



SUSTAINABLE ENERGY DEVELOPMENT PROGRAMME

SEMI-ANNUAL BUDGET MONITORING REPORT

FINANCIAL YEAR 2022/23

APRIL 2023

Budget Monitoring and Accountability Unit
Ministry of Finance, Planning and Economic Development
P.O. Box 8147, Kampala
www.finance.go.ug

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ABBREVIATIONS AND ACRONYMS

AFD	Agence Française de Development
AfDB	African Development Bank
CDAP	Community Development Action Plan
CGV	Chief Government Valuer
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement and Construction
ERT	Energy for Rural Transformation
EXIM	Export Import
FAT	Factory Acceptance Test
GERP	Grid Extension and Reinforcement Project
GoU	Government of Uganda
HPP	Hydro Power Project
HSE	Health Safety and Environment
HV	High Voltage
IDA	International Development Association
IFMS	Integrated Financial Management System
IPC	Interim Payment Certificate
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau
KIL	Kilembe Investment Limited
KIS	Kalangala Infrastructure Services limited
KRECS	Kyegegwa Rural Electricity Cooperative Society Limited
kV	kilo Volts
LPG	Liquefied Petroleum Gas
LV	Low Voltage
MDAs	Ministries, Departments and Agencies
MEMD	Ministry of Energy and Mineral Development
MEPS	Minimum Energy Performance Standard
MLHUD	Ministry of Lands, Housing and Urban Development
MoU	Memoranda of Understanding
MPS	Ministerial Policy Statement
MV	Medium Voltage
MW	Mega Watts
NDP III	Third National Development Plan
OE	Owner's Engineer
PACMECS	Pader- Abim Community Multi-Purpose Electric Co-operative Society
PAPs	Project Affected Persons
PBS	Programme Budgeting System
PDHs	Physically Displaced Households
PIP	Public Investment Plan
PPDA	Public Procurement and Disposal of Assets



PPP	Public-Private Partnership
RAP	Resettlement Action Plan
REP	Rural Electrification Programme
ROW	Right of Way
SDR	Special Drawing Rights
SPV	Special Purpose Vehicle
TA	Technical Assistance
UEDCL	Uganda Electricity Distribution Company Limited
UEGCL	Uganda Electricity Generation Company Limited
UETCL	Uganda Electricity Transmission Company Limited
UNBS	Uganda National Bureau of Standards
UREAP	Uganda Rural Electrification Access Project



FOREWORD

Uganda like many other countries in the world continues to be affected by the aftermaths of the Coronavirus Disease (COVID-19) pandemic, Russia's invasion of Ukraine, climate change effects, and increasing food prices among the many global shocks today. Amidst this environment, the Government has shown a strong commitment to innovatively raise and allocate resources to fund its strategic interventions, in a bid to build resilience and drive sustainable economic growth and development.

For this Financial Year 2022/23, the semi-annual programme monitoring findings show a fair performance across the board, with a few programmes on track to achieving their annual goals. This performance notwithstanding, there are still many perennial challenges that are putting many government interventions at risk of not achieving their intended objectives.

Since we are operating in an environment of scarcity, it is imperative that we expedite the processes of streamlining and strengthening our planning, implementation, monitoring and execution of Government programmes. We must harness the comparative advantages expected from operating in a programme mode. To that effect, all Ministries, Departments, Agencies and Local Governments should critically review the noted challenges and institute innovative ways of circumventing them during the remaining months.

Ramathan Ggoobi
Permanent Secretary/Secretary to the Treasury



EXECUTIVE SUMMARY

The Sustainable Energy Development (SED) Programme is among the 20 programmes that have been earmarked for implementation in the National Development Plan III. The goal of the Sustainable Energy Development Programme is to meet the energy needs of the country by providing adequate, affordable, clean and reliable energy for sustainable socio-economic growth and development. The sub-programmes under this programme are: Transmission and Distribution, Generation, Renewable Energy Development; Energy Efficiency and Conservation.

