

Ministry of Energy/ Ghana
Energy Sector
Transformation Initiative
Project (GETSIP)/Public
Utilities Regulatory
Commission (PURC)

Consultancy Services for Validation of
Electricity Company of Ghana (ECG)
Revenue/Collection Accounts



February 2024

FINAL TASK 1 REPORT FOR THE PERIOD 1 JULY 2023 TO 30 SEPTEMBER 2023

Strictly private and confidential



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All issues and results mentioned in this and other reports relate only to those matters that we have found in the course of our work or that were important for our work, and about which we feel you should be informed. However, this report is not a comprehensive listing of our findings; specifically, we cannot be held responsible for identifying all of the risks or all weaknesses of the internal control system. This report was prepared for your exclusive use and may not be quoted either in whole or in part without our prior written consent. We do not accept any responsibility towards third parties, as this report was not prepared for any additional purpose.

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Digital Address: GA-052-9469

28 February 2024

Dear Sir

Subject: Final Report - Consultancy Services for Validation of Electricity Company of Ghana (ECG) Revenue/Collection Accounts (covering 1 July 2023 to 30 September 2023)

In accordance with our contract with you dated 31 October 2023, we are pleased to enclose herewith our Final Report on the above-mentioned Project.

The report outlines:

- Our work done to date and some key challenges;
- Our review of the Cash Waterfall Mechanism (“CWM”);
- Our general observations and specific key issues identified from the validation exercise; and
- Our conclusion and next steps.

This final report has been issued subsequent to an earlier report dated 29 December 2023. ECG provided further information which we evaluated and considered in presenting this final report. The period covered for this assessment is from 1 July 2023 to 30 September 2023.

This report is intended solely for the information and use of the Ministry of Energy and the Public Utilities Regulatory Commission and is not intended to be and should not be used by anyone other than these specified parties.

We express our gratitude to all the stakeholders for the support during the conduct of the validation exercise.

Yours sincerely,
for: PricewaterhouseCoopers (Ghana) LTD

Vish Ashiagbor

Director

Prince Adufutse

Director



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Abbreviations

Abbreviation	Full Meaning
AI	Action Item
CAATs	Computer Assisted Audit Techniques
CMS	Customer Management System
CWM	Cash Waterfall Mechanism
DR	Disaster Recovery
ECG	Electricity Company of Ghana
ESRP	Energy Sector Recovery Program
GCB	Ghana Commercial Bank
GNGC	Ghana National Gas Company Limited
GoG	Government of Ghana
GHS	Ghanaian Cedi
GWh	Gigawatt hours
NEDCO	Northern Electricity Distribution Company
NGC	Natural Gas Clearinghouse
NSLT	Non-Special Load Tariff
PURC	Public Utilities Regulatory Commission
PwC	PricewaterhouseCoopers
RPO	Recovery Point Objective
RTO	Recovery Time Objective
SLA	Service Level Agreement
SLT	Special Load Tariff
SQL	Structured Query Language
USD	United States Dollars
VRA	Volta River Authority



Executive Summary



Executive Summary

Introduction and Background

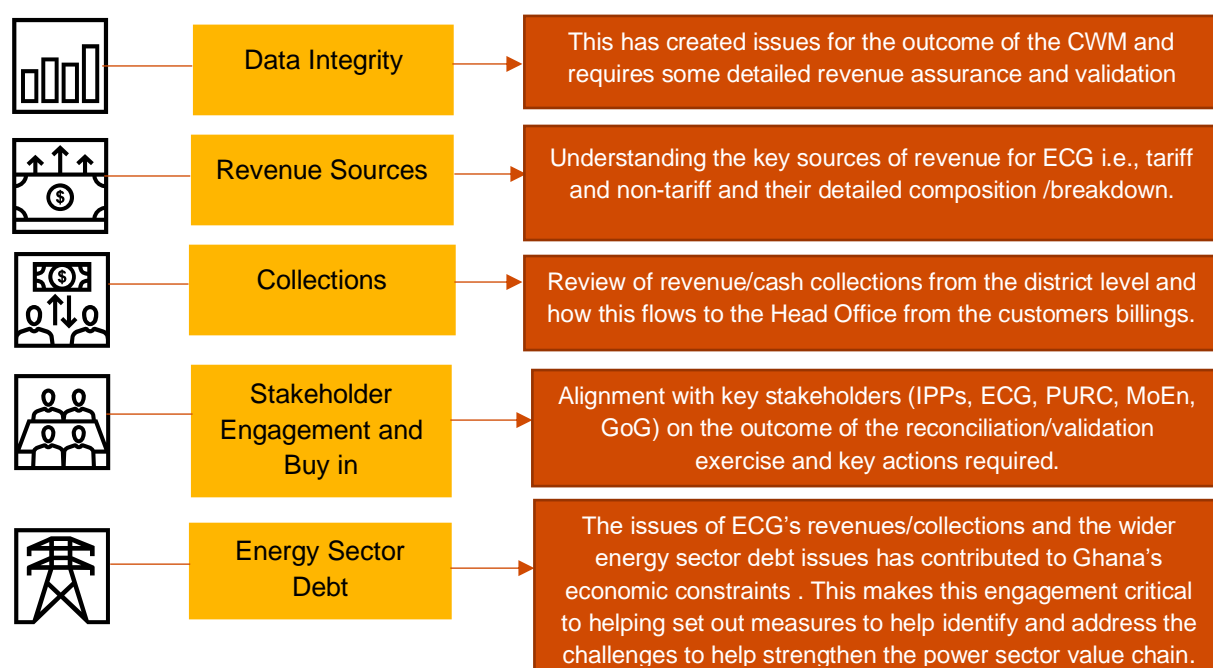
As part of achieving financial sustainability in Ghana's energy/utilities value chain, the Government of Ghana (GoG) initiated the Energy Sector Recovery Program (ESRP) in May 2019. The ESRP is a comprehensive recovery program that sets out the roadmap of policies and actions required for the financial recovery in the energy sector.

The ESRP implemented a payment mechanism in April 2020, the Cash Waterfall Mechanism (CWM), to ensure transparent, equitable and timely payment of all revenues and the billed and collected by the Electricity Company of Ghana (ECG) on behalf of the entire electricity generation value chain.

The CWM and the Natural Gas Clearinghouse (NGC) mechanisms were put in place to ensure equity and transparency in the disbursement of energy revenues, equitable allocation of tariff revenue collected by the Electricity Company of Ghana to all parties in the energy value chain.

This engagement seeks to validate electricity sales in terms of kWh and amount billed and collected by ECG over a defined period to confirm if these sales, billings and collections align with the requirements and outcomes of the Cash Waterfall Mechanism and its related payments. The assessment will also validate the cycle of power delivered, corresponding billing and collection as well as the full transfer of these collected funds from the regional collection accounts into the Single Collections account.

The following are some of the key challenges in Ghana's power sector that we believe has informed the importance and urgency for this engagement:



As part of the assessment for this engagement, the scope covers the review period: 1 July 2023 to 30 September 2023 (3 months). This was originally identified in the scope of work as Task 1.

This final report has been issued subsequent to an earlier report dated 29 December 2023. ECG provided further information which we evaluated and considered in presenting this final report. The period covered for this assessment is from 1 July 2023 to 30 September 2023, which is the Task 1 period.

Review of CWM

The following are some key observations we made during our review of the CWM models we received from ECG and PURC over the Task 1 Period:

- **CWM Discrepancies (Declaration vs Disbursement):** We observed that the declared collections and corresponding allocations made by ECG were consistently different from what was actually paid. This according to the CWM reports were due to overpayments/underpayments to beneficiaries classified as Tier 2 (Level B) of CWM. The CWM report does not state clearly why this happened and the PURC notes that the CWM Standing committee indicated how this defeats the purpose of the CWM. We generally agree with this position as the guidelines for the CWM are quite clear. It will be important to understand from ECG's perspective why the guidelines were not followed consistently.
- **CWM process:** As mentioned earlier, the allocations and subsequent disbursement often do not completely follow the requirements of the guidelines. It will be useful for PURC to take advantage of technology enabled solutions to facilitate a system that provides real-time data, independent validation and a stronger reconciliation system to support a more efficient monitoring and evaluation process in the CWM declaration process.
- **Use of an unprotected Microsoft Excel spreadsheet (Data Integrity and Model Security):** We observed that most of the submitted CWM models did not have protected cells to limit users' ability to interfere with allocation formulas either intentionally or by error. Going forward, PURC will need to reconsider the use of Microsoft Excel based spreadsheet for the CWM. To promote the process of transparency and efficient management of the mechanism, the integrity of the data entered into the spreadsheet must be safeguarded. Key cells must be locked with control access features and enhanced access log features programmed into the spreadsheet to track any attempted changes to the inputs in the model. As suggested in our recommendation, PURC together with ESRP should consider a shared platform approach to enhance oversight and accountability from ECG, beneficiaries and the key stakeholders of Ghana's value chain to promote confidence in the CWM and its ability to meet its objectives.

General Observations and Specific Key Issues Identified from Validation Exercise

Key Limitations of Validation Exercise

The following table sets out the key limitations of our reconciliation and validation exercise for this engagement.

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No.	Thematic Area	Key Issues Identified
1	Validation of payments to CWM beneficiaries.	<p>From our review of payments made to CWM beneficiaries, we noted that some payments were made through ECGs operational accounts, margin accounts and escrow accounts (ADB, Consolidated Bank, Fidelity Bank, GCB, Access Bank, Zenith Bank, Bank of Africa, First Atlantic Bank, GT Bank, Omni BSIC, Republic Bank, Ecobank, ABSA, Stanbic Bank, Societe Generale, CAL Bank and Universal Merchant Bank).</p> <p>As at the date of this report, the bank statements of these accounts have not been made available to us to validate these payments. As such the validation of these payments could not be performed. Refer to Appendix 2 for the details of these payments.</p>
2	Validation of payments from ECG collection accounts to non-CWM beneficiaries	<p>The terms of reference required the confirmation of payments from ECG collection accounts to other non-CWM beneficiaries.</p> <p>ECG has indicated that such information is not within the scope of the review and as such has not provided the data and supporting evidence as at the date of this report. The validation of the payments could therefore not be performed.</p> <p>We have however analysed the total disbursements made by ECG to non-CWM beneficiaries against ECG's CWM allocation to assess if ECG's disbursements to the non-CWM beneficiaries are within their allocated amount. Refer to section 3.6 for our results and conclusions on this.</p>
3	Validation of payment of statutory deductions to the various authorities	<p>The terms of reference required the confirmation of payment of statutory deductions declared by ECG to the relevant authorities.</p> <p>As at the date of this report, the required data (VAT returns and evidence of payments) have not been made available for this procedure to be completed.</p>
4	Validation that all revenues received by ECG for the reporting period are in alignment with	ECG provided aggregated data which showed the total power sales (in Gwh)

No.	Thematic Area	Key Issues Identified
	<p>the electricity received and distributed by ECG.</p>	<p>and the corresponding sales (in GHS). As shown in our analysis in Appendix 5, this does not give us an appropriate unit of measure to recompute the revenues as differences in customer bands gives different average unit costs across the different ECG operational regions and months.</p> <p>We explained to ECG that at a minimum we require the sales data submitted to show the tariff band breakdown to facilitate the re-computation analysis as part of this exercise. This information is yet to be provided.</p>
5	<p>Review and assess ECG's billing and invoicing procedures, including the accuracy of metering, tariff application, and customer billing.</p>	<p>From our engagement with ECG, they indicated that the organisation has recently changed its processes and systems.</p> <p>The old customer onboarding/ billing/ collection system (Customer Management System -CMS) which was subject to the cybersecurity attack has been changed.</p> <p>The new customer onboarding/billing/collection system (Meter Management System to enhance ECG's digitisation drive) has been implemented. This new system has been driven by a move towards digitalising collections, billing and revenue management with the support of third-party technology providers such as Hubtel Limited.</p> <p>As at the date of this report ECG has not provided the relevant data to enable us to review and assess the billing and invoicing system. Thus, this task has not been completed.</p>

The list of documents reviewed as part of the validation exercise include the following:

- CWM payments (from 1 July 2023 to 30 September 2023);
- GCB Bank Statement for account number 1011130011277 for the period from 1 July 2023 to 30 September 2023;
- Fidelity Bank statements for account number 1070006628289 for the period from 1 July 2023 to 30 September 2023;
- Cheque register for payments to CWM beneficiaries for the period from 1 July 2023 to 30 September 2023; and
- Bank Transfer advices to various banks for payments to various CWM beneficiaries for the period from 1 July 2023 to 30 September 2023.

Based on the data made available to us, we adopted the following approach to the exercise:

- **Cash collections:** We obtained the bank statements of GCB collections account (1011130011277) and Fidelity single collections account (1070006628289) and analysed all collections received in the account (credit transactions in the bank statement) on a monthly basis for the period from July 2023 to September 2023. We then compared the total monthly collections analysed from the bank statements to the amounts reported in the CWM, highlighting the differences noted for each month.
- **Disbursements:** We obtained the bank statements of GCB collections account (1011130011277) and Fidelity single collections account (1070006628289) and analysed all disbursements in the account (debit transactions in the bank statement) on a monthly basis for the period from July 2023 to September 2023. We then identified all disbursements on a month-by-month basis made to CWM beneficiaries by obtaining and analysing the cheque register and bank transfer advices from ECG. For those payments made through the fidelity and GCB accounts, we agreed these amounts to the bank statements. We then excluded the total CWM payments from the total disbursements to ascertain the non-CWM disbursements made by ECG and compared these amounts to ECG's CWM allocation.

