow of geothermal power to the respective regions. Thus, improving supply quality and reliability to the said regions of the country. This is justifiable in that it will stabilize power supply, improve on transmission line security hence cushioning against losses occasioned by power failures and blackouts;
- xi. There is need to implement an **Automatic Generation Control** for the Kenya Grid to improve response to system fluctuations and improvement system stability;
- xii. There is need to enhance the **Black Start Capability** in the Kenyan Grid System to ensure fast system recovery and restoration in the event of a national power outage;
- xiii. KPLC to procure and install weather forecasting stations at the National Control Centre and substations, as well as at various proposed and under-construction renewable energy plant sites. Adequate Supervisory Control and Data Acquisition (SCADA) communication network between the RE plants and National Control Centre will be required for accessing data from the weather systems that will help in predicting the output of the various renewable energy connected to the grid and assist the System Operator in the overall dispatch process;
- xiv. Utilize information gathered from smart meters and automatic meter readers (AMR) to implement options to reduce commercial losses and improve the collection rate of Kenya Power. Analyses of the data will also provide the most recent data from these customers for future demand forecasting;

### **Distribution Planning**

- xv. KPLC to improve inventory management of meters to address the issue of delays in meter installation denying the distribution utility income through unpaid bills. Kenya Power should consider procuring smart meters on a monthly basis to reduce backlog and traction by interested bidders (the industry ‘big boys’);
- xvi. KPLC to ride on the underground infrastructure to provide alternative supply and expand the power grid at a lower cost while reducing vandalism;
- xvii. KPLC to develop an integrated SCADA system across all Utilities. An integrated SCADA system will help Kenya Power improve the distribution network monitoring thereby reducing outage times and times for restoration. The potential of a SCADA system for Kenya Power should be carried out, to assess improvement in monitoring of its distribution network to reduce outage durations like the August 26<sup>th</sup>, 2023 night 14-hour power outage experienced in the country;

### **Other Recommendations**

- xviii. There is an urgent need to strengthen energy sector institutions. This can be done through enhancing financial and political independence, strengthening their capacity

- for service delivery. National Assembly should provide for adequate funding to promote autonomy;
- xix. The Ministry of Energy and Petroleum in conjunction with EPRA to draft and table a legislative proposal to amend Section 12 of the Energy, Act 2019 to allow one person nominated by Kenyan workers, one person nominated by the Kenya Association of Manufacturers and one representative of domestic consumers to be represented in the Energy and Petroleum Regulatory Authority (EPRA) board to benchmark Ghana's PURC board, with the rest of the board members being appointed by the President;
  - xx. The power sector in Kenya is bundled and the state has absolute control over transmission, distribution and partly generation. Unbundling the sector will allow local and international private firms to work together with state institutions. Reconfigure KPLC and REREC across consumer segments so that KPLC is positioned to serve large commercial and industrial consumers while REREC is positioned to serve the social mandate for household consumers and;
  - xxi. Introduction of small law courts to deal with illegal connections and curb debt of electricity;

#### 4.1 Conclusion

26. The Study visit provided an avenue for a lot of lessons learnt and consolidation of best practices within the Energy sector in Kenya. Much of what is required now is to set the pace for the implementation of these recommendations.



SIGNED .....  
 HON. (ENG.) VINCENT MUSYOKA MUSAU, MP

CHAIRPERSON, DEPARTMENTAL COMMITTEE ON ENERGY

DATE ..... 22/11/2023 .....