The programme is implemented by the Ministry of Energy and Mineral Development (MEMD), the Uganda Electricity Transmission Company Limited (UETCL), Uganda Electricity Generation Company Limited, Uganda Electricity Distribution Company Limited (UEDCL) and the Electricity Regulatory Authority (ERA). Other key private implementation partners are: UMEME, Kilembe Investments Limited (KIL), Kyegegwa Rural Electrification Cooperative Society (KRECS), Pader- Abim Community Multipurpose Electric Society (PACMECS) and Kalangala Infrastructure Services (KIS). This report shares the programme performance for the period 1st July to 31st December, 2022.

Programme Performance

The annual performance of the programme was fair at 61.7% and implementation of most planned interventions was behind schedule at half year financial year (FY) 2022/23. The approved budget for the programme was Ug shs.1536.2 billion (bn), of which Ug shs 491.0bn was released and Ug shs 473.3bn spent. The release of funds on the Government of Uganda (GoU) funded projects was low and so was disbursement of funds budgeted under external due to delayed project implementation under the Generation, and Transmission and Distribution sub-programmes.

Performance of the Generation Sub-programme was fair at 57.2%. The main planned outputs were: Completion of works at Karuma HPP and defects liability for Isimba HPP, and construction of Nyagak III and Muzizi HPP. Completion of Karuma HPP was delayed with works at 99.6% yet commissioning of the first generation unit was due in November 2022. The project was plagued by defects in the works and there were several unresolved contractual disputes between the contractor (Sino-Hydro Limited) and MEMD. Works at Nyagak III progressed well and 84.7% of the planned works were completed, but procurement of works for Muzizi were cancelled.

The Transmission and Distribution Sub-programme performance was fair at 63.1% by half year FY2022/23 due to Right of Way (RoW) bottlenecks and contractor capacity challenges. The planned interventions under this sub-programme for FY 2022/23 are: expanding the transmission network; expansion and rehabilitation of the distribution network; reducing the end user tariffs. A total of 75km of transmission lines connecting Karuma HPP to Lira substation was completed and energized. However, the works on other key transmission projects were still under implementation with delays noted on the Lira-Gulu-Nebbi-Arua Transmission Project, Gulu-Agago Transmission Project, Mutundwe-Entebbe Transmission Project, Mirama-Kabale Transmission Project and the Karuma-Lira transmission line.

Implementation delays for the transmission projects were mainly attributed to the difficulties in acquisition of the line corridors, and recurring incidents of vandalism of the towers with the Karuma-Interconnection Project the most affected with five towers vandalized. The delayed



implementation is causing the persistent deemed energy costs due to generation capacity that cannot be evacuated onto the grid and has to be paid for.

Implementation of several rural electrification projects continued during the financial year and several schemes under the Uganda Electricity Access Project (UREAP) were completed in the Eastern region (Kaliro, Iganga, Soroti, Serere), Northern region (Gulu, Nwoya, Lira) and Central region (Nakaseke, Luwero, Wakiso). Other ongoing works under Energy for Rural Transformation (ERT III) were delayed by the failure to fully acquire wayleaves. In total, 680km of medium voltage distribution (11kv and 33kV) and 500km of low voltage distribution lines were completed against a planned target of 1,000km. The grid access increased from 19% at end of FY2021/22 to 20% at the end of the first half of the FY2022/23 and in total 127,428 new connections were added countrywide against an annual target of 300,000.

The performance of the Renewable Energy Development Sub-programme was fair at 51.6%. The sub-programme has one intervention – to promote use of new and renewable energy sources. The construction of 14 mini-grids in Isingiro and Rakai was ongoing by half year. Pole erection for the distribution grid was ongoing and acquisition of land for nine locations for the solar array was undertaken in FY2022/23. The procurement of 90 other mini-grids with funding from the Swedish Embassy was ongoing, while 400 improved cook stoves were distributed, but there was no funding for the five planned institutional cook stoves.