Summary of ECG Cash Collection and Management Analysis

No.	Key Finding	Details of finding
1	Differences between Total Collections declared on CWM and the total collections consolidated from the bank statements of the GCB main account and Fidelity Single collections account	<p>On a monthly basis, ECG is required to report their total collections for the month for input into the CWM, which would then be distributed amongst the CWM beneficiaries.</p> <p>To assess the amounts reported by ECG, we obtained and analysed all collections received in the GCB collections account (account number 1011130011277) for the period from July 2023 to September 2023 and the Fidelity Bank Single Collections Account (account number 1070006628289) for the period from July 2023 to September 2023).</p> <p>From our analysis performed on the bank statements received, we noted a net difference of GHS629 million between the total collections declared on the CWM approved schedules and the inflows consolidated from the bank account statements shared with us (see Appendix 1 for month-on-month analysis). The total collections per the CWM were lower than the total collection per the two bank statements.</p> <p>We have raised this with ECG and requested for explanations and supporting evidence for these disparities. As at the date of this report, ECG management were yet to revert with these explanations and supporting evidence.</p>

Summary of ECG CWM Disbursement Analysis

No.	Key Finding	Details of finding
1	Disbursement to CWM beneficiaries from other ECG operational accounts post the MoF directive of 21 June 2023 effective 1 July 2023.	<p>The Ministry of Finance (MoF) issued a directive on 21 June 2023, effective 1 July 2023 that ECG should operate a single account from which all collections and payments will be made. In this regard, ECG designated Fidelity Bank Account number 1070006628289 as the single collections account.</p> <p>From our validation procedures performed, we noted that some payments totalling GHS684 million to CWM beneficiaries for the period from 1 July 2023 to 30 September 2023 were made from other ECG operational accounts, escrow accounts and margin accounts (see Appendix 2). Payments through these other accounts were not in line with the MoF directive issued.</p> <p>We have raised this with ECG and requested for the bank statements for these operational accounts, escrow accounts and margin accounts to validate these payments to the CWM beneficiaries. We are still yet to receive them.</p>
2	Disbursement to Non-CWM beneficiaries (individuals and organisations) in excess of ECG's allocated amount per the CWM.	<p>Per the CWM model, ECG is allocated a portion of approximately 25% from which its operational expenditures are to be made.</p> <p>From our analysis of the disbursements made from the GCB collections account and the Fidelity Single collections account, we noted that for all the months, the disbursements made by ECG to Non-CWM beneficiaries was in excess of its allocated amount per the CWM. In total, disbursements of approximately GHS 591 million were made in excess of ECG's CWM allocation from 1 July 2023 to 30 September 2023 (see Appendix 3 for month-on-month analysis). This is not in line with the Cash Waterfall Mechanism.</p>

Conclusion and Next Steps

Our Proposed Recommendations

We have identified and described in detail our recommendations for strengthening the current CWM and the inputs from ECG going forward. In summary this includes:

- Establishing billing and invoicing Process improvements at ECG;
- Key considerations for the CWM disbursement process;
- Key considerations for the management of non-tariff revenue by ECG;
- Medium term redevelopment of the CWM onto a technology enabled platform to strengthen the fundamental objectives of the mechanism; and
- Key considerations for cybersecurity and data protection measures at ECG (including Implementation of a Disaster Recovery Plan/Framework, Integration of Cyber Defence Mechanisms and Processes at ECG and considerations for managing third party solutions/ collaborations).

We have elaborated on our proposed recommendations in Section 4.1 of this report.

Our Proposed Next Steps

The immediate next steps for us, will be to engage with the Ministry of Energy , PURC and the other relevant stakeholders to establish the critical process of retrieving the required data/information to complete our tasks. This will also establish the foundation for the relevant process and information requirements going forward for the quarterly reviews. We also look forward to discussing our recommendations as PURC, ESRP and the other stakeholders plan to work with ECG to implement them to help restore confidence and promote a transparent and strengthened CWM.



Introduction and Background



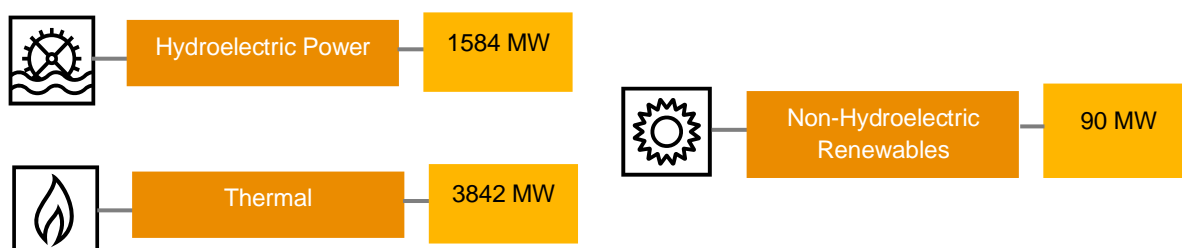
Introduction and Background

1.1 Introduction

1.1.1 An Overview of Ghana's Power Sector

Ghana has approximately 5,516 MW of installed power generation capacity which is made up of ¹ the following sources of power as shown in Figure 1:

Figure 1: Summary of Ghana's Power Generation Capacity



Source: Estimated 2022 data | BMI, Ghana Power Report (Q1 2024)

Ghana is noted to have achieved one of the highest electrification rates in sub-Saharan Africa of more than 80%².

Thermal generation³ accounts for the largest share of Ghana's power generation (representing 66%). This is followed by hydroelectric power (33%) and renewables (1%).

Ghana's power sector can broadly be segregated into three major areas: generation, transmission and distribution. The power generation mix in Ghana is supplied from Volta River Authority (VRA), Bui Power Authority (BPA) and Independent Power Producers (IPPs). Energy produced from the generating stations is transmitted by the state-owned Ghana Grid Company (GRIDCo) throughout the entire country to VRA power sale customers i.e. the distribution and service connections companies, through an interconnected transmission network at 69 Kilovolts (kV), 161kV and 225kV voltage levels. The transmission grid comprises a matrix of substations and transmission lines. It includes over 4,000 kilometres of high voltage transmission lines operating at 161kV and 69kV and includes an interconnection to Cote d'Ivoire at 225kV. Distribution in Ghana is carried out by three main distribution utilities, two state-owned (Electricity Company of Ghana [ECG] and

¹ BMI | A Fitch Solutions Company | Ghana Power Report (Q1 2024) | Estimated data for 2022

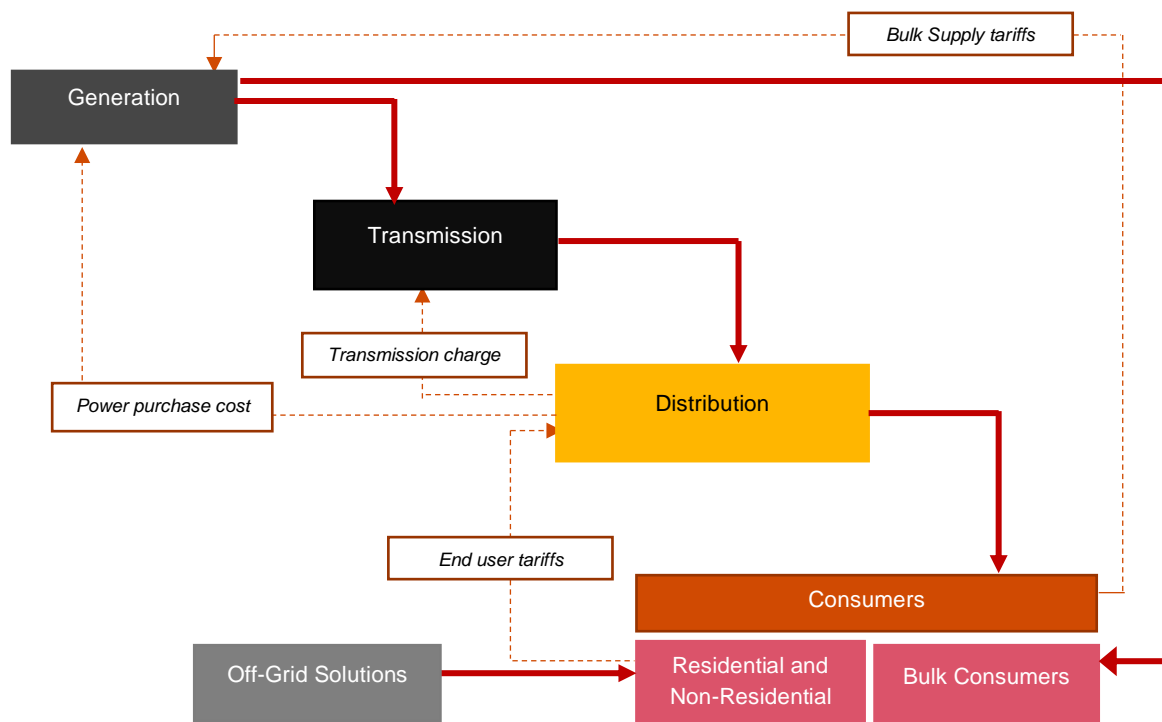
² International Energy Agency(IEA)| Access to Electricity Data – Ghana (2022). LINK: <https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity>

³ Ghana Energy and Renewables - Country Commercial Guides | Energy Sector |US Department of Commerce (2023), <https://www.trade.gov/country-commercial-guides/ghana-energy-and-renewables>

Northern Electricity Distribution Company[NEDCO]) and one private sector operator (Enclave Power Company)⁴.

The diagram below summarises Ghana’s power sector value chain (focused on energy flow and charge/tariff flows):

Figure 2: Ghana’s Power Sector Structure (Tariff/Charges Flow and Flow of Power)



KEY	
	Flow of power (supply and consumption)
	Tariffs/Charges

Source: Ghana Investment Promotion Centre (GIPC) and PwC Analysis

1.1.2 The Public Utilities Regulatory Commission (PURC) and its Role

PURC is a state entity and regulator for the electricity utility services water utility services and the transportation of natural gas services in Ghana. The PURC under its establishing act (Public Utilities Regulatory Commission Act, 1997 [Act 538]) is an independent body and is not subject to the control of any authority in the performance of its function. The PURC’s role covers the following functions:

- Examination and approval of utility rates in Ghana;
- Provision of guidelines for rates to be charged for the provision of utility services in Ghana;

⁴ Ministry of Energy| Overview of The Ghana Power Sector

- Receive, investigate and settle complaints relating to utility services
- Promotion of fair competition among public entities in Ghana;
- Provision of advice to any person or authority in relation to any public utility in Ghana;
- Protection of the interest of consumers and providers of utility services in Ghana;
- Monitoring and enforcement of standards of performance for the provision of utility services in Ghana;
- Review of reasonableness of pricing under Ghana's Power Purchase Agreements and monitoring their quality of service; and
- Regulation of other public entities in Ghana's power generation sub-sector by approving the Bulk Generation Tariffs.

The following entities all fall within the remit of PURC's regulation:

- Electricity Company of Ghana (ECG);
- Northern Electricity Distribution Company (NEDCO);
- Enclave Power Company Limited;
- Ghana Grid Company (GRIDCO);
- Ghana National Gas Company Limited (GNGC); and
- Ghana Water Company Limited (GWCL).

Under the amended Energy Sector Recovery Programme (June 2023), the following items highlight steps taken to help strengthen PURC's role as regulator in Ghana's power sector:

- Operationalisation of a regulatory financial reporting framework;
- Installation of prepaid meters for non-strategic MDAs in Ghana by ECG and NEDCO;
- Institute regulations and tariffs for full recovery of street lighting costs;
- Completion of periodic adjustment of revenue requirement for ECG and NEDCO (as per quarterly adjustment);
- Review non-residential block tariff structure; and
- Commission regular audit of collections and disbursements of ECG and NEDCO.

1.1.3 The Energy Sector Recovery Programme (ESRP)

The Energy Sector Recovery Programme (ESRP) was launched in May 2019 by the GoG as a roadmap to bring the energy sector into financial balance by 2023. It comprised of an original set of 30 reform actions or Action Items (AIs), split across 3 Phases, that would simultaneously reduce cost and increase revenues while improving the operational performance of sector SOEs. During the ESRP implementation period of 2019 to 2023, the GoG also committed to annual budgetary transfers (Stabilisation Payments) to cover prevailing sector revenue shortfalls to prevent further accumulation of Legacy Arrears.

The second phase of the AIs consisted of 21 AIs which were to be initiated within the first twelve months after the approval of the ESRP, by May 2020. The adoption of the Cash Waterfall or other appropriate mechanism to increase payment transparency was item 24 (in Phase II) of the ESRP AIs.

In April 2020, the ESRP established the Cash Waterfall Mechanism (CWM) to facilitate a transparent, equitable and timely process of payments to Ghana's power sector value chain from revenues billed and collected by ECG. The core objectives of implementing the CWM was to:

- Create a mechanism that ensures that the revenue collected from the regulated electricity market in Ghana is allocated across the electricity value chain in an equitable and transparent manner;
- Facilitate the process of clearly and comprehensively establishing the gap between the cost of electricity supply and the revenue collected; and
- To ensure transparency, efficient and equitable disbursement of ECG's collections to the power sector players in Ghana.