Annexure 1: Existing Power Plants in Ghana, as of December 2022

Plant Name	Online Date	Region	No. of Units	Operating Utility	Capacity Sub-Type	Installed Capacity (MW)	Net Dependable Capacity (MW)	Reserve Margin Contribution (MW)
<b>Akosombo</b>	Jan-1966	Akosombo, Eastern	6	Volta Authority	RiverHydro: Hydro (Utility)	1020	900	900
<b>Kpong</b>	Jan-1982	Kpong, Eastern	4	Volta Authority	RiverHydro: Hydro (Utility)	160	140	140
<b>TAPCO (T1)</b>	Mar-1998	Takoradi, Western	3	Volta Authority	RiverLCO/Gas Combined Cycle	330	315	315
<b>TICO (T2)</b>	Jun-2000	Takoradi, Western	3	Volta Authority	RiverLCO/Gas Combined Cycle	340	320	320
<b>T317</b>		Takoradi, Western	5	Volta Authority	RiverLCO/Gas Combined Cycle	132	0	0
<b>TT1PP</b>	Jun-2009	Tema, Accra	Greater1	Volta Authority	RiverLCO/Gas Combustion	110	100	100
<b>TT2PP</b>	Jun-2010	Tema, Accra	Greater8	Volta Authority	RiverGas Turbine Combustion	80	70	70
<b>SAPP 1</b>	Sep-2011	Tema, Accra	Greater6	Volta Authority	RiverGas Turbine Combustion	200	180	180
<b>VRA Navrongo</b>	SolarJan-2013	Navrongo, East	Upper1	Volta Authority	RiverSolar Photovoltaic	2.5	1.8	0

VRA Solar Kaleo	Dec-2021	Kaleo	1	Volta Authority	RiverSolar Photovoltaic	13	13	0
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17 T3 is currently offline, however, it is scheduled to come online in 2024 after which it's dependable and its contribution to peak will be 120 MW.

Annexure 1: Existing Power Plants in Ghana, as of December 2022

Alkosombo	Jan-1966	Alkosombo, Eastern	6	Volta Authority	RiverHydro: Hydro (Utility)	1020	900	900
Kpong	Jan-1982	Kpong, Eastern	4	Volta Authority	RiverHydro: Hydro (Utility)	160	140	140
TAPCO (T1)	Mar-1998	Takoradi, Western	3	Volta Authority	RiverLCO/Gas Cycle	330	315	315
TICO (T2)	Jun-2000	Takoradi, Western	3	Volta Authority	RiverLCO/Gas Cycle	340	320	320
T317		Takoradi, Western	5	Volta Authority	RiverLCO/Gas Cycle	132	0	0
TTIPP	Jun-2009	Tema, Accra	Greater1	Volta Authority	RiverLCO/Gas Combustion	110	100	100
TT2PP	Jun-2010	Tema, Accra	Greater8	Volta Authority	RiverGas Turbine	80	70	70
SAPP 1	Sep-2011	Tema, Accra	Greater6	Volta Authority	RiverGas Turbine	200	180	180
VRA Navrongo	SolarJan-2013	Navrongo, East	Upper1	Volta Authority	RiverSolar Photovoltaic	2.5	1.8	0

VRA Solar Kaleo	Dec-2021	Kaleo	1	Volta Authority	RiverSolar Photovoltaic	13	13	0
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17 T3 is currently offline, however, it is scheduled to come online in 2024 after which it's dependable and its contribution to peak will be 120 MW.

Plant Name	Online Date	Region	No. of Units	Operating Utility	Capacity Sub-Type	Installed Capacity (MW)	Net Dependable Capacity (MW)	Reserve Margin Contribution (MW)
		Upper West						
		Kaleo		Volta Authority	River			
<b>VR Solar Lawra</b>	Dec-2020	Upper West	1		Solar Photovoltaic	6.5	6.5	0
<b>Bui</b>	Jun-2013	Bui, Brong Ahafo	3	Bui Power Authority	Hydro (Utility)	404	333.5	333.5
<b>CENT</b>	Oct-2013	Tema, Accra	Greater1	Cenit Limited	LCO Combustion	110	100	100
<b>KTPP</b>	Oct-2015	Tema, Accra	Greater2	Volta Authority	RiverDFO/Gas Combustion	220	200	200
<b>KarpowerShip</b>	Sep-2019	Takoradi, Western	26	Karpower Ltd	HFO/Gas Combined Cycle	470	450	450
<b>BXC Solar</b>	Jan-2016	Winneba, Central	1	BXC Company	Solar Photovoltaic	20	18	0
<b>Bui Solar</b>	April-2021	Bui, Bono	1	Bui Power Authority	Solar Photovoltaic	50	45	0
<b>Safisana</b>	Sep-2016	Ashaiman, Accra	Greater1	Safisana Company Ltd	MSW – Landfill Gas	0.1	0.1	0
<b>AKSA</b>	Aug-2017; Jan-2019	Tema, Accra	Greater22	AKSA Ghana	HFO/Gas Combined Cycle	370	330	330
<b>SAPP 2</b>	Mar-2017	Tema, Accra	Greater4	Sunon Asogli Power Co.	LCO/Gas Combined Cycle	360	350	350