The Energy Efficiency and Conservation Sub-programme performance was good at 75%. The planned interventions was promotion of the use of energy efficient equipment for industrial and residential consumers. Research and categorization of the different industries was undertaken so that the industries could be better supported in uptake of energy efficiency. Also, awareness on energy efficiency was undertaken and the Energy Efficiency and Electric Mobility Conference successfully held in November 2022. Three new draft standards covering several areas in energy management among energy consumers were developed in conjunction with Uganda National Bureau of Standards (UNBS) in areas of verification of energy savings.

Challenges

1. Continued vandalism on ongoing electricity transmission and distribution infrastructure due to high demand for metal scrap from steel factories is damaging critical energy infrastructure and increasing the costs of providing electricity.
2. Transmission line and rural electrification projects continue to experience delays due to land acquisition challenges as a result of protracted court cases and unreasonable financial demands by some project affected persons
3. The low rate of new connections persists due to the low grid coverage mostly in the rural areas and the high connection costs that is unaffordable for many.

Recommendations

1. The Judiciary should enforce the provisions in the revised Electricity Act so that the vice of vandalism is discouraged.
2. The MEMD should engage the Judiciary to explore the fast-tracking of court cases that are holding up key projects to avoid stalling ongoing works.
3. The Government should create a special fund for undertaking the free connections initiative with funds ring-fenced from being diverted and reliance on external funding alone should be minimized.



CHAPTER 1: BACKGROUND

1.1 Background

The mission of the Ministry of Finance, Planning and Economic Development (MFPED) is, “*To formulate sound economic policies, maximize revenue mobilization, and ensure efficient allocation and accountability for public resources so as to achieve the most rapid and sustainable economic growth and development.*”

The MFPED through its Budget Monitoring and Accountability Unit (BMAU) tracks implementation of programmes/projects by observing how values of different financial and physical indicators change over time against stated goals, indicators and targets (how things are working). The BMAU work is aligned to budget execution, accountability, service delivery, and implementation of the Domestic Revenue Mobilization Strategy (DRMS).

Commencing in the FY 2021/22, the BMAU is undertaking Programme-Based Monitoring to assess performance against targets and outcomes in the Programme Implementation Action Plans (PIAPs) of the third National Development Plan (NDPIII). Semi-annual and annual field monitoring of government programmes and projects is undertaken to verify receipt and application of funds by the user entities and beneficiaries, the outputs and intermediate outcomes achieved, and level of gender and equity compliance in the budget execution processes. The monitoring also reviews the coherency in implementing the PIAP interventions; the level of cohesion between sub-programmes; and challenges of implementation.

The monitoring covered the following Programmes: Agro-Industrialization; Community Mobilization and Mindset Change; Digital Transformation; Human Capital Development; Innovation, Technology Development and Transfer; Integrated Transport Infrastructure and Services; Manufacturing; Mineral Development; Natural Resources, Environment, Climate Change, Land and Water Management; Public Sector Transformation; Regional Development; Sustainable Development of Petroleum Resources; and **Sustainable Energy Development**.

This report presents findings from monitoring the Sustainable Energy Development Programme for the budget execution period of 1st July 2022 and 31st December 2022.

1.2 Programme Goal

The goal of the Sustainable Energy Development (SED) Programme is to meet the energy needs of the country by providing adequate, affordable, clean and reliable energy for sustainable socio-economic growth and development. The SED Programme consists of 4 sub-programmes namely: Generation, Transmission and Distribution, Rural Electrification, Renewable Energy Development, and Energy Efficiency and Conservation.

The lead MDA for programme implementation is the Ministry of Energy and Mineral Development (MEMD), with other key implementing agencies being the Uganda Electricity Transmission Company Limited (UETCL) and Uganda Electricity Generation Company Limited (UEGCL).