The scope of the ESRP has since been amended to allow the completion of uncompleted AIs and the implementation of its new AIs (additional 12 AIs) due to the change in circumstances (particularly, higher than expected exchange rate fluctuation, worse than expected State Owned Enterprise performance, increased power generation and operations cost higher than expected all leading to wider than anticipated sector shortfall of approximately US\$ 8 billion). The amendment (instituted in June 2023) has led to the extension of the ESRP by two and a half years (to 2025). Some of the key AIs largely relevant to the scope of this engagement include:

- Implement mechanisms for enforcing the guidelines of the CWM and NGC.
- PURC to commission regular audit of collections and disbursements of ECG and NEDCo.
- PURC to complete periodic adjustment of revenue requirement for ECG and NEDCo (as per quarterly adjustment).
- PURC to operationalise a regulatory financial reporting framework.
- Develop and institutionalise a framework for inter-utility debt reconciliation and settlement.

In the next section, we have set out the objectives and other details of the engagement.



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1.2 Engagement Background

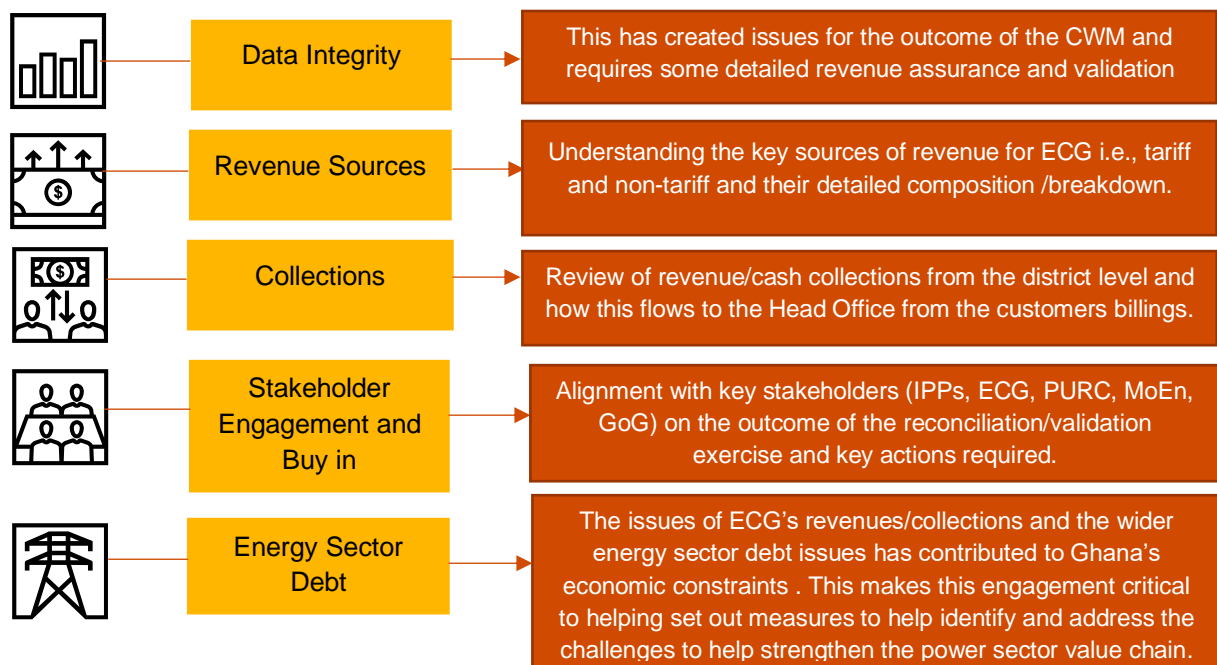
As part of achieving financial sustainability in Ghana's energy utilities and value chain, the Government of Ghana (GoG) initiated the Energy Sector Recovery Program (ESRP) in May 2019. The ESRP is a comprehensive recovery program that sets out the roadmap of policies and actions required for the financial recovery in the energy sector.

The ESRP implemented a payment mechanism in April 2020, the Cash Waterfall Mechanism (CWM), to ensure transparency, equitable and timely payment of all revenues billed and collected by the Electricity Company of Ghana (ECG) on behalf of the entire electricity generation value chain.

The CWM and the Natural Gas Clearinghouse (NGC) mechanisms were put in place to ensure equity and transparency in the disbursement of energy revenues, equitable allocation of tariff revenue collected by the Electricity Company of Ghana to all parties in the energy value chain.

This engagement seeks to validate electricity sales in terms of kWh and amount billed and collected by ECG over a defined period to confirm if these sales, billings and collections align with the requirements and outcomes of the Cash Waterfall Mechanism and its related payments. The assessment will also validate the cycle of power delivered, corresponding billing and collection as well as the full transfer of these collected funds from the regional collection accounts into the Single Collections account.

The following are some of the key challenges in Ghana's power sector that we believe has informed the importance and urgency for this engagement:



As part of the assessment for this engagement, the scope covers the 1 July 2023 to 30 September 2023 (3 months). This was originally identified in the scope of work as Task 1.

This final report has been issued subsequent to an earlier report dated 29 December 2023. ECG provided further information which we evaluated and considered in presenting this final report. The period covered for this assessment is from 1 July 2023 to 30 September 2023, which is the Task 1⁵ period.



⁵ Per the terms of reference for this engagement, Task 2 covers the period 1 July 2022 to 30 June 2023 (12 months). Our assessment for this period has been covered in a separate report.

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1.3 Engagement Report

Our approach to delivering this assignment started with an inception report in which we detailed our preliminary findings, outcome of our initial discussions and data requests from ECG.

The next phase of our approach looked at a review of the CWM after which we conducted a validation and reconciliation review of ECG's revenue (tariff and non-tariff), collections, billings, disbursements (payments to CWM beneficiaries and statutory deductions), power purchased/received, power distributed/sold including a review of their related processes.

As indicated earlier, our review was significantly affected by the lack of the relevant data to carry out the full scope of work for the assignment. We took steps as a firm to engage ECG for the required data including broader engagements with key stakeholders such as the MoEn, PURC, The World Bank and the ESRP Secretariat. Despite our efforts as consultants and efforts from the stakeholders, ECG failed to provide the necessary documentation within the required timeframe to complete our work. The following data/information and clarification remain outstanding from ECG as of the preparation of this report:

- Detailed billing data covering the Task 1 and Task 2 reporting period.⁶
- Collections data per customer covering the Task 1 and Task 2 reporting period.
- Chart of Accounts for cash and bank data from ECG's general ledger system.
- Customer onboarding process details with workflow data showing approvals and broken into the following categories:
 - Walk-in customers.
 - Self Help Electrification Project (SHEP) customers.
 - Temporary supply customers.
- Documented Transfers in Margin and Escrow Accounts for Cash Build Up.
- List of all registered vendors and bonded cashiers who operate with ECG.
- Revenue general ledger covering the Task 1 and Task 2 reporting period.
- Documented explanation for the observed differences between Total Collections declared on CWM and the Total Collections consolidated from the bank statements of ECG's GCB Main Account and its Fidelity Bank Single Collections Account.
- List of meter categories which are hosted by ECG or vendors.
- Details of customers who pay directly into ECG accounts (SWIFT)
- Details of all customer accounts for onboarded customers broken down into:
 - Smart meter prepaid customers.
 - Other prepaid customers.
 - Post paid customers.

In relation to the missing data and information⁷ yet to be provided by ECG for this engagement, we have set out the key scope items per the Terms of Reference for this engagement,

⁶ We received billing data from ECG after we agreed that they may exclude sensitive customer data such as names, addresses and contact numbers for its customers. However, ECG provided aggregated data (categorised monthly and per district) which showed the total power sales (in Gwh) and the corresponding sales (in GHS). We explained to ECG that at a minimum we required the data to be further disaggregated to show power consumption by tariff bands. We are yet to receive this data.

⁷ Our initial follow up on the data/information request via email was sent to ECG on 14 November 2023, with subsequent follow ups on 17 November 2023, 22 November 2023, 29 November 2023, 5 December 2023.

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highlighting the status of each task with comments on outstanding data and other remarks on our approach.

The following table summarises the estimated percentages ranges that the correspond to the three defined status categories:

Table 1 : Explanation of Status Categories

Status Category	Description	Percentage Assigned
Not Completed	Less than half of the requested data was provided to us. Consequently, we did not have enough information to conduct the relevant analysis and come to a conclusion.	0-49%
Partially Completed	More than half but not a 100% of the requested data was provided to us . As a result, we did not have enough information to conduct the relevant analysis to come to a definite conclusion.	50%-99%
Completed	All the requested information was provided, and we were able to come to a conclusion.	100%

Table 2 : Status of Scope of Works Requirements

No.	Scope of Work (per TOR)	Status
1	Review the CWM allocation determination process, including the methodologies used and the inputs considered, all revenues collected against electricity received from generators by ECG and delivered to customers, corresponding bills issued and collected, and transferred into a single collection account for declaration by ECG to the CWM including all payment instructions issued to ECG by the CWM for disbursement under CWM guidelines and also all disbursements made out of the single collection account.	Status: Partially Completed Comments: ECG did not provide the disaggregated sales and customer billing information to allow us to carry out this task completely.
2	Review and assess ECG's billing and invoicing procedures, including the accuracy of	Status: Not Completed

After these follow ups, a letter was issued to the MoEn to officially inform them about the lack of the relevant data from ECG to support the scope of work of the engagement. Representatives of ECG were copied in the on 11 December 2023. The letter was forwarded to ECG on 11 December 2023. Since then, there have been subsequent physical follow ups to obtain the outstanding data for the exercise. We have attached the letters in Appendix 6 of this report.

No.	Scope of Work (per TOR)	Status
	metering, tariff application, and customer billing.	Comments: ECG indicated that their new system is still being implemented and that the relevant manuals are yet to be updated in line with the new system. As a result, the relevant data for this task has not been provided by ECG.
3	Review and assess ECG's revenue collection and accounts receivables management.	Status: Not Completed Comments: The relevant data for this task has not been provided by ECG.
4	Validate that all revenues received by ECG for the reporting period are in alignment with the electricity received and distributed by ECG along with corresponding billing and collections, and amounts declared by ECG to the electricity value chain entities and note any discrepancies.	Status: Partially Completed Comments: Cash received by ECG in the GCB and Fidelity bank statements for the reporting period were compared with the amounts declared to the value chain entities. We are unable to compare the electricity sold by ECG to these cash collections and corresponding billing as the data to complete this task has not been provided by ECG.
5	Validate that ECG has made timely payment to the electricity value chain entities in accordance with the payment instructions issued to ECG by the CWM and note any discrepancies.	Status: Partially Completed Comments: We did not get all the relevant bank statements from ECG to allow us to complete this task.
6	Identify all accounts into which customer cash collections are transferred.	Status: Not Completed Comments: We did not get all the bank statements from ECG to allow us to work on this task
7	Check that all revenues received at each collection point were transferred in full to the relevant district collection/revenue accounts.	Status: Not Completed Comments: We did not get customer billing data from ECG to allow us to work on this task
8	Check that the daily banked receipts were swept in full into the Head Office Single collection/revenue account;	Status: Not Completed Comments: We did not get all the relevant bank statements from ECG to allow us to work on this task.
9	Identify any revenue accounts utilised by ECG which are not swept into the district collection accounts and head office Single Collection account.	Status: Not Completed Comments: We did not get all the relevant bank statements from ECG to allow us to work on this task.
10	Check the inflows into all the operational accounts to determine the sources of such revenue;	Status: Not Completed

No.	Scope of Work (per TOR)	Status
		Comments: The relevant operational accounts were not provided by ECG.
11	Check the disbursement from the revenue/collection accounts to the other beneficiaries.	Status: Partially Completed Comments: We did not get all the bank statements from ECG to allow us to complete this task.
12	Determine whether the disbursements by ECG were in accordance with the CWM allocation percentages per the payment instructions issued by the CWM to ECG.	Status: Partially Completed Comments: We did not get all the bank statements from ECG to allow us to complete this task.
13	Confirm the amounts declared weekly as non-tariff revenues (i.e., any revenues not declared by ECG to the CWM).	Status: Not Completed Comments: We did not get non-tariff data from ECG to enable us undertake this task.
14	Confirm the payment of the statutory deductions declared by ECG have been disbursed to the various authorities in a timely manner.	Status: Not Completed Comments: We did not get statutory payment data from ECG to enable us undertake this task.
15	Check whether ECG is using a single collection account as per MoF directive of June 21, 2023 effective July 1, 2023.	Status: Partially Completed Comments: We did not get the relevant bank statements from ECG to allow us to complete this task.
16	Undertake a comprehensive assessment of the adequacy, transparency and effectiveness of accounting and overall internal control systems for the revenue collections, transfer, and disbursement mechanisms.	Status: Partially Completed Comments: We did not get relevant data (customer data, general ledger, revenue details, operational accounts and bank statements, etc.) from ECG to allow us to complete this task.
17	Recommend and advise the GOG on how to strengthen internal controls and GOG oversight over ECG's revenue and disbursement structure under the CWM	Status: Completed Comments: Please refer to Section 4.1 (Our Recommendations) of this report.

Review of Cash Waterfall Mechanism (CWM)



Review of the Cash Waterfall Mechanism (CWM)

2.1 Introduction

The Cash Waterfall Mechanism (CWM) has been operational since April 2020, with a primary objective of ensuring equitable and transparent distribution of monthly revenue collections by ECG, based on the invoices submitted by the beneficiaries and the share of each beneficiary in the PURC tariff build up.