Plant Name	Online Date	Region	No. of Units	Operating Utility	Capacity Sub-Type	Installed Capacity (MW)	Net Dependable Capacity (MW)	Reserve Margin Contribution (MW)
<b>Cenpower</b>	Jun-2019	Tema, Greater Accra	3	Cenpower Generation Company	LCO/Gas Cycle Combined	360	340	340
<b>Twin City (Amandi)</b>	Oct-2019	Takoradi, Western	3	AMANDI Energy	LCO/Gas Cycle Combined	210	201	201
<b>MeinEnergy Solar Plant</b>	Sep-2018	Winneba, Central	1	Meinenergy	Solar Photovoltaic	20	18	18
<b>Total</b>			101			4,988.1	4,386.9	4,347.5

Source: Energy Commission, PPTC.

**Annexure 2: Under-Construction Power Plants in Ghana**

Plant Name*	Online Date**	Region	No. of Units	Operating Utility	Capacity Sub-Type	Installed Capacity (MW)	Net Dependable Capacity (MW)	Reserve Margin Contribution (MW)
<b>Ameri (6 Units)**</b>	2023	Kumasi, Ashanti	6	Volta River Authority	LCO/Gas Combustion	150	135	135
<b>Ameri (4 Units)**</b>	2026	Kumasi, Ashanti	4	Volta River Authority	LCO/Gas Combustion	100	90	90
<b>Early Power 1</b>	Mar-2023	Tema, Greater Accra	6	Early Power	LPG/Gas Combustion	191	185	185
<b>Early Power 2</b>	Mar-2027	Tema, Greater Accra	3	Early Power	LPG/Gas Combustion	315	300	300
<b>Total</b>			19			756	715	715

Source: *Energy Commission of Ghana.*

\* The online dates of these plants are tentative, as online dates are subject to change. The dates shown here are the expected dates of commissioning, as of December 2022.

\*\*Ameri currently is a 250 MW existing power plant in Takoradi but 6 units out of 10 units is being relocated to Kumasi. The remaining 4 units will be used to revive T3. Per VRA's plan, in 2026, 4 units (Ameri 4 units) will be purchased and added to the 6 units (Ameri 6 Units) in Kumasi to make 10 units (250 MW).

Note: The net dependable capacity is the expected capacity that is available for generation from a planning perspective, although on an operational basis, the amount up to the installed capacity (or greater) can be available for a short duration. The reserve margin capacity is the capacity that is available for meeting the peak demand. In most cases, the dependable capacity is the same as the reserve margin, except for non-dispatchable renewables and plants that are not controlled by the grid operator.

REPUBLIC OF KENYA



THE NATIONAL ASSEMBLY  
THIRTEENTH PARLIAMENT

DEPARTMENTAL COMMITTEE ON ENERGY

MEMBERS' ADOPTION LIST

Agenda: Adoption of the report of foreign visit to Ghana  
DATE: 19/10/23 VENUE: 2nd Floor Chamber START TIME: 11:00 AM END TIME: 12:30 pm

	NAMES	SIGNATURE
1.	Hon. (Eng.) Vincent Musyoka, MP- Chairperson	
2.	Hon. Lemanken Aramat, MP- Vice Chairperson	
3.	Hon. Charles Gimose, M.P	
4.	Hon. Julius Musili Mawathe, MP	
5.	Hon. Richard Ken Chonga, MP	
6.	Hon. Walter Owino, M.P MP	
7.	Hon. Elisha Odhiambo, MP	
8.	Hon. Tom Mboya Odege, MP	
9.	Hon. Simon King'ara, MP	
10.	Hon. George Omera Aladwa, MP	
11.	Hon. Mwafrika Augustine Kamande, MP	
12.	Hon. Victor Koech Kipngetch, MP	
13.	Hon. Geoffrey Ekesa Mulanya, MP	
14.	Hon. Cecilia Asinyen Ngitit, MP	
15.	Hon. Barongo Nolfason Obadiah, MP	