1.3 Programme Objectives

The specific objectives of the programme are:

- i. Increase access and utilization of electricity;
- ii. Increase generation capacity of electricity;
- iii. Increase adoption and use of clean energy; and
- iv. Promote utilization of energy efficient practices and technologies.

1.4 Programme Outcomes and Indicators

The NDP III outlines outcomes and the targets to be delivered under each programme objectives. The indicators in Table 1.1 will be used to measure the progress towards the outcomes in the programme.

Table 1.1: Sustainable Energy Development Outcomes and Indicators

Outcome	Indicators
Objective 1: Increase access and utilization of electricity	
Increased electricity access	1. Increase percentage of households with access to electricity from 50% to 80%.
	2. Increase grid reliability from 88% to 90%.
	3. Increase electricity consumption per capita (kWh per capita) from 100kWh to 578kWh.
	4. Increase length of High voltage transmission lines (km) from 2354km to 4354km.
	5. Increase length of distribution network from 45,423.1km to 70,000km.
Objective 2: Increase electricity generation capacity	
Increased electricity generation capacity	Increase electricity generation capacity from 1,252.3MW to 3500MW
Objective 3: Increase adoption and use of clean energy	
Increased energy consumption	Increase primary energy consumption (million tonnes of oil equivalent) from 15.2 to 21.74 million tonnes of oil equivalent
Objective 4: Promote utilization of energy efficient practices and technologies.	
Increased consumption of alternative clean cooking energy	Reduce total energy losses (%) on the distribution network from 19.6% to 12.6%.
Efficient energy utilization	Increase % of adoption of energy efficient technologies from 30% to 50% across all consumer categories

Source: NDP III



CHAPTER 2: METHODOLOGY

2.1 Scope

This monitoring report is based on selected interventions in the Sustainable Energy Development Programme implemented during FY 2022/23 (1st July 2022-31st December 2022). The interventions and respective outputs reviewed under each sub-programme: Ministry, Department and Agency/ (MDAs)/Vote/Local governments are listed in Annex 1.

Monitoring involved analysis and tracking of inputs, activities, processes, outputs and in some instances intermediate outcomes as identified in the Programme Implementation Action Plan (PIAP), Ministerial Policy Statements (MPSs), and semi-annual and quarterly work plans, progress and performance reports of MDAs.

A total of seven (7) of the eight (8) interventions in the MPS were reviewed. The 7 reviewed interventions translated into 90% coverage of the approved budget for the FY2022/23. The selected interventions monitored were:

- i. Undertake preliminary development of large generation plants
- ii. Finalize plans for development of nuclear power generation
- iii. Expand and Rehabilitate the Transmission Network
- iv. Expand and Rehabilitate the Distribution Network
- v. Establish mechanisms to reduce the end-user tariffs
- vi. Promotion of use of new and renewable energy solutions
- vii. Promote the use of energy efficient equipment for both industrial and residential consumers

Interventions i and ii are under the Generation Sub-programme, while iii, iv and v are under the Transmission and Distribution, intervention vi is under Renewable Energy Development, and intervention vii is under Energy Efficiency and Conservation.

The selection of interventions to monitor was based on the following criteria:

1. Significant contribution to the programme objectives and national priorities.
2. Level of investment, interventions that had large volume of funds allocated were prioritized.
3. Planned outputs whose implementation commenced in the year of review, whether directly financed or not. In some instances, multiyear investments or rolled over projects were prioritized.
4. Interventions that had clearly articulated gender and equity commitments in the policy documents.
5. Completed projects to assess beneficiary satisfaction, value for money and intermediate outcomes.

2.2 Approach and Sampling Methods

Both qualitative and quantitative methods were used in the monitoring exercise. Physical performance of interventions, planned outputs and intermediate outcomes were assessed through monitoring a range of indicators. The progress reported was linked to the reported expenditure and physical performance.



A combination of random and purposive sampling was used in selecting interventions and outputs from the PIAPs, Ministerial Policy Statements (MPS) and progress reports of the respective Ministries, Departments, Agencies and Local Governments (MDALGs) for monitoring.