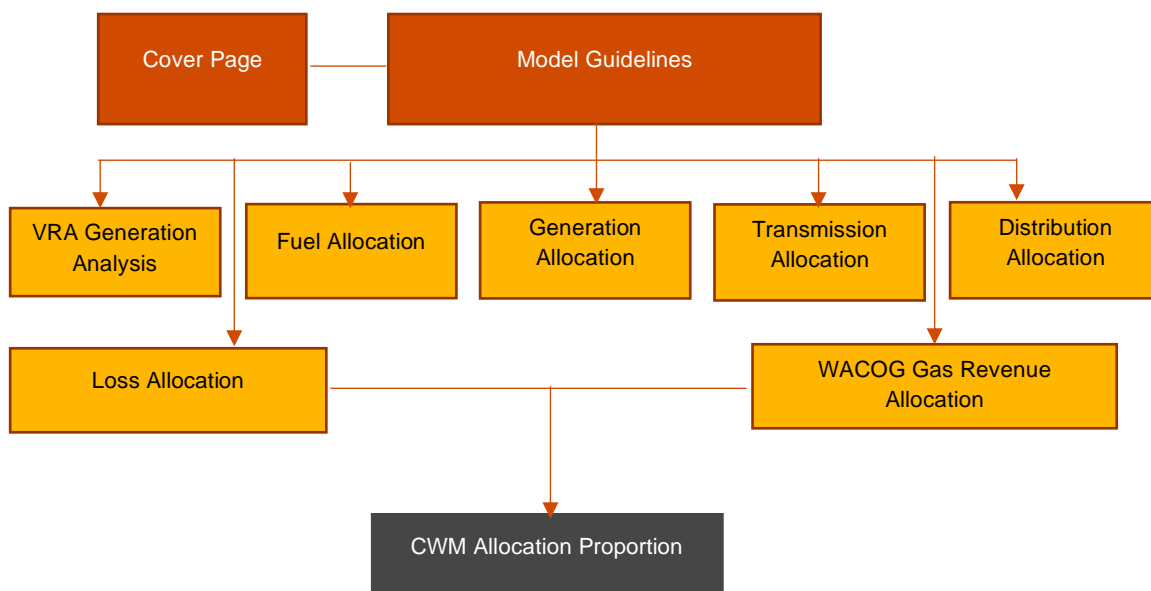
After the June 2023 directive from the President of the Republic of Ghana on the revision of the implementation of the CWM due to ECG's non-compliance with the previous guidelines, the updated model was effective from July 2023. In the updated CWM, IPPs (Level A stakeholders) are to be paid approximately USD 43million on a monthly basis whereas the rest of the cash is split among the rest of the stakeholders/beneficiaries along the value chain (i.e. Level B stakeholders) based on an agreed proportion split (as was previously the case). The table below shows the directed formulae for the allocation of the revenue collected to the energy sector players:

Table 3 : Allocation of revenue collected by ECG to sector player (CWM beneficiaries)

Collection			
Total collection		A	
Payments to IPPs		B	
Balance for CWM		$C=A-B$	
Statutory Deductions (12.5%)		D	
Net Revenue for Allocation		$E=C-D$	
Allocation			
Electricity Value Chain	Cost	% Allocation	Disbursement
Generation	G	G/T	$(G/T)*E$
Fuel	F	F/T	$(F/T)*E$
Regulatory Levies (Power)	RI	RI/T	$(RI/T)*E$
Distribution	Dis	Dis/T	$(Dis/T)*E$
Transmission	Tr	Tr/T	$(Tr/T)*E$
Total	T	100	

Additionally, the directive required ECG to declare monthly minimum collection of GHS 1 billion for disbursement and the Sankofa gas payment excluded for the allocation within the mechanism. The current CWM model can be summarised as follows:

Figure 3: Summary CWM Model Structure



2.2 Review of model structure and mechanics

The following table sets out our review of the CWM model structure and mechanics. We reviewed the CWM model presented to us by ECG for the month of September 2023.

Table 4 : CWM model structure and mechanical review

No.	Thematic Area	Comments
1	General model structure	<p>The model is well structured and defines terminology applied across the model as well as the applicable colour coding.</p> <p>As a form of best practice, the guidelines within the model should also include a detailed description of each sheet within the model structure to present the flow of the framework and the importance of the calculations there. It will be best if the cover page could incorporate this.</p>
2	Formulas and mechanical framework	<p>In general, the formulas and mechanical framework of the CWM are sound and well structured. Due to the sensitive nature of revenue allocations and tariff computations, it</p>

No.	Thematic Area	Comments
		<p>will be more prudent for these relatively more sensitive sheets to be protected going forward particularly given the fact that all other stakeholders will only be reviewing the information presented on the computations.</p> <p>We did not identify any problematic formulas within the CWM model. However, we noticed that the Loss Allocation sheet was not formatted per the model architecture framework, and this should be updated for consistency.</p>
3	Errors and inconsistencies	Our review of the CWM model did not show any obvious errors or inconsistencies. The model is relatively robust in the relevant formulas for the allocation analysis.
4	Model security and protection	<p>Given the current structure of the mechanism and how it is shared, it is important for the model to be secured in terms of:</p> <ul style="list-style-type: none"> • Internal computations (by PURC) establishing the allocations for generation, fuel, loss and transmission should have restricted access to avoid errors/miscalculations due to cell interference. • Version of the model shared with stakeholders such as ECG should provide limited access to provide validated collections to facilitate automatic CWM allocation computation. • PURC should also consider establishing an access log and version control system for the CWM model received from third parties such as ECG.
5	Considerations for more efficient and transparent operationalisation	An unprotected spreadsheet for the CWM may not be too efficient in holding key stakeholder accountable to validated collections and ensuring that the CWM guidelines are followed. A real time platform that allows PURC and ESRP to monitor and evaluate the mechanism will strengthen its ability to meet the fundamental objectives of the CWM.

2.3 Key observations and issues identified

The following are some key observations we made during our review of the CWM models we received from ECG and PURC over the Task 1 Period:

- **CWM Discrepancies (Declaration vs Disbursement):** We observed that the declared collections and corresponding allocations made by ECG were consistently different from what was actually paid. This according to the CWM reports were due to overpayments/underpayments to beneficiaries with Tier 2 (Level B) of CWM. The CWM report does not state clearly why this happened and the PURC notes that the CWM Standing committee indicated how this defeats the purpose of the CWM . We generally agree with this position as the guidelines for the CWM are quite clear. It will be important to understand from ECG's perspective why the guidelines were not followed consistently.
- **CWM process:** As mentioned earlier, the allocations and subsequent disbursement often do not completely follow the requirements of the guidelines. It will be useful for PURC to take advantage of technology enabled solutions to facilitate a system that provides real-time data, independent validation and a stronger reconciliation system to support a more efficient monitoring and evaluation process in the CWM declaration process.
- **Use of an unprotected Microsoft Excel spreadsheet (Data Integrity and Model Security):** We observed that most of the submitted CWM models did not have protected cells to limit users' ability to interfere with allocation formulas either intentionally or by error. Going forward, PURC will need to reconsider the use of Microsoft Excel based spreadsheet for the CWM. To promote the process of transparency and efficient management of the mechanism, the integrity of the data entered into the spreadsheet must be safeguarded. Key cells must be locked with control access features and enhanced access log features programmed into the spreadsheet to track any attempted changes to the inputs in the model. As suggested in our recommendation, PURC together with ESRP should consider a shared platform approach to enhance oversight and accountability from ECG, beneficiaries and the key stakeholders of Ghana's value chain to promote confidence in the CWM and its ability to meet its objectives.

In section 4.1.4 of this report , we have provided a detailed recommendation on facilitating a stronger and efficient mechanism going forward.



General Observations and Specific Key Issues Identified from Validation Exercise



General Observations and Specific Key Issues Identified from Validation Exercise

3.1 Introduction

This section of our report highlights the key limitations of the validation exercise as well as key issues we have identified from our review of the available documentation on the project and our discussions with management of ECG.

3.2 Key limitations of the validation exercise

The following table below sets out the key limitations of our reconciliation and validation exercise for this engagement.

Table 5 : Key limitations of the ECG validation exercise

No.	Thematic Area	Key Issues Identified
1	Validation of payments to CWM beneficiaries.	<p>From our review of payments made to CWM beneficiaries, we noted that some payments were made through ECGs operational accounts, margin accounts and escrow accounts (ADB, Consolidated Bank, Fidelity Bank, GCB, Access Bank, Zenith Bank, Bank of Africa, First Atlantic Bank, GT Bank, Omni BSIC, Republic Bank, Ecobank, ABSA, Stanbic Bank, Societe Generale, CAL Bank and Universal Merchant Bank).</p> <p>As at the date of this report, the bank statements of these accounts have not been made available to us to validate these payments. As such the validation of these payments could not be performed. Refer to Appendix 2 for the details of these payments.</p>
2	Validation of payments from ECG collection accounts to non-CWM beneficiaries	<p>The terms of reference required the confirmation of payments from ECG collection accounts to other non-CWM beneficiaries.</p> <p>ECG has indicated that such information is not within the scope of the review and</p>

No.	Thematic Area	Key Issues Identified
		<p>as such has not provided the data and supporting evidence as at the date of this report. The validation of the payments could therefore not be performed.</p> <p>We have however analysed the total disbursements made by ECG to non-CWM beneficiaries against ECG's CWM allocation to assess if ECG's disbursements to the non-CWM beneficiaries are within their allocated amount. Refer to section 3.6 for our results and conclusions on this.</p>
3	Validation of payment of statutory deductions to the various authorities	<p>The terms of reference required the confirmation of payment of statutory deductions declared by ECG to the relevant authorities.</p> <p>As at the date of this report, the required data (VAT returns and evidence of payments) have not been made available for this procedure to be completed.</p>
4	Validation that all revenues received by ECG for the reporting period are in alignment with the electricity received and distributed by ECG.	<p>ECG provided aggregated data which showed the total power sales (in Gwh) and the corresponding sales (in GHS). As shown in our analysis in Appendix 5, this does not give us an appropriate unit of measure to recompute the revenues as differences in customer bands gives different average unit costs across the different ECG operational regions and months.</p> <p>We explained to ECG that at a minimum we required the sales data provided to provide the tariff band breakdown to facilitate the re-computation analysis as part of the exercise. This information is yet to be provided.</p>
5	Review and assess ECG's billing and invoicing procedures, including the accuracy of metering, tariff application, and customer billing.	<p>From our engagement with ECG, they indicated that the organisation has recently changed its processes and systems.</p> <p>The old customer onboarding/ billing/ collection system (Customer Management System -CMS) which was subject to the cybersecurity attack has been changed.</p> <p>The new customer onboarding/billing/collection system (Meter Management System to enhance</p>

No.	Thematic Area	Key Issues Identified
		<p>ECG's digitisation drive) has been implemented. This new system has been driven by a move towards digitalising collections, billing and revenue management with the support of third-party technology providers such as Hubtel Limited.</p> <p>As at the date of this report ECG has not provided the relevant data to enable us to review and assess the billing and invoicing system. This procedure could therefore not be completed.</p>

3.3 Key documents reviewed

The following table sets out the key documents reviewed as part of our reconciliation and validation process.



Table 6 : Summary of documents reviewed

No.	Name of document	Format of document	Description	Date received
1	CWM payment July 2023 and September 2023	Excel Spreadsheet	<p>Captures total net revenue made by ECG in 2023 and the expected payments made to the CWM beneficiaries as follows:</p> <ul style="list-style-type: none"> • Sunon Asogli • CENIT • Karpowership • CENPOWER • AKSA Energy • Amandi • VRA • Bui Power • BXC Solar • Meinergy • GNPC • Ghana Gas • PURC • GRIDCO • Chase Petroleum 	8 November 2023
2	GCB Bank statements for account number 1011130011277 for the period from July 2023 to September 2023	PDF Documents	<p>These documents show the statement of accounts of ECG at GCB from July 2023 to September 2023 for account number 1011130011277. This account is the head office collections account.</p> <p>The statement shows amounts deposited into the account (collections) and amounts paid out of the account (disbursements).</p>	8 November 2023
3	Fidelity Bank statements for account number 1070006628289 for the period from July 2023 to September 2023	PDF Documents	<p>These documents show the statement of accounts of ECG at Fidelity Bank from July 2023 to September 2023 for account number 1070006628289. This account is the head office single collections account.</p> <p>The statement shows amounts deposited into the account (collections) and amounts paid out of the account (disbursements).</p>	12 December 2023

No.	Name of document	Format of document	Description	Date received
4	Cheque register for payments to CWM beneficiaries for the period of July 2023 to September 2023	Photocopied documents	<p>These documents show the details of cheque payments made to the various CWM beneficiaries for the period from July 2023 to September 2023</p> <p>The cheque register shows the following:</p> <ul style="list-style-type: none"> • date the cheque was picked up • the beneficiary in whose name the cheque was issued • The bank for which the cheque was written • The amount of the cheque 	20 December 2023
5	Bank Transfer advices to various bank for payments to various CWM beneficiaries for the period from July 2023 to September 2023	Photocopied documents	<p>Captures bank transfer advices from ECG to various banks for payments to the following CWM beneficiaries:</p> <ul style="list-style-type: none"> • GNPC • Ghana Gas • PURC • AKSA Energy • Sunon Asogli • Cenit Energy • CENPOWER • Karpowership • VRA • BXC Solar • GRIDCO • Amandi • Meinergy • Safisana • Chase Petroleum 	20 December 2023

3.4 Other key considerations applied in our approach

Based on the data made available, as set out in section 3.3 above, we adopted the following approach to review and validate the cash collections reported in the CWM and disbursements made by ECG:

- **Cash collections:** We obtained the bank statements of GCB collections account (1011130011277) and Fidelity single collections account (1070006628289) and analysed all collections received in the account (credit transactions in the bank statement) on a monthly basis for the period from July 2023 to September 2023. We then compared the total monthly collections analysed from the bank statements to the amounts reported in the CWM, highlighting the differences noted for each month. Refer to Appendix 1 for details and results of this analysis.
- **Disbursements:** We obtained the bank statements of GCB collections account (1011130011277) and Fidelity single collections account (1070006628289) and analysed all disbursements in the account (debit transactions in the bank statement) on a monthly basis for the period from July 2023 to September 2023. We then identified all disbursements on a month-by-month basis made to CWM beneficiaries by obtaining and analysing the cheque register and bank transfer advices from ECG. For those payments made through the fidelity and GCB accounts, we agreed these amounts to the bank statements. We then excluded the total CWM payments from the total disbursements to ascertain the non-CWM disbursements made by ECG and compared these amounts to ECG's CWM allocation. See Appendix 3 for details and results of this analysis.