Forwarded by:

Signed: Date: 19/10/2023  
Mr. Adan Gindicha  
Principal Clerk Assistant II – Lead Committee Clerk

Approved by:

Signed: Date: 22/11/23  
for Mr. Peter K. Chemweno,  
Director  
Directorate of Departmental Committees

1. The first part of the document is a list of names and addresses of the members of the committee.

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**MINUTES OF THE 85<sup>th</sup> SITTING OF THE DEPARTMENTAL COMMITTEE ON ENERGY HELD ON THURSDAY 19<sup>th</sup> OCTOBER, 2023 IN CONTINENTAL HOUSE 2<sup>nd</sup> FLOOR BOARDROOM AT 12.00PM**

**PRESENT**

1. The Hon. (Eng.) Vincent Musyoka Musau, MP –**Chairperson**
2. The Hon. Lemanken Aramat, MP-**Vice Chairperson**
3. The Hon. Cecilia Asinyen Ngikit, MP
4. The Hon. Victor Koech Kipngetch, MP
5. The Hon. Elisha Odhiambo, MP
6. The Hon. Walter Owino, MP - Virtual
7. The Hon. Simon King'ara, MP
8. The Hon. Geoffrey Ekesa Mulanya, MP
9. The Hon. Barongo Nolfason Obadiah, MP

**APOLOGIES;**

1. The Hon. Richard Ken Chonga, MP
2. The Hon. Tom Mboya Odege, MP
3. The Hon. Julius Musili Mawathe, MP
4. The Hon. George Aladwa Omwera, MP
5. The Hon. Mwafrika Augustine Kamande, MP
6. The Hon. Charles Gimose, MP

**COMMITTEE SECRETARIAT**

- |                         |   |                               |
|-------------------------|---|-------------------------------|
| 1. Mr. Adan Gindicha    | - | Principal Clerk Assistant II  |
| 2. Ms. Mary Lemerelle   | - | Clerk Assistant II            |
| 3. Mr. Salim Athuman    | - | Clerk Assistant III           |
| 4. Josphat Bundotich    | - | Principal Sergeant at Arms II |
| 5. Mr. Brian Njeru      | - | Fiscal Analyst III            |
| 6. Mr. Robert Langat    | - | Research Officer III          |
| 7. Ms. Mercy Mayende    | - | Media Relation Officer        |
| 8. Ms. Rehema Chepkurui | - | Audio-Recording Officer       |

**AGENDA**

1. Prayers
2. Preliminaries/Introductions
3. **Adoption of the report on Budget Implementation Oversight for 2022/2023**
4. **Adoption of the report on benchmarking visit to Ghana on PPA management**
5. **Adoption of the report on benchmarking visit to South Africa on PPA management**
6. **Adoption of the report of the committee participation in the 4<sup>th</sup> Petroleum Conference in Kampala, Uganda.**
7. Adjournment/ Date of the next meeting

#### **MIN. NO. NA/ENERGY/2023/74 : PRELIMINARIES**

The meeting was called to order at 11.30am and commenced with prayers by the Hon Simon King'ara. Self-Introductions were made. The Agenda of the meeting was adopted as adoption of the report on Budget Implementation 2022/23, Adoption of the three reports on foreign visits to Ghana, South Africa and Uganda having being proposed by the Hon.Lemanken Aramat and seconded by Hon Geoffrey Mulanya.