To aid mapping of PIAP interventions against annual planned targets stated in the Vote MPS and quarterly work plans, a multi-stage sampling was undertaken at four levels: i) Sub-programmes ii) Sub sub-programmes iii) Local governments, and iv) Project beneficiaries. Regional representation was considered in the selection of districts and outputs.

2.3 Data Collection and Analysis

2.3.1 Data collection

The monitoring team employed both primary and secondary data collection methods. Secondary data collection methods included;

- i) Literature review from key policy documents including, Ministerial Policy Statements(MPS) FY 2022/23; National and Programme Budget Framework Papers; A handbook for implementation of NDPIII Gender and Equity commitments, PIAPs (NDP III), quarterly progress reports and work plans for the respective implementing agencies, Quarterly Performance Reports, Budget Speech, Public Investment Plans, Approved Estimates of Revenue and Expenditure, project reports, strategic plans, policy documents, Aide Memoires and Evaluation Reports for selected programmes/projects.
- ii) Review and analysis of data from the Integrated Financial Management System (IFMS); Programme Budgeting System (PBS); Health Management Information System, Budget Portal; Quarterly Performance Reports and Bank statements from some implementing agencies.

Primary data collection methods on the other hand included;

- iii) Consultations and key informant interviews with Institutional heads, project/intervention managers, Household Heads, and service beneficiaries at various implementation levels.
- iv) Field visits to various project sites, for primary data collection, observation and photography.
- v) Call-backs in some cases were made to triangulate information.

2.3.2 Data Analysis

The data was analyzed using both qualitative and quantitative approaches. Qualitative data was examined and classified in terms of constructs, themes or patterns to explain events among the beneficiaries (interpretation analysis) and reflective analysis where the monitoring teams provided an objective interpretation of the field events. Quantitative data on the other hand was analyzed using advanced excel tools that aided interpretation.

Comparative analyses were done using percentages, averages, and cross tabulations of the outputs/interventions; intermediate outcome indicators and the overall scores. Performance of outputs/interventions and intermediate outcome indicators was rated in percentages according to level of achievement against the annual targets. The sub-programme score was determined as the weighted aggregate of the average percentage ratings for the output/intermediate outcomes in the ratio of 65%:35% respectively.

The overall programme performance is an average of individual sub-programme scores assessed.



The performance of the programme and sub-programme was rated on the basis of the criterion in **Table 2.1**. Based on the rating assigned, a BMAU colour coded system was used to alert the policy makers and implementers on whether the interventions were achieved or had very good performance (Green), or good performance (yellow), fair performance (light gold) and poor performance (Red) to aid decision making.

Table 2.1: Assessment guide to measure performance in FY 2022/23

Score	Performance Rating	Comment
90% and above	Green	Very Good (Achieved at least 90% of outputs and outcomes)
70%-89%	Yellow	Good (Achieved at least 70% of outputs and outcomes)
50%- 69%	Light Gold	Fair (Achieved at least 50% of outputs and outcomes)
49% and below	Red	Poor (Achieved below 50% of outputs and outcomes)

Source: Author's Compilation

Ethical considerations

Introduction letters from the Permanent Secretary/ Secretary to Treasury were issued to the respective MDAs. Entry meetings were held with the Accounting Officers or delegated officers upon commencement of the monitoring exercise. Consent was sought from all respondents including programme or project beneficiaries. All information obtained during the budget monitoring exercise was treated with a high degree of confidentiality.

2.4 Limitations

1. Lack of reliable and real time financial data on donor financing which was not accessible on the IFMS.
2. Limited access to credible expenditure data especially for agencies/subventions that still operated manual accounting systems.

2.5 Structure of the Report

The report is structured into four chapters. These are: Introduction, Methodology, Programme Performance, Conclusion, and Recommendations respectively.