3.5 ECG Cash Collection and Management Analysis

The following table summarises the key issues we have identified from our review of the available data in relation to ECG's cash collection and management process.

Table 7 : Findings from ECG Cash Collection and Management Analysis (Task 1 period)

No.	Key Finding	Details of finding	Conclusion/Recommendation
1	Differences between Total Collections declared on CWM and the total collections consolidated from the bank statements of the GCB main account and Fidelity Single collections account	<p>On a monthly basis, ECG is required to report their total collections for the month for input into the CWM, which would then be distributed amongst the CWM beneficiaries.</p> <p>To assess the amounts reported by ECG, we obtained and analysed all collections received in the GCB collections account (account number 1011130011277) for the period from July 2023 to September 2023 and the Fidelity Bank Single Collections Account (account number 1070006628289) for the period from July 2023 to September 2023).</p> <p>From our analysis performed on the bank statements received, we noted a net difference of GHS 629 million between the total collections declared on the CWM approved schedules and the inflows consolidated from the bank account statements shared with us (see Appendix 1 for month-on-month analysis). The total collections per the CWM were lower than the total collection per the two bank statements.</p> <p>We have raised this with ECG and requested for explanations and supporting evidence for these disparities. As at the date of this report, ECG management were yet to revert with these explanations and supporting evidence.</p>	<p>ECG should ensure that all cash collections are accurately communicated for inputs into the CWM.</p> <p>See Appendix 7 for letters from ECG with responses to key findings.</p>

3.6 ECG CWM Disbursement Analysis

The following table summarises the key issues we have identified from our review of the available data in relation to ECG's disbursement process.



Table 8 : Findings from ECG Cash Collection and Management Analysis (Task 1)

No.	Key Finding	Details of finding	Conclusion/Recommendation
1	Disbursement to CWM beneficiaries from other ECG operational accounts post the MoF directive of 21 June 2023 effective 1 July 2023.	<p>The Ministry of Finance (MoF) issued a directive on 21 June 2023, effective 1 July 2023 that ECG should operate a single account from which all collections and payments will be made. In this regard, ECG designated Fidelity Bank Account number 1070006628289 as the single collections account.</p> <p>From our validation procedures performed, we noted that some payments totalling GHS684 million to CWM beneficiaries for the period from July 2023 to September 2023 were made from other ECG operational accounts, escrow accounts and margin accounts (see Appendix 2). Payments through these other accounts were not in line with the MoF directive issued.</p> <p>We have raised this with ECG and requested for the bank statement for these operational accounts, escrow accounts and margin accounts to validate these payments to the CMW beneficiaries.</p>	<p>ECG should ensure that all payments to CWM beneficiaries are made through the single collections account in line with the MoF directive of 21 June 2023 effective 1 July 2023.</p> <p>See Appendix 7 for letters from ECG with responses to key findings.</p>
2	Disbursement to Non-CWM beneficiaries (individuals and organisations) in excess of ECG's allocated amount per the CWM.	<p>Per the CWM model, ECG is allocated a portion of approximately 25% from which its operational expenditures are to be made.</p> <p>From our analysis of the disbursements made from the GCB collections account and the Fidelity Single collections account, we noted that for all the months the disbursements made by ECG to Non-CWM beneficiaries was in excess of its allocated amount per the CWM. In total, disbursements of approximately GHS591 million were made in excess of ECG's CWM allocation from July 2023 to September 2023 (see Appendix 3 for month-on-month analysis). This is not in line with the Cash Waterfall Model.</p>	<p>ECG should ensure that disbursements made from the single collections account to Non-CWM beneficiaries are done through other operational accounts. Additionally, all disbursements should be within ECG's allocated portion of approx. 25% as per the CWM.</p> <p>See Appendix 7 for letters from ECG with responses to key findings.</p>

Conclusion and Next Steps



Conclusion and Next Steps

4.1 Our recommendations

Based on our analysis of the data and information made available to us by ECG within the relevant scope of work set out in the terms of reference, we have identified the following key recommendations for the attention of the Ministry of Energy, PURC and ECG as part of facilitating a transparent and efficient CWM process and strengthening the expected outcomes of the mechanism.

4.1.1 Billing and Invoicing Process Improvements

It is our understanding that the billing and invoicing system is currently being set up and as such data to enable us to validate the process was not made available. Notwithstanding, we engaged with ECG's management to understand the billing process in place, noting some areas of improvement to be incorporated into the system.

Considering the system is being built, we recommend that functionalities that would enable ECG track consumer consumption of power supplied, monthly band classification as well as associated customer payment for the power supplied is built into the new system.

We also recommend that reporting functionalities such as reports to show customer monthly power consumption per band classification is incorporated into the system. This will enable ECG to track actual consumption of customers and the reasonability of amounts billed to customers as well as revenue recognised. It would also enable ECG to properly quantify commercial losses, thus informing appropriate measures to reduce these losses.

4.1.2 CWM Disbursement Considerations

The objective of the Ministry of Finance's (MoF's) directive on 21 June 2023, effective 1 July 2023 is for ECG to operate a single account from which all collections and payments will be made to promote transparency for all stakeholders of the CWM. In this regard, ECG designated Fidelity Bank Account number 1070006628289 as the single collections account. However, from our review, we noted that this directive has not been fully enforced.

We recommend that management of ECG enforces this directive, ensuring that all disbursements to CWM beneficiaries are made through the designated Single collections account. This will ensure transparency in the process and streamline the future quarterly reviews to be performed.

We also recommend that going forward, the single collections account should only be used for CWM disbursement. ECG's monthly allocated amount per the CWM should be transferred to its operational account, from which all other non-CWM disbursements are made from. This will ensure that ECG's disbursements are within the threshold of their allocated amount per the CWM.

4.1.3 Management of Non-Tariff Revenue

From our review of available data and engagement with management of ECG, there is currently no appropriate IT based mechanism in place to distinguish collections for tariff revenue from non-tariff revenue. Management relies on a report provided by the commercial team to designate amounts as non-tariff revenue. The lack of an IT based mechanism may cast doubt on the completeness and accuracy of these amounts and reports.

We recommend that the new system being built incorporates a functionality to distinguish between tariff and non-tariff revenue. This would enable management to assess the accuracy of these amounts reported as well as facilitate the validation of these amounts in future reviews.

4.1.4 CWM Review Recommendations

Based on the fundamental objectives of the CWM, which includes transparency, timeliness and equitability (per agreed allocations) of payments we believe the model for the CMW should be upgraded into a cloud-based platform . Currently, as per our comments on the functionality and the system within which the mechanism is applied, there is room for improvement on in the operationalisation of the model. Although we agree with the process of quarterly reconciliation and validation to meet the fundamental objectives of the CWM, we recommend that in the medium term the mechanism be restructured into a secure cloud-based platform with independent auditor support.

In this proposed system, selected staff at ECG, PURC, ESRP and the representatives of the tiers of beneficiaries (including the IPPs) will be given a unique access key to log on to the cloud-based platform. On the platform, the ECG representative will log in the validated and reconciled tariff revenue from the Single Collections Account in line with the Government's directive. Once this is keyed in, a back-end algorithm will allocate the amounts per the established regime or allocation and work out the relevant tariffs applicable across the value chain within the model. The system will also require the beneficiaries to enter the confirmed receipts from ECG per the CWM. This will also be validated by the auditor to confirm that the validated CWM amount is what is paid to the relevant beneficiaries, and they can confirm via the system the amount received. The beneficiaries will be required to upload proof of receipt of payment and ECG will also upload proof of payment. This will help check the problem of differences in amounts paid to beneficiaries relative to the amounts declared on the CWM. The cloud-based platform will also provide a dashboard feature and access to PURC and ESRP for monitoring to confirm that the validated amounts are declared correctly, and the disbursements align with the allocation to the beneficiaries. It is important to mention that only PURC and ESRP will have overview access of the entries into the CWM. The section of the platform for beneficiaries will only show a text box for entry of the amount received from ECG and an upload button to share the relevant documentation (receipt and evidence of bank transfer). ECG will be able to view the allocations to inform the payments it is required to make to the beneficiaries.

The system will also be built to provide portable document format (pdf) reports which can be signed by PURC as validated and confirmed for monitoring records.

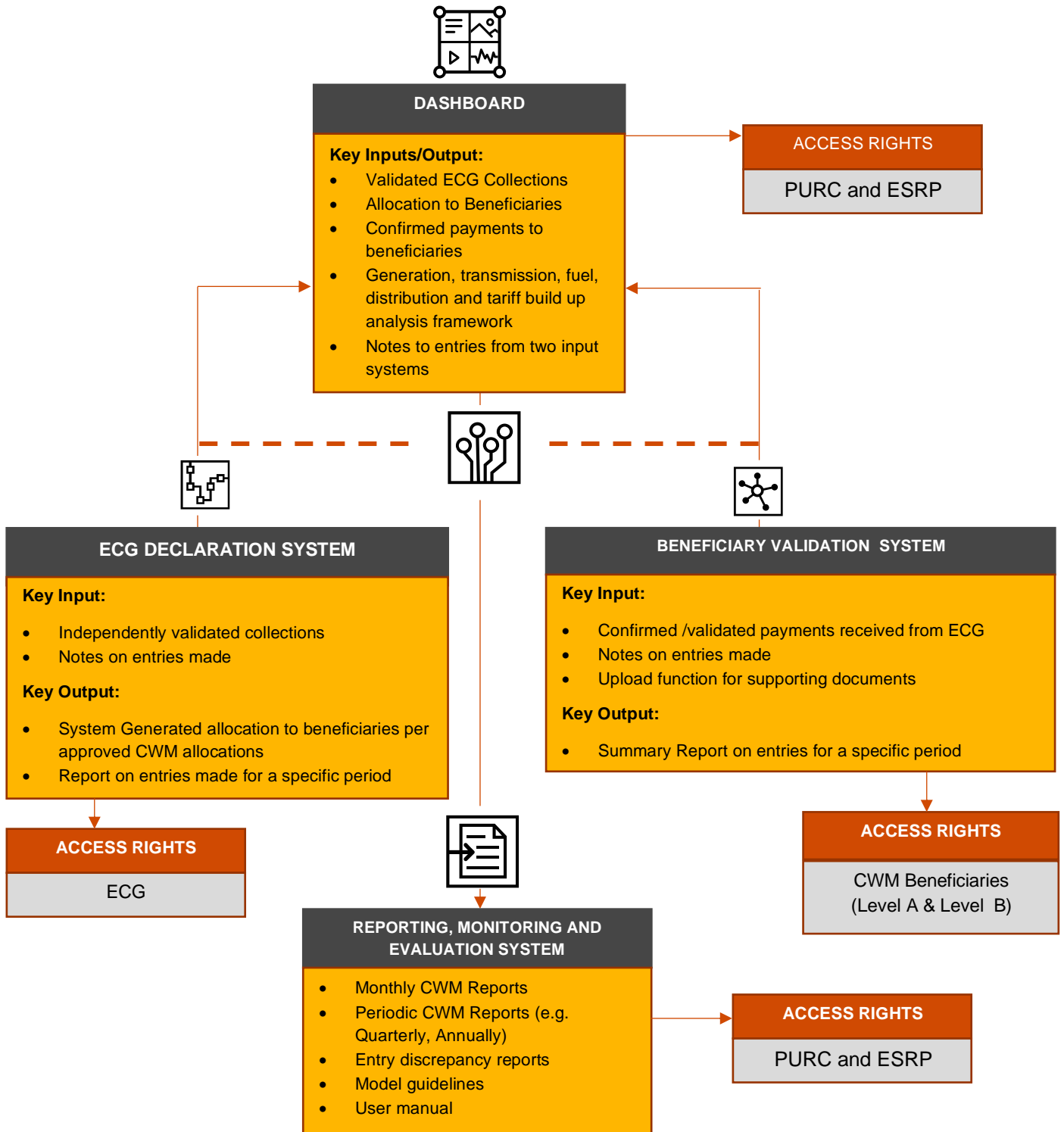
The platform can be developed on a combination of Microsoft Power BI, secured Microsoft Excel driven connection and developed cloud-based platform to manage the 4 systems connected by the platform. This will include:

- A dashboard;
- ECG CWM Declaration System

- Beneficiary Validation System
- Reporting, Monitoring and Evaluation System

The following diagram is a high-level schematic showing how this proposed secured cloud-based system could work to help manage a more resilient, efficient and transparent system.