#### **MIN. NO. NA/ENERGY/2023/75: ADOPTION OF THE REPORT ON BUDGET IMPLEMENTATION OVERSIGHT 2022/2023**

The following observations were from the report which was presented by the Fiscal Analyst;

- i. There were several projects undertaken by KETRACO which include Nanyuki–Isiolo-Meru, Sondu-Homabay-Ndhiwa-Awendo, Power Transmission System Improvement Project, Kamburu Embu Thika Transmission Line, and Naivasha Industrial Park were affected by budget cuts which reduced their project budgets to zero, however they still received budget disbursements.
- ii. There were several projects undertaken by the State Department For Energy which are bundled together, and they include the last mile connectivity project, Street lighting, Electrification of Public Facilities and Installation of transformers in constituencies project
- iii. There was an under-performance of AIA witnessed in the 5% Electricity Levy-REP, the sale of steam, KOSF storage charges and Sale of Wood Fuel Burners in the recurrent expenditure category while in the development expenditure category, underperformance was witnessed in the 5% electricity levy.
- iv. The State Department for Energy had a budgeted development expenditure from foreign sources i.e., grants and loans of Kshs.22.2 billion, however the actual expenditure arising from the two sources amounted to Kshs.12.5 billion resulting to an underperformance of Kshs.9.7 billion.
- v. As at 30<sup>th</sup> June 2023, the pending Bills among the SAGAs under the State Dept. for Energy were incurred by KETRACO (Kshs.22.16 billion) owing from wayleave claims and compensations, NUPEA(Kshs.82.9 million) owing from conferences and project funding constraints and GDC (Kshs.1.22 billion) as a result of budgetary challenges, under litigation, dispute and cash flow challenges. KPLC has pending bills amounting to Kshs.82.5 billion which comprises of Kshs.75.1 billion owed to Energy Suppliers who include KenGen, KETRACO, REREC and IPPs, Kshs.876 million owed as statutory payments such as royalty, and dividends and Kshs.6.5 billion owed to General and other suppliers. On the other hand, the National govt owed KPLC Kshs.19.6 billion of which Kshs.19.2 billion emanates from the RES projects maintenance, Kshs.121 million owing to the tariff compensation subsidy and Kshs.248 million for REREC primary schools maintenance.

Kenya Pipeline is losing throughput products of 0.04% against a threshold of 0.25% set by EPRA through theft. Considering that Kenya Pipeline transports about 8 billion liters annually, the 0.04% in losses translates to around 3.2 million liters lost and approximately Kshs.600 million in revenue lost.

An analysis of the pending bill owed to the Oil marketing companies as at the 15 December 2022 - 14 January 2023 pricing cycle indicates that the pending bill amounted to Kshs.53.3 billion, while a further analysis indicates that the pending bill as the 15th May 2023- 14th June 2023 pricing cycle indicates that the pending bill was at Kshs.45.7 Billion, a difference of only Kshs.7.6 billion, despite the programme having an allocation of Kshs.63.1 Billion in FY 2022-23, which was an increase of Kshs.42.7 billion from Kshs.20.4 billion in the initial estimates. It is also critical to note that the funding was approved by the National Treasury in line with article 223 of the constitution, and Kshs.22.59 billion had already been disbursed, meaning subject to the regularization of the expenditure in the FY 2022/23 Supplementary Estimates which was done by parliament, the amount that was remaining to be disbursed was Kshs.20.15 billion.

vi.

### **Committee Recommendations**

The Cabinet Secretary for the Ministry of Energy and Petroleum in conjunction with the Cabinet Secretary for the National Treasury to undertake the unbundling of the projects in the subsequent budget i.e., FY 2024-25 annual budgets, with the breakdown containing the list of projects to be funded per constituency against their allocation in order to promote transparency in allocation of projects and their implementation by 28<sup>th</sup> February 2024

The Cabinet Secretary for the Ministry of Energy and Petroleum to provide to the Committee a comprehensive status report regarding the entire cost of the LPG Bulk storage and Handling Facility in Mombasa, its expected completion date and a breakdown of the utilization of the Kshs.192 million spent so far on the project by 30<sup>th</sup> November 2023

The Kenya pipeline company to leverage on technology e.g., use of tactic drones to enhance surveillance on their pipeline network, reduce costs accruing from acquisition of SCADA (supervisory control and data acquisition) as well as help reduce incidences of product theft by 31<sup>st</sup> March 2024.