CHAPTER 3: PROGRAMME PERFORMANCE

3.1 Overall performance

Financial Performance

The overall programme budget was Ug shs 1,536.2bn, of which Ug shs 491.0bn was released, and Ug shs 473.3bn spent by half year. The budget release was poor at 32.0% mainly due to low disbursement on the externally funded projects under the Transmission and Distribution Sub-programme. The implementation challenges on the electricity transmission and grid extension projects affected the disbursement of the external funding on the. The delays were mainly attributed to failure to acquire the transmission and distribution corridors in time. The programme financing is summarized in Table 3.1.

Table 3.1: Financing of the Sustainable Energy Development Programme at 31st December 2022

Sub-Programme	Budget (Ug shs Bn)	Release (Ug shs Bn)	Expenditure (Ug shs Bn)	Release as % of budget	Expenditure as % of release
Generation	377	150.9	149.2	40.0	98.9
Transmission and Distribution	1158	339.7	323.8	29.3	95.3
Renewable Energy Development	0.68	0.2	0.1	25.0	82.4
Energy Efficiency and Conservation	0.6	0.2	0.1	30.0	79.4
Overall Performance	1,536.28	491.0	473.3	32.0	96.4

Source: IFMS and PBS Quarterly Reports

Physical performance

The overall programme performance was fair at 61.7% due to the slow implementation of the key deliverables such as the power transmission projects, rural electrification grid extensions and the large hydropower generation projects (Table 3.2). The Transmission and Distribution Sub-programme performance was delayed by land acquisition challenges and long procurement processes. Delays on the large hydro projects, Karuma HPP and Isimba HPP were attributed to several defects in the completed works. For the Karuma HPP, the first generation unit was initially expected online in November 2022 but this did not happen due to several defects identified and needed to be addressed.

Table 3.2: Summary performance for the Sustainable Energy Development Programme for FY2022/23

Sub-programme	Performance (%)
Generation	57.2
Transmission and Distribution	63.1
Renewable Energy Development	51.6
Energy Efficiency and Conservation	75.0
Overall Performance	61.7

Source: Authors compilation



3.2 Generation Sub-programme

The sub-programme objective is to ensure adequate generation capacity for economic development and it contributes to the programme outcome of “increased electricity generation capacity added to the grid”. The outcome indicator for the sub-programme is the generation capacity in megawatts (MW) added to the grid. The planned interventions under the sub-programme are:

- i. Undertake preliminary development of large generation plants
- ii. Finalize plans and approvals for construction of a nuclear power generation plant.

Performance of Interventions

The overall sub-programme performance was fair at 51.6 % (Table 3.3). The interventions did not meet the planned target of increasing the generation capacity by 600MW due to the delayed works on key outputs namely: Karuma HPP and Nyagak III HPP. Plans to develop Muzizi HPP were cancelled by the Government due to the high project cost. The total budget for the interventions under the sub-programme was Ug shs 377bn, of which Ug shs 94.1bn (25%) was released and Ug shs 92.3bn (24.5%) spent by half year.

Table 3.3: Performance of interventions under the Generation Sub-programme

Intervention	Performance Rating	Remarks
Undertake preliminary development of large generation plants		Poor performance of 48.2%. Works on Karuma delayed and Isimba HPP defects not fully resolved
Finalize plans and approvals for nuclear power generation		Fair performance of 55%. The siting for planned nuclear power plant has been identified and community engagement commenced.
Average performance intervention		Fair performance of 51.6%

3.2.1 Undertake preliminary development of large hydropower generation plants

The intervention is jointly implemented by Uganda Electricity Generation Company Limited (UEGCL) and MEMD. The planned outputs under the intervention are construction of Nyagak III HPP, Muzizi HPP, Karuma HPP, and completion of Isimba HPP defects liability.

Performance of the intervention

The performance of the intervention was poor at 48.2%. Completion of works for Karuma HPP and Nyagak HPP was not achieved. The budget for the intervention was Ug shs 376.7bn and Ug shs 93.8bn (24.9%) was released, while Ug shs 91.1bn (24.1%) was spent at half year.