Figure 4: Proposed CWM Platform



4.1.5 Cybersecurity and Data Protection

Based on our understanding of the cybersecurity incident and the contractual agreement between ECG and Hubtel Limited for business improvement, we have identified three (3) main areas for consideration:

Disaster Recovery

ECG should prioritise adopting disaster recovery (DR) system as extensively as possible. This will involve developing the necessary framework and processes to prepare for the recovery of critical applications, systems, and infrastructure after a disaster or outage.

IT systems at ECG can go offline unexpectedly due to unforeseen events or circumstances, such as natural events, power outages, cyber-attacks and security issues. From our interactions with management, we noted that there were no backups taken to recover the data which was lost during the period of the cyber incident.

This inadvertently affected ECG's ability to bill its customers using the CMS application and had to resort to estimated billing to continue operations. This further validates the need for a comprehensively documented disaster recovery and business continuity policy which should be put in place to protect data loss as well as facilitate the recovery of sensitive data and critical systems.

Management of ECG should develop a comprehensive DR plan which captures mission critical or critical applications and related infrastructure with their acceptable required recovery timelines to avoid future significant business disruption. The DR plan needs to be reviewed on a frequent basis to make sure its current with all the applications and infrastructure in the environment including their respective requirements (Recovery Time Objective (RTO) and Recovery Point Objective (RPO)).

Application and data recovery at a minimum need to be tested on an annual basis and documentation put in place to ensure preparation and response to events that threaten to impact critical IT services.

Cyber Defence

ECG suffered a cyber-attack which resulted in the disruption of its activities. From our discussion with management, the root cause of the cyber-attack has still not been determined, whether the attack was internal or external. A forensic investigation should be undertaken to find the root cause and provide the necessary recommendation to improve the IT environment and systems.

Considering ECG's size, coupled with the sensitive data and critical infrastructure it handles, it is advisable for the establishment of a robust cyber defence, with capabilities that cover all functions, including threat Intelligence, threat hunting, incident response and controls validation to ensure a timely incident response and a base level security to protect assets. The Cyber Defence program should have the ability to prevent cyber-attacks from infecting a computer system or network. The program needs to put in place processes and practices that will defend the network, its data, and nodes from unauthorised access or manipulation by implementing protective procedures such as: firewalls, network detection and response, endpoint detection and response to identify, analyse, and report incidents that occur within a network. As the threat landscape continues to increase, cyber defence strategy and tactics adopted should have a common goal, which is to prevent, avoid disruption and respond to cyber threats.

An appropriately documented and approved incident response plan needs to accompany the cyber defence program which can respond to threats. When Incident response capabilities are not established, this leads to an inability to respond as needed causing inappropriate access and exploitation of confidential and sensitive data. There needs to be a well-defined process to assign a level of importance or urgency to incidents which helps in the remediation of issues in a timely manner. The contract Service Level Agreement (SLA) between ECG and Hubtel needs to describe specific definitions of incidents (data breaches, security violations) and events (suspicious activities), the actions to be initiated by and the responsibilities of both parties. A well-defined process needs to exist to assign a level of importance or urgency to incidents, which determines the order in which they will be investigated to promote the timely remediation of issues.

ECG needs to carry out periodic incident response exercises such as tabletop and threat hunting. Cybersecurity awareness and training should be carried out periodically with employees not just IT staff to help ward off threats especially social engineering. Physical security measures need to be put in place to restrict unauthorised access to sensitive and confidential areas especially the server room.

Third Party Solutions

IT Third party management needs to be adopted by ECG to monitor and assess the risk posed by third parties who provide services to their organisation. This allows for performing a comprehensive third-party risk assessment that will help the organisation in making risk-informed decisions. Additionally, this will provide ECG a holistic view of their third-party risk and as to whether adequate controls have been implemented to mitigate or reduce those risks. For effective IT third party management, ECG needs to have a centrally governed, collaborative, and technology-enabled solution to holistically assess the risks impacted by the organisation's interactions with third parties.

With ECG's service/third party arrangement with Hubtel, it brings onboard a new risk which needs to be clearly identified and documented as part of the risk assessment process. Due to the nature and infrastructure that Hubtel provides to augment ECG's business process and activities, Hubtel has their application solution serving as a hot replacement for ECG's billing and collection processes. Management of ECG should perform adequate due diligence and a cyber risk assessment on Hubtel to obtain assurance that the vendor has considered and implemented fundamental cybersecurity best practices.

Inadequate scanning for security vulnerabilities or protecting the IT environment may lead to a breach of ECG or Hubtel's network, resulting in unauthorised data access or disruption to services rendered. There is a need to put in place adequate controls and procedures to prevent this. ECG needs to scan for vulnerabilities on a periodic basis across all relevant IT Assets including systems being managed and provided by Hubtel. The scan for vulnerabilities needs to include scanning of: Network Device Vulnerabilities, System Vulnerabilities, Server Vulnerabilities, especially API endpoints, gateways and unused ports.

Due to the three areas of consideration mentioned, we recommend that Management of ECG contract the services of a consultant to assist with the implementation of ISO/IEC 27001:2022, an international information security framework which would help establish a robust Information Security Management System (ISMS). At a minimum, the ISO/IEC 27001:2022 standard seeks to

ensure that ECG has implemented basic cybersecurity controls to ensure the security of sensitive customer information and company data.

4.1.6 Other Recommendations

As part of our review, we obtained ECG's Accounting and Procedures Manual dated July 2012. We note that this manual is based on the old system which has now been updated. We recommend that management of ECG should update the Accounting and Procedures manual to reflect the new systems and updates to the various processes.

4.2 Next Steps

The immediate next steps for us, will be to engage with the Ministry of Energy , PURC and the other relevant stakeholders to establish the critical process of retrieving the required data/information to complete our tasks. This will also establish the foundation for the relevant process and information requirements going forward for the quarterly reviews. We will also look forward to discussing our recommendations as PURC, ESRP and the other stakeholders plan to work with ECG to implement them to help restore confidence and promote a transparent and strengthened CWM.

6.2.1 Outstanding data and information

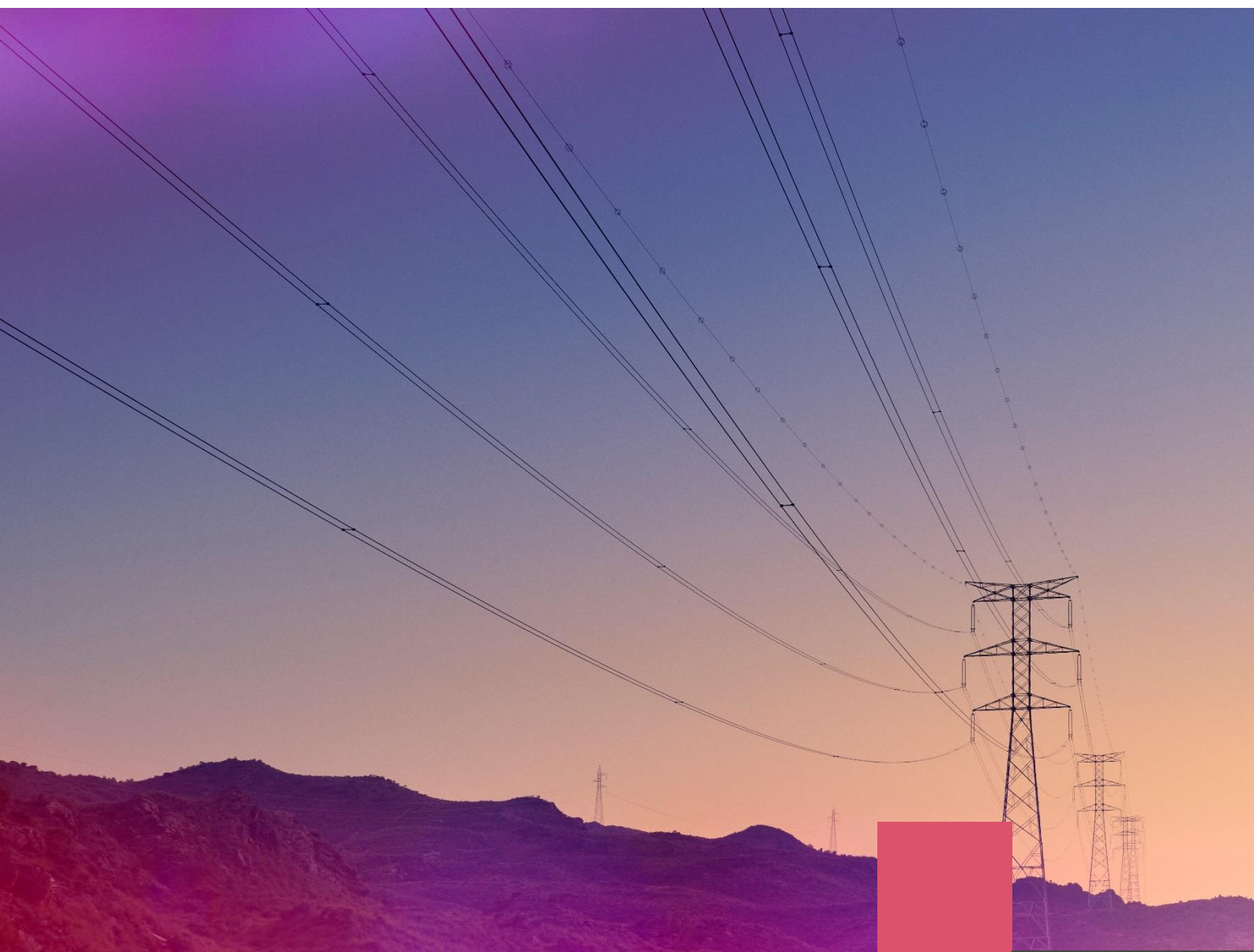
In section 1.3 of this report, we have highlighted the outstanding data and indicated our challenges in obtaining them. We will entreat PURC in collaboration with its stakeholders to open discussions with ECG for the data to be provided to complete our tasks.

6.2.2 Quarterly Reviews

Based on our observations and findings we note that the quarterly reconciliation and validation exercise will be a crucial step in helping enforce the CWM guidelines, set out the challenges, identify the gaps and help reduce deviations from the CWM by promoting a transparent and sound data to inform the mechanism going forward.



Appendices



Appendices



Appendix 1-Analysis of cash inflows into ECG’s collection accounts (GCB/Fidelity) for the period from July 2023 to September 2023



Month per CWM	GCB Bank Statement (GHS)	Fidelity Bank Statement (GHS)	Total Collections (Bank Statements) (GHS)	Total Collections (CWM) (GHS)	Difference in Collections (GHS)
	(a)	(b)	(c) = (a) + (b)	(d)	(e) = (c) - (d)
Jul-2023	245,339,601	777,544,823	1,022,884,424	506,749,566	516,134,858
Aug-2023	245,390,883	459,931,320	705,322,203	1,000,013,200	(294,690,997)
Sep-2023	168,916,151	1,091,242,314	1,260,158,465	852,740,000	407,418,465
Total	659,646,634	2,328,718,458	2,988,365,092	2,359,502,766	628,862,327

Note: Effective April 2023, collections declared in the CWM for distributions relate to collections of the previous month.

Appendix 2-Details of disbursements to CWM beneficiaries made through other ECG operational accounts from July 2023 to September 2023

Month	CWM Beneficiary	Amount GHS	Date of payment	Name of disbursing Bank	Cheque number/transfer details
Jul-23	Sunon Asogli	10,000,000	14/07/2023	First Atlantic Bank	#611685
Aug-23	Ghana National Gas	50,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	CEN POWER	110,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	GNPC	50,000,000	31/08/2023	First Atlantic Bank	Transfer from 0024011101013
	Gridco	50,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	VRA	30,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	Karpowership	7,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	Sunon Asogli	77,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	Sunon Asogli	10,000,000	10/08/2023	First Atlantic Bank	#611777
	PURC	20,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	BX Solar	1,687,588	23/08/2023	Access Bank	Transfer from 0090100713431
	Meinergy	1,752,365	23/08/2023	Access Bank	Transfer from 0090100713431
	Safisana	26,464	8/23/2023	Access Bank	Transfer from 0090100713431
	CENIT	55,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
AKSA	77,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229	
Sep-23	Gridco	25,000,000	04/09/2023	Cal Bank	Transfer from 0024011101013
	Gridco	25,000,000	28/09/2023	Consolidated Bank	Transfer from 0024011101013
	VRA	25,000,000	04/09/2023	Cal Bank	Transfer from 021010015542
	VRA	25,000,000	28/09/2023	Consolidated Bank	Transfer from 210102725217
	PURC	15,000,000	04/09/2023	Cal Bank	Transfer from 021010015542

Month	CWM Beneficiary	Amount GHS	Date of payment	Name of disbursing Bank	Cheque number/transfer details
	PURC	15,000,000	28/09/2023	Consolidated Bank	Transfer from 210102725217
	BX Solar	2,261,055	28/09/2023	Consolidated Bank	Transfer from 210102725217
	Meinergy	2,109,694	28/09/2023	Consolidated Bank	Transfer from 210102725217
	Safisana	27,095	9/28/2023	Consolidated Bank	Transfer from 210102725217
Total		683,864,261			

Appendix 3-Analysis of ECG disbursements from the GCB collections account and Fidelity Bank single collections account for the period from July 2023 to September 2023



Month	Total disbursement per GCB bank statement	Total disbursement per Fidelity bank statement	Total Disbursement	Disbursement to CWM beneficiaries per ECG transfer advices	ECG disbursements after exclusion of disbursement to CWM beneficiaries	ECG allocated amount per CWM	Excess of disbursement over CWM Allocation	ECG disbursement within CWM allocation?
	GHS	GHS	GHS	GHS	GHS	GHS	GHS	
	(a)	(b)	(c) = (a) + (b)	(d)	(e) = (c) - (d)	(f)	(g) = (e) - (f)	
July 2023	193,542,379	556,426,426	749,968,805	186,479,742	563,489,063	116,926,128	446,562,935	No
August 2023	396,733,653	349,360,669	746,094,323	656,466,417	89,627,906	80,035,642	9,592,264	No
September 2023	44,937,982	707,939,730	752,877,712	537,397,845	215,479,868	79,715,004	135,764,864	No
Total			2,248,940,840	1,380,344,004	868,596,837	276,676,774	591,920,063	

Note: Although ECG schedules and the declarations made to PURC through the CWM indicated that a total amount of GHS1.73 billion was declared for payment from July 2023 to September 2023, we were able to validate only GHS1.38 billion through the payment records provided by ECG for that period.