### **MIN. NO. NA/ENERGY/2023/76: ADOPTION OF THE REPORT ON BENCHMARKING VISIT TO GHANA ON PPA MANAGEMENT.**

The following observations were made from the report;

- i. Ghana has been able to renegotiate some PPAs, restructured others and terminated some;
- ii. Ghana has 3 distribution companies; ECG, NEDco and Enclave which is a privately-owned entity
- iii. In some cases, the take-and-pay model changed to take-and-pay, which relieved the offtaker from the obligation to pay for unused.
- iv. Cost of electricity in Kenya is higher than the global average of \$ 0.136 per kWh for households
- v. Ghana has been able to renegotiate some PPAs, restructured others and terminated some;
- vi. In some cases, the take-and-pay model changed to take-and-pay, which relieved the offtaker from the obligation to pay for unused
- vii. Ghana's commercial losses account for about 32% while technical losses stands at 9% similar to Kenya's 10%;

### **Recommendations from the report;**

- i. The MoEP to commence the process to set the stage for the renegotiation of PPAs, including the pricing model with a view of upscaling the Take-and-Pay model as opposed to the Take-or-Pay model. This will go a long way to address escalating cost of electricity. All retired Power Plants to revert to Government of Kenya (GoK) upon their expiry of term limit. Kenya Power in collaboration the Office of the Auditor General to conduct assessment on the suitability and cost-effectiveness of the said plants;
- ii. The GoK as part of negotiations to audit all the IPPs in terms of their initial investments in those plants and the capital recoveries that have been accrued so far. This should provide the basis for renegotiation of PPAs;
- iii. There is need to fast track the implementation of **High Grand Falls Hydro Electric Project** with the capacity similar to the Akosombo hydro plant in Ghana (**1020MW**) so to give the Kenya Grid the much-needed Inertia and Regulating Reserves to improve grid stability, resilience and reliability with the high penetration of Variable Renewable Energy sources of wind and solar;
- iv. MoEP to expedite plans to complete the 132kV 81km double circuit Narok-Bomet, 132kV Malindi-Weru, 132kV Sondu-Homabay-Ndiwa and 132kV Kabarnet-Rumuruti transmission lines. This will establish a more reliable power supply by providing alternative route to allow flow of geothermal power to the respective regions. Thus, improving supply quality and reliability to the said regions of the country. This is justifiable in that it will stabilize power supply, improve on transmission line security hence cushioning against losses occasioned by power failures and blackouts
- v. There is need to implement an **Automatic Generation Control** for the Kenya Grid to improve response to system fluctuations and improvement system stability;
- vi. There is need to enhance the **Black Start Capability** in the Kenyan Grid System to ensure fast system recovery and restoration in the event of a national power outage;
- vii. The benchmarking visit provided an avenue for a lot of lessons learnt and consolidation of best practices within the Energy sector in Kenya. Much of what is required now is to set the pace for the implementation of these recommendations

### **MIN. NO. NA/ENERGY/2023/77: ADOPTION OF THE REPORT ON BENCHMARKING VISIT TO SOUTH AFRICA ON PPA MANAGEMENT.**

The Committee made the following observations and Findings, THAT

- i. The establishment of the IPP office in 2010 through a tripartite memorandum of understanding between the Development Bank of South Africa(DBSA),National Treasury(NT) and Department of Mineral Resources and Energy(DMRE) and subsequent introduction of the Independent Power Producers Procurement Programme has led to a reduction in tariffs through competitive procurement of new electricity generation capacity provided by independent power producers (IPPs)with Bid window 1 prices amounting to 3.94 Rand Cents and this has subsequently reduced to 0.54 Rand Cents for solar and wind plants in Bid Window 6.The programme's dual consideration of economic development objectives has also led to the creation of a significant number

of jobs, as well as the promotion of foreign direct investment and private sector investment into the South African energy sector.

- ii. The Regulatory sub-committees of the National Energy Regulator of South Africa are open to the public except where confidential matters are to be considered.
- iii. There is a huge variance between the ESKOM's installed capacity of 48,000 MW against the available capacity of 27,000MW, which has to a great extent led to the perennial load shedding being experienced in South Africa.
- iv. Owing to the high variability in flow and the lack of suitable sites for hydroelectricity in South Africa, pumped storage schemes are used as an alternative to conventional hydroelectric power stations to provide the power needed during peak periods, which entails the retaining and reusing of the water in the system Instead of discharging it.
- v. South Africa is the only nuclear operator in Africa, and currently has two nuclear reactors generating about 6% of its electricity and is among the cheapest sources of power in their energy mix, at a cost of about 1 USD cents per kilowatt-hour(kWh).