Construction works on Nyagak III HPP

The planned project duration was 33 months at a cost of US\$19.39 million and works commenced in 2017. The scope of works on the project includes the dam structure, spillway, power intake conduit, surge tank, penstock, and a powerhouse with two (2) turbines each of 3.3MW, access roads to the dam and power house and permanent housing for the operations and maintenance team.

Construction works on Nyagak III HPP were ongoing in Zombo District with overall progress at 84.7% against a target of 100%. The project budget was Ug shs 13.5bn, of which Ug shs 5.55bn was released and Ug shs 5.34bn spent by half year.



Right: Completed dam and spillway; Bottom: Completed penstock structure at Nyagak III HPP

There was good progress during the financial year although the works were behind schedule. The civil works on the access roads, dam structure, spillway and the surge tank were completed, so was laying of the pipe conduit from the dam intake to the surge chamber and the penstock piping. Other major equipment such as the draft tubes and spiral casing were received on site and pending installation. The major issue affecting Nyagak III project was the delay by the project private partners to obtain the planned loan financing whereas the project was at a critical stage of project implementation.

Construction of Muzizi HPP

The development of Muzizi HPP was postponed by Government after all the bids received for the EPC works were higher than the project budget and Government requested the funder to cancel the loan. The project will be repackaged as a private public partnership (PPP). The progress of the RAP for the project was at 54% with funding from GoU.

Completion of Karuma HPP works

Construction works for Karuma HPP progressed from 99% to 99.6%. The cumulative disbursement on the project loan at half year FY2022/23 increased from US\$1,357,571,049 to US\$ 1,374,423,505. The planned date for wet commissioning of the first generation unit was extended from November 2022 to March 2023. All major civil, electrical and electromechanical works at Karuma were completed at the spillway, dam intake, powerhouse, substations and tunnels. Dry commissioning of several commons systems at the generation plant was on-going.

The rectification of identified defects/snags continued during the financial year with progress at 92%. One major snag that was still to be resolved on the project was replacement of the damaged log-boom, which has to be undertaken before any wet commissioning can commence.



Completed electromechanical and electrical equipment installation in the Karuma HPP powerhouse



Completed central control room (CCR) for the Karuma HPP

Final pre-commissioning and functional tests on the electromechanical, hydraulic, electrical systems, instrumentation, protection systems and wiring in the control cabinets were ongoing for the 6 generation units; so was the final rust repair and further painting throughout the plant on finished works.

Construction works for the permanent roads of Karuma HPP was completed. The major outstanding activities were finishing works on the road shoulders, road marking; sign post installation, hump construction, road lighting, installation, guardrail, installation, outflow channel construction and any pending road repairs.

The overall completion progress for the transmission component of the project was 99.6%. The long pending works on the 73.1km Lira-Karuma transmission line were completed and Lira substation energized. The project however faces recurring incidents of vandalism on the already completed segments on the Karuma-Kawanda Line.

The main completion of the Employer's Permanent Camp was as follows: Substantial completion of the Zone A of Employer's Permanent Camp, and currently rectifying and improving the minor problems and defects raised by the Owner and Owner's Engineer in the joint handover. The main buildings of Zone B of Employer's Permanent Camp had been basically completed, and the remaining main works children's park, sports facilities, etc. auxiliary facilities are currently in progress. Other remaining supporting auxiliary facilities of Employer's Permanent Camp such as the walkway, water supply works, power supply, sewerage treatment, landscaping were still under progress.

The Community Development Action Plan (CDAP) for the project commenced works on the three selected schools at Nora Primary School in Oyam, Diima Primary School in Kiryandongo and Purungo Primary School in Nwoya was completed. Each of the selected schools got two classroom blocks, two latrine blocks, four staff houses and water harvesting tanks. The other CDAP components which include work on health facilities, extension of grid electricity and water facilities and had not commenced due to the insufficient funding.



Completed double classroom blocks at Nora Primary School, Oyam District under the Karuma HPP CDAP



The construction of the 119 resettlement houses for the vulnerable PAPs on the Karuma HPP had not commenced. The categories of PAPs classified as vulnerable are the widows, elderly and child-led households. The delay in construction of the houses was as a result of the requirement by the National Environment Management Authority (NEMA) for MEMD to undertake an Environmental and Social Impact Assessment (ESIA) at the proposed construction site.

Completion of Defects Liability Period for Isimba HPP

The hydropower plant was commissioned in March 2019 and is under the Defects Liability Period (DLP) monitoring. The overall progress for fixing of the identified snags and defects during the DLP was at 98% with 761 of the identified 776 snags completed with the DLP elapsing at the end of March 2023. The long pending firefighting and alarm system was completed and commissioned. The plant is still reviewing the cause of the wear in the spillway concrete so that an effective repair method can be adopted. Other key issues pending was the production of up to date as built drawings and operation manuals for plant equipment, and several malfunctioning/poorly installed instruments and sensors.

3.2.3 Finalize plans and approvals for construction of a nuclear power generation plant

The planned outputs under the intervention are: Atomic Energy Amendment Bill prepared; Awareness on the nuclear energy conducted; Preparation for construction of a Centre for Nuclear Science and Technology conducted; Local Content Strategy for nuclear energy development prepared; Spent fuel and radioactive waste management strategy for Uganda prepared and implemented; Bilateral and multilateral cooperation coordinated;

Performance of the intervention

The performance of the intervention was fair at 57.2%. The siting for the planned nuclear generation plant was completed and the community engagement commenced. The Nuclear Unit under MEMD also continued to engage and receive technical support from the International Atomic Energy Agency (IAEA). The budget allocation for this intervention was Ug shs 0.8bn, of which Ug shs 0.215bn was released and Ug shs 0.184bn spent by half year 2022/23.

Atomic Energy Amendment Bill prepared

Proposed amendments for the Atomic Energy Act, 2008 were prepared with support from the Ministry of Justice and Constitutional Affairs, and the Atomic Energy Council, as part of the principles for amendment of the Act. Two (2) Cabinet Standing Committee meetings were held to consider the final draft principles for amending the Atomic Energy Act, 2008.

Awareness on the nuclear energy conducted

Created awareness among 100 PAPs in Bukungu Town Council, Buyende District on 5th August 2022 and Buyende District leadership engaged to close information gaps. The proposed 2000MW Buyende Nuclear Power Project was exhibited during the Renewable Energy Conference, 2022 at Speke Resort Munyonyo and the 2022 National Science Week at Kololo Independence Ground from 7th – 10th November 2022. A member of staff was trained on managing PAPs in municipalities with nuclear facilities from 31st – 4th November 2022 in Vienna, Austria with support from IAEA.



Preparation for construction of a Centre for Nuclear Science and Technology conducted

The project profile for the Centre for Nuclear Science and Technology was prepared and presented to the MFPED Development Committee. Needs assessment for the Centre of Nuclear Science and Technology in central Uganda was conducted and the site selection report for the Centre for Nuclear Science and Technology disseminated. A member of staff was trained on preventive maintenance of dosimetry equipment from 27th November to 1st December, Algiers, Algeria with support from IAEA.

Local content strategy for nuclear energy development prepared

The MEMD Nuclear Unit drafted Terms of Reference (ToRs) for preparation of a Local Content Strategy for Buyende Nuclear Power Project. A member of staff was trained on electric grid considerations and interactions with the Nuclear Power Plant from 26th – 30th September 2022 at Argonne National Laboratory, Chicago, Illinois, USA with support from IAEA.

Spent fuel and radioactive waste management strategy for Uganda prepared and implemented

The Spent Fuel and Radioactive Waste Management Strategy for Uganda was updated. ToRs for siting a Centralized