Appendix 4-Details of disbursements to CWM beneficiaries made through other ECG operational accounts

Month	CWM Beneficiary	Amount GHS	Date of payment	Name of disbursing Bank	Cheque number/transfer details
Jul 2023	Sunon Asogli	10,000,000	14/07/2023	First Atlantic Bank	#611685
Aug 2023	Ghana National Gas	50,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	CEN POWER	110,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	GNPC	50,000,000	31/08/2023	First Atlantic Bank	Transfer from 0024011101013
	Gridco	50,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	VRA	30,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	Karpowership	7,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	Sunon Asogli	77,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	Sunon Asogli	10,000,000	10/08/2023	First Atlantic Bank	#611777
	PURC	20,000,000	23/08/2023	First Atlantic Bank	Transfer from 0024011101013
	BX Solar	1,687,588	23/08/2023	Access Bank	Transfer from 0090100713431
Sep 2023	Meinergy	1,752,365	23/08/2023	Access Bank	Transfer from 0090100713431
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	CENIT	55,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	AKSA	77,000,000	18/08/2023	Fidelity Bank	Transfer from 8080006628229
	Gridco	25,000,000	04/09/2023	Cal Bank	Transfer from 0024011101013
	Gridco	25,000,000	28/09/2023	Consolidated Bank	Transfer from 0024011101013
	VRA	25,000,000	04/09/2023	Cal Bank	Transfer from 021010015542
	VRA	25,000,000	28/09/2023	Consolidated Bank	Transfer from 210102725217
	PURC	15,000,000	04/09/2023	Cal Bank	Transfer from 021010015542
	PURC	15,000,000	28/09/2023	Consolidated Bank	Transfer from 210102725217
Sep 2023	BX Solar	2,261,055	28/09/2023	Consolidated Bank	Transfer from 210102725217
	Meinergy	2,109,694	28/09/2023	Consolidated Bank	Transfer from 210102725217
	Safisana	27,095	9/28/2023	Consolidated Bank	Transfer from 210102725217

Appendix 5-Analysis of average unit sales for the period from July 2022 to December 2022



Total Sales 2022									
MONTH	Average Unit GWh Sale								
	Accra East	Accra West	Tema	Ashanti West	Ashanti East	Western	Central	Eastern	Volta
Jul-22	0.85	0.78	0.73	0.76	0.74	0.76	0.63	0.77	0.63
Aug-22	0.87	0.82	0.73	0.70	0.76	0.79	0.72	0.82	0.73
Sep-22	0.95	0.96	0.76	0.76	0.85	0.83	0.76	0.84	0.76
Oct-22	1.02	0.96	0.82	0.90	0.99	0.94	0.84	0.90	0.96
Nov-22	1.06	1.03	0.90	0.92	1.06	1.05	0.93	0.97	0.89
Dec-22	1.06	1.05	0.95	0.92	1.02	0.91	0.79	0.98	1.05
Average	0.92	0.86	0.77	0.80	0.82	0.82	0.74	0.81	0.78

Appendix 6-Follow up Letters to ECG and MoEn on outstanding data





The Chief Director
Ministry of Energy
Ministries Enclave
Accra

24 November 2023

Dear Mrs Asamoah

Subject: Validation of Electricity Company of Ghana (ECG) Revenue/Collection Accounts – Lack of Data

We refer to our engagement with the Ministry of Energy to carry out the above-mentioned assignment, which must be fully completed by 31 December 2023.

We commenced our work on 6 November 2023 with an initial meeting with The Managing Director of ECG and some members of the ECG management team during which ECG's General Manager for Financial Planning and Revenue Assurance was nominated as our contact person for the assignment.

Since then, we have held various meetings and discussions with the General Manager for Financial Planning and Revenue Assurance and other members of the ECG management team in pursuance of a data and information request that we sent. These include meetings held on 8 November 2023, 13 November 2023 and 16 November 2023. While the meetings have been cordial and informative, we have still not been provided with any substantive data that will enable us to progress with our work as set out in our Terms of Reference. We have not been able to obtain or gain access to any substantive information on ECG's current and historical customer data, billing or collection details. This is central to our work and presents a significant limitation to our ability to progress with the assignment as required by the Ministry of Energy.

We further understand from our enquiries that ECG management currently has no alternative approaches to retrieving the historical customer and billing information. We understand however that ECG has a project ongoing that is being managed by Hubtel Limited, which will in due course allow for a current customer and billing database to be compiled.

On 23 November 2023, we met with the Managing Director to inform him of the difficulty that we are facing in obtaining the data that we require for our work. He has informed us that the Terms of Reference that was agreed at a meeting between ECG, Ministry of Energy, Public Utilities Regulatory Commission and the World Bank held in Washington DC in the United States of America sometime in September 2023 is different from the Terms of Reference that we have been engaged to undertake. Specifically, the Managing Director of ECG indicated that the Terms of Reference that was agreed by all stakeholders did not require a review of ECG's customer billing and collection information and as such ECG is unable to provide such information to us, especially as ECG has already notified the Ministry of Energy and the other stakeholders mentioned above that amongst other system related weaknesses, ECG suffered a ransomware attack sometime in August 2022 resulting in the loss of its historical billing and collections data. As such, any historical customer billing and collections information is not reliable.

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PwC Tower, A4 Rangoon Lane, Cantonments City, PMB CT 42, Cantonments, Accra, Ghana
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Directors: Wyczynsky Ashiagbor · Michael Asiedu-Antwi · Maxwell Darkwa · Ayesha Bedwei · George Arhin
Nelson Opoku · Eric Nipah · Edward Gomado · Abeku Gyan-Quansah · Hayfron Aboagye
Kingsley Owusu-Ewli · Richard Ansong · Samuel Kingsford Arthur · Lydia Pwadura · Destiny Attatsitsey
Dzidedze Fiadjoe · Prince Adufutse · Uyiosa Akpata





The Chief Director
Ministry of Energy
Accra

Given the significance of this development to our ToR and its impact on the deadline for completion of our assignment, we wish to bring this to your attention and to request an urgent meeting with ECG and all other stakeholders to clarify our ToR and the next steps for the engagement.

We have attached a copy of our information/data request list indicating the status of each item requested for your information. Also, attached is a copy of our ToR for your information.

Yours sincerely
for: PricewaterhouseCoopers (Ghana) LTD

A handwritten signature in black ink, appearing to read 'Vish Ashiagbor', written in a cursive style.

Vish Ashiagbor
Director

Enc.

Cc: The Executive Secretary- Public Utilities Regulatory Commission
The National Coordinator - Energy Sector Recovery Programme
The Project Coordinator – Ghana Energy Sector Transformation Initiative Project
The Managing Director – Electricity Company of Ghana





The Chief Director
Ministry of Energy
Ministries Enclave
Accra

8 December 2023

Dear Mrs Asamoah

Subject: Validation of Electricity Company of Ghana (ECG) Revenue/Collection Accounts – Lack of Data

We refer to our engagement with the Ministry of Energy to carry out the above-mentioned assignment, our letter to you of 23 November 2023 in which we brought to your attention some concerns that ECG had on our scope of work, and the subsequent conference call that was held on 28 November 2023 which the various stakeholders copied onto this letter attended.

Our understanding from the conference call of 28 November 2023 was that our scope of work as set out in our contract remains unchanged and that notwithstanding ECG management's concerns over the integrity of the company's historical customer billing and collections data, ECG would provide us with the data and information that is necessary for our work.

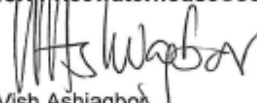
Following the meeting of 28 November 2023, we followed up with ECG for the data and information as agreed and we were informed on 30 November 2023 by the General Manager for Financial Planning and Revenue Assurance that the Managing Director of ECG had instructed that we attend a meeting on 7 December 2023 at 10 am at ECG so that the data that we had requested, including the customer billing and collections, and the bank statements for the Single Collection Account for the period of our review would be provided to us.

On 7 December 2023 we met the Managing Director of ECG as requested, however, he stated during the meeting that ECG is unable to provide customer billing and collection data to a third party as this will contravene the Data Protection Act, 2012 (Act 843). As such, we were not provided with any data or information at the meeting and to date we do not have any customer billing and collection data, nor do we have any of ECG's bank statements for the Single Collection Account for any of the periods to be covered by our review.

The lack of this data and information presents a significant limitation to the conduct of our work and without it we will be unable to perform any meaningful analysis towards the overall objectives of the assignment. Accordingly, we wish to request an urgent meeting with you at your earliest convenience to discuss the next steps for the engagement.

Yours sincerely

for: PricewaterhouseCoopers (Ghana) LTD



Vish Ashiagbor
Director

PricewaterhouseCoopers (Ghana) LTD
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Dzidedze Fiadjoe · Prince Adufutse · Uyiosa Akpata





The Chief Director
Ministry of Energy
Accra

cc: The Executive Secretary –Public Utilities Regulatory Commission
The National Coordinator– Energy Sector Recovery Programme
The Project Coordinator – Ghana Energy Sector Transformation Initiative Project
The Managing Director – Electricity Company of Ghana



Appendix 7-Letters from ECG with Responses to Key Findings



ELECTRICITY COMPANY OF GHANA LTD.

ELECTRO-VOLTA HOUSE



Your Ref.....
Our Ref. MD/PURC/4.9/1063 Date 19th February, 2024

P. O. Box GP 521 Accra -Ghana
TEL: No. +233 (0) 302-676727-47
FAX: No. +233 (0) 302-666262
MAIL: ecgho@ecgh.com

The Executive Secretary
Public Utilities Regulatory Commission
(PURC) Head Office, 2nd Floor Olympic
Committee Building No. 53, Liberation
Road, Ridge
P.O Box CT 3095,
Cantonments, Accra



Dear Sir,

Response to Report on Consultancy Services for Validation of Electricity Company of Ghana (ECG) Revenue/Collection Accounts by PwC

We refer to your letter dated 9th February, 2024 on the above-mentioned subject and wish to make the following comments:

Preliminary Comments

As we mentioned and noted during the meeting held in the office of the President on Friday 9th and Saturday 10th February 2024, ECG was not given ample opportunity to go through its corporate processes to ensure the preparation, consideration and issuance of a detailed and appropriate response to the said Draft Report, as we are entitled to do, *before its issuance as a Final Validation Report* of the Company's Revenue/Collection Accounts.

We have, however, taken note of an apparent directive issued by the Public Utilities Regulatory Commission to Price Waterhouse Coopers (PwC) on Sunday, 11th February, 2024 to meet with officials of the Company on, Monday, 12th February, 2024 to discuss "how to remedy" the current situation.

In this regard, we wish to put on record that officials of the Company did indeed have a cordial discussion with officials of PwC on the said date and at which meeting we reiterated our strong objection to the structure of the Report and findings contained therein. In particular, we pointed out that the said Final Report failed to specifically acknowledge amongst the **Key Limitations of the Validation Exercise** the following:

- (i) The challenge of ECG in providing information and data in view of our opinion that the Terms of Reference (ToR) as issued by PURC were not the ToR as agreed by the various stakeholders. From the discussions and negotiations at the IMF meeting in Washington DC, this audit should have covered the first three months of the operation of the Single Collections Accounts, i.e., 1st July 2023 to 30th

Page 1 of 4

September 2023. This position is confirmed by the letter from the Minister of State dated 5th February 2024. Appendix Table 1 attached to the letter under reference requires as a structural benchmark “Publish on PURC’s website the report of the **first** quarterly audit of the ECG’s single account”. However, the report submitted indicated that the audit covered a period of **15 months, starting from July 2022**, at a time that the revised CWM model was not in operation. Besides, ECG suffered ransomware attacks in both the third and fourth quarters of 2022 resulting in the loss of its historical billing and collections data making it impossible to provide reliable and accurate supporting data on customer onboarding/billing/collection systems.

- (ii) It is worthy of note that prior to 1st July 2023, ECG was not under any obligation to operate Single Collection Accounts and therefore tariff revenue collections and payments under the CWM were made from multiple accounts. The directive to operate a Single Collections Accounts started from 1st July, 2023.
- (iii) We wish to further state that the standard practice of audit engagement is that after completion, an exit meeting is conducted with the client and the responses of the auditee taken into consideration in the report. In the instant case, we wish to place on record that PwC neither held an exit meeting nor shared a draft report with ECG before submitting the final report to the stakeholders. The assertion that an exit meeting was held on this report is a subject for strict proof.
- (iv) It should be noted that at the inception meeting, responsible officers were identified as contact persons for exchange of data and first point of call in all correspondence for the exercise. However, the draft report was emailed from an officer other than the PwC’s nominated officer at 1:pm on 28th December 2023. In that email, it was stated as follows; “...as *we finalize and share the report with various stakeholders tomorrow. In the interim, let us know by close of business today, 28 December 2023 if you have any comments on this draft report*”. Evidently, the Email was received at short notice, during the company’s advertised end of year break from 22nd December 2023 to 10th January 2024. As ECG was on a Christmas break and received the email a few hours to the deadline for submission of responses to the draft final report, we were unable to respond appropriately.
- (v) Following from (iv) above, the report failed to recognize the practical challenge in having the Report reviewed by relevant desk officers of the ECG, preparing the necessary responses for submission to Management for consideration and subsequent submission for review by the Audit and Finance Sub-Committee of the Board of Directors before final consideration by the Company’s Board of Directors.