The Committee made the following recommendations, THAT;

- i. The Cabinet Secretary for the Ministry of Energy and Petroleum in conjunction with the Cabinet Secretary for the National Treasury to initiate the formation of an Independent Power Producers(IPP) Office which incorporates membership from the National Treasury, Attorney General, Ministry of Energy and Petroleum, KPLC and EPRA, to manage, implement and monitor IPPs, within thirty-six (36) months upon adoption of the report.
- ii. The Cabinet Secretary for the Ministry of Energy and Petroleum and the Energy & Petroleum Regulatory Authority to implement upcoming energy projects under the Energy Auctions Policy in order to ensure that new electricity capacity is procured competitively and in line with the Least Cost Power Development Plan within twelve (12) months of adoption of the report.
- iii. The Energy and Petroleum Regulatory Authority (EPRA) to open to the public the proceedings of their regulatory sub-committees meetings except on confidential matters in order to promote transparency and accountability within twelve (12) months upon adoption of the report.
- iv. The Kenya Electricity Generating Company PLC (KenGen) to incorporate pump storage schemes in their hydroelectric generation plants to necessitate pumping the water back after use which will help combat the issue of poor hydrology arising from drought and famine as well as enable the country benefit from their quick re-action to changes in electricity demand which play a major part in maintaining the stability of the national grid within sixty (60) months of adoption of the report.

**MIN. NO. NA/ENERGY/2023/78: Adoption of the report of the committee participation in the 4<sup>th</sup> Petroleum Conference in Kampala, Uganda.**

The Committee made the following observations;

The conference coincides with the East Africa Community's commitment to implement its EAC Vision 2050 plan, which seeks to ensure a sustainable, adequate, affordable, competitive, secure and reliable supply of energy to meet regional needs at the least cost.

2. Africa must be helped to secure the economic benefits from oil and gas development which can help raise millions of people out of poverty.
3. The dilemma facing many African countries is how to address the continent's significant energy access gap, as well as the need to reduce the negative environmental impacts of traditional energy sources
4. As the world moves towards renewable energy sources, the role of Oil and Gas in the energy transition is becoming increasingly under scrutiny.
5. Premised on the need for the world to swift from primary use of fossil fuel to renewable sources of energy, the energy transition is faced with the challenges of energy poverty and economic transformation of countries endowed with oil and gas
6. National Oil Companies can use their functions to achieve this balance and promote socio-economic transformation in petroleum-rich countries

The committee learnt the following key lessons;

East Africa has the capacity of ending energy poverty among its population while contributing to global energy security and a just and inclusive energy transition, on the back of optimal development and exploitation of vast energy resources including oil, gas, hydrogen and renewables

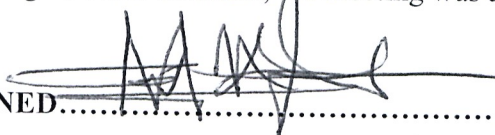
2. Energy consumption pattern in Africa is driven by mainly three sectors which demand up to 80% of the energy supply: the transport, residential and industrial sectors of the economy.
3. The private sector plays a pivotal role in the development of the oil and gas industry, particularly in the provision of much-needed goods and services for example, the Bank of Uganda has guided on how revenues from oil and gas activities are managed in line with Petroleum Revenue Investment Policies (PRIP)
4. The Government-to-Government agreements for oil importation on credit is one of the ways the East African Regional States are undertaking to help in petroleum logistics and supplies

**MIN. NO. NA/ENERGY/2023/79: ANY OTHER BUSINESS**

There was no any other business.

**MIN. NO. NA/ENERGY/2023/80: ADJOURNMENT**

There being no other business, the meeting was adjourned at half past one o'clock.

SIGNED.......... DATE 22/11/2023.....  
(CHAIRPERSON)