In the meantime, Management has taken note of the serious implications of some of the statements made in the Report and has accordingly, reviewed salient features of the Report and submitted our comments for incorporation into the Report as is the practice and requirement in all audit reports. We believe that failure to have these comments along with



our submissions on the Key Limitations to the Validation exercise incorporated in the Report will seriously undermine the credibility and objective of the audit exercise.

Our responses to the significant findings raised in the Report are presented below:

Key Findings:

1.0 Differences between Total Collections declared on CWM and the total collections consolidated from the bank statements of the GCB main account and the Fidelity Single Collections Account.

Response

The methodology used to arrive at this conclusion is not consistent with the procedure used in collating the data. The revised CWM guidelines stipulate that monthly payment should be made on the 22nd of every month. Thus, while PwC used calendar months in their reporting, CWM guidelines stipulated otherwise. It is also important to emphasize that, the revenue declared and applied in a particular month relates to the total collections of the previous month.

2.0 Disbursement to CWM beneficiaries from other ECG operational accounts post the MoF directive of 21 June 2023 effective 1 July 2023

Response

In our role as a public utility with a large number of third-party vendors and contractors, the demands of the treasury operations are enormous. Consequently, the Board of Directors of the Company has deemed it commercially prudent for ECG to operate overdraft accounts with other banks to enable the Company to honour some of its urgent financial commitments. Further, due to Bank of Ghana Regulations on Single Obligor Limits with the Universal Banks, ECG is compelled to operate with more than one bank hence the payments from other banks. This commercial arrangement also helps to avoid concentration risks.

Additionally, payments to some Tier One CWM beneficiaries are made/paid in USD which necessitates transfers from the Ghana Cedi Single Collections Accounts to enable the purchase of US dollars and which are then deposited in the Margin Accounts which is subsequently used to pay Tier One CWM beneficiaries.

3.0 Disbursement to Non-CWM beneficiaries (individuals and organizations) in excess of ECG's allocated amount per the CWM. Per the CWM model, ECG is allocated a portion of approximately 25% from which its operational expenditures are to be made.

Response

The finding that ECG retained more than 25% or GHS3.5 billion of the revenue under CWM cannot be justified by the prima facie CWM disbursement data shared with PwC. The underlying reason is that the amount reported as 'disbursement to CWM beneficiaries' in



Appendix 3 is inaccurate.

It is important to note that data on CWM disbursement to all beneficiaries was provided by ECG. In addition, PwC independently obtained the same data set from ESRP/CWM and PURC and confirmed same as provided by ECG.

This data set was relied upon by PwC to determine the 'total payments to CWM beneficiaries' and amount retained by ECG as shown in Appendix 3. However, the amount (GHS 3.7 billion) reported as 'total payments to CWM beneficiaries' by PwC was far lower than the amount (GH¢5.7 billion) shown in the CWM disbursement report. On the other hand, the amount indicated by PwC as retained by ECG was the same.

The effect of this error, when corrected, will reduce the excess of disbursement over CWM allocation from **GH¢3.5 billion** to **GHS1.5 billion** as shown in 'Appendix 3 corrected' (copies attached). Meanwhile, this approach does not take into consideration the statutory and non-tariff revenues, which were also lodged in the same bank accounts and paid to non-CWM beneficiaries.

It is important to note that the trend of revenue collections over the period under review shows a significant growth. We therefore wish to bring these salient observations to your attention and will respectfully recommend that our responses are incorporated in the Final Report or published alongside the report on your website.

Your continued cooperation in this regard would be much appreciated.

Yours faithfully,



SAMUEL DUBIK MAHAMA, ESQ.
MANAGING DIRECTOR

Cc: 1. The Secretary to the President
2. The Honourable Minister, Ministry of Energy
3. The Honourable Minister, Ministry of Finance

Enc.

Appendix 1-Analysis of cash inflows into ECG's collection accounts (GCB/Fidelity) for the period from July 2022 to September 2023

Month	Total disbursement per GCB bank statement GHS	Total disbursement per Fidelity bank statement GHS	Total Disbursement GHS	Disbursement to CWM beneficiaries per ECG transfer advices GHS	disbursements after exclusion of disbursement to CWM beneficiaries GHS	ECG allocated amount per CWM GHS	Excess of disbursement over CWM Allocation GHS	ECG's disbursement within CWM allocation?
	(a)	(b)	(c) = (a) + (b)	(d)	(e) = (c) - (d)	(f)	(g) = (e) - (f)	
Jul-22	317,936,718	-	317,936,718	163,281,402	154,655,316	128,324,242	26,331,075	No
Aug-22	396,733,653	-	396,733,653	170,543,663	226,189,991	156,208,762	69,981,229	No
Sep-22	303,049,719	-	303,049,719	166,927,797	136,121,923	113,215,209	22,906,714	No
Oct-22	424,083,060	-	424,083,060	159,259,402	264,823,658	129,618,038	135,205,620	No
Nov-22	316,663,156	-	316,663,156	112,604,798	204,058,358	42,671,583	161,386,775	No
Dec-22	406,319,941	-	406,319,941	171,888,531	234,431,410	64,487,753	169,943,656	No
Jan-23	388,321,003	109,265,685	497,586,689	142,982,723	354,603,966	112,001,908	242,602,057	No
Feb-23	274,303,650	272,306,892	546,610,542	481,335,233	65,275,310	107,935,092	-42,659,782	Yes
Mar-23	239,665,569	665,502,284	905,167,853	147,813,868	757,353,986	119,171,771	638,182,215	No
Apr-23	124,926,574	902,798,020	1,027,724,594	191,382,400	836,342,194	136,739,754	699,602,440	No
May-23	143,771,232	662,533,398	806,304,630	429,535,250	376,769,381	228,156,384	148,612,997	No
Jun-23	309,327,858	478,171,612	787,499,470	850,121	786,649,349	111,867,215	674,782,134	No
Jul-23	193,542,379	556,426,426	749,968,805	186,479,742	563,489,063	116,926,128	446,562,935	No
Aug-23	396,733,653	349,360,669	746,094,323	656,466,417	89,627,906	80,035,642	9,592,264	No
Sep-23	44,937,982	707,939,730	752,877,712	537,397,845	215,479,868	79,715,004	135,764,864	No
Total			8,984,620,866	3,718,749,189	5,265,871,676	1,727,074,483	3,538,797,193	



Appendix 1-Analysis of cash inflows into ECG's collection accounts (GCB/Fidelity) for the period from July 2022 to September 2023. (CORRECTED)

Month	Total disbursement per GCB bank statement GHS	Total disbursement per Fidelity bank statement GHS	Total Disbursement GHS	Disbursement to CWM beneficiaries per ECG transfer advices GHS	disbursements after exclusion of disbursement to CWM beneficiaries GHS	ECG allocated amount per CWM GHS	Excess of disbursement over CWM Allocation GHS	ECG's disbursement within CWM allocation? No
	(a)	(b)	(c) = (a) + (b)	(d)	(e) = (c) - (d)	(f)	(g) = (e) - (f)	
Jul-22	317,936,718	-	317,936,718	328,491,191.38	-10,554,473	128,324,242	-138,878,715	No
Aug-22	396,733,653	-	396,733,653	409,722,533.57	-12,988,881	156,208,762	-169,197,643	No
Sep-22	303,049,719	-	303,049,719	294,065,501.97	8,984,217	113,215,209	-104,230,992	No
Oct-22	424,083,060	-	424,083,060	335,535,215.17	88,547,845	129,618,038	-41,070,193	No
Nov-22	316,663,156	-	316,663,156	119,157,457.47	197,505,699	42,671,583	154,834,116	No
Dec-22	406,319,941	-	406,319,941	180,035,545.75	226,284,395	64,487,753	161,796,642	No
Jan-23	388,321,003	109,265,685	497,586,689	312,730,394.03	184,856,295	112,001,908	72,854,387	No
Feb-23	274,303,650	272,306,892	546,610,542	301,330,907.27	245,279,635	107,935,092	137,344,543	Yes
Mar-23	239,665,569	665,502,284	905,167,853	332,750,000.00	572,417,853	119,171,771	453,246,082	No
Apr-23	124,926,574	902,798,020	1,027,724,594	381,803,111.60	645,921,482	136,739,754	509,181,728	No
May-23	143,771,232	662,533,398	806,304,630	637,055,538.72	169,249,091	228,156,384	-58,907,293	No
Jun-23	309,327,858	478,171,612	787,499,470	312,354,304.88	475,145,165	111,867,215	363,277,950	No
Jul-23	193,542,379	556,426,426	749,968,805	326,479,742.00	423,489,063	116,926,128	306,562,935	No
Aug-23	396,733,653	349,360,669	746,094,323	752,806,416.67	-6,712,094	80,035,642	-86,747,736	No
Sep-23	44,937,982	707,939,730	752,877,712	641,597,844.59	111,279,867	79,715,004	31,564,863	No
Total			8,984,620,866	5,665,915,705	3,318,705,160	1,727,074,483	1,591,630,675	



ELECTRICITY COMPANY OF GHANA LTD.

ELECTRO-VOLTA HOUSE



Your Ref.....
Our Ref. MD/PUR/SLU/9/1065 Date 28th February, 2024

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The Executive Secretary
Public Utilities Regulatory Commission
(PURC) Head Office, 2nd Floor Olympic
Committee Building No. 53, Liberation
Road, Ridge
P.O Box CT 3095,
Cantonments, Accra

Dear Sir,

Response to Report on Consultancy Services for Validation of Electricity Company of Ghana (ECG) Revenue/Collection Accounts by PwC

We refer to the updated Final Report dated 27th February 2024 and our response on the first report dated 19th February, 2024 on the above-mentioned subject and wish to make the following comments:

Preliminary Comments

We wish to state that our initial response to the first report on the validation exercise dated 29th December 2023 still stands since it has not been acknowledged and incorporated in the updated Final Report. It is however worth noting that, subsequent to our initial response, two meetings were held between ECG and PwC on 26th and 27th February 2024 where issues raised in the first report were clarified. As a result, it was agreed that the best way to validate payments to beneficiaries under CWM is to request the beneficiaries to confirm amounts received directly to PwC. Therefore, we obtained confirmation letters from PwC and attached payment schedules to all stakeholders on 27th February 2024. As at the date of this response, the stakeholders have started responding directly to PwC.

Again, in the earlier response, Management took note of the serious implications of some statements in the first Report and has accordingly, reviewed and submitted responses for incorporation into the Report as is the practice and requirement in all audit reports. Unfortunately, the updated Final Report did not reflect our response as well as the decisions agreed at the subsequent meetings with PwC.

Please, note that ECG has complied fully with disbursement to Tier 1 beneficiaries during the period under review.

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Further responses to the significant findings raised in the Report are presented below:

Key Findings:

1.0 Differences between Total Collections declared on CWM and the total collections consolidated from the bank statements of the GCB main account and the Fidelity Single Collections Account.

Response

The difference of GHS629million is attributed to non-tariff revenue, statutory deductions, bank charges incurred on electronic transfers and payments for liquid fuel during the period.

2.0 Disbursement to CWM beneficiaries from other ECG operational accounts per the MoF directive of 21 June 2023 effective 1 July 2023

Response

Our earlier response is valid and is reproduced below:

In our role as a public utility with a large number of third-party vendors and contractors, the demands of the treasury operations are enormous. Consequently, the Board of Directors of the Company has deemed it commercially prudent for ECG to operate overdraft accounts with other banks to enable the Company to honour some of its urgent financial commitments. Further, due to Bank of Ghana Regulations on Single Obligor Limits with the Universal Banks, ECG is compelled to operate with more than one bank hence the payments from other banks. This commercial arrangement also helps to avoid concentration risks.

Additionally, payments to some Tier One CWM beneficiaries are made/paid in USD which necessitates transfers from the Ghana Cedi Single Collections Accounts to enable the purchase of US dollars which are then deposited in the Margin Accounts which is subsequently used to pay Tier One CWM beneficiaries.

3.0 Disbursement to Non-CWM beneficiaries (individuals and organizations) in excess of ECG's allocated amount per the CWM. Per the CWM model, ECG is allocated a portion of approximately 25% from which its operational expenditures are to be made.


Response

Sequel to our earlier response and the decisions agreed with PwC at the subsequent meetings, confirmation letters have been sent to beneficiary Independent Power Producers and State-Owned Enterprises to confirm the amounts received during the period. The beneficiaries are currently responding directly to PwC. We are convinced that the confirmation of payments will invalidate this finding.

Finally, we wish state that our responses (including the earlier one) are incorporated in the Final Report or published alongside the report on your website.

Your continued cooperation would be much appreciated.

Yours faithfully,



SAMUEL DUBIK MAHAMA, ESQ.
MANAGING DIRECTOR

- Cc: 1. The Secretary to the President
2. The Honourable Minister, Ministry of Energy
3. The Honourable Minister, Ministry of Finance
4. The Senior Partner, PwC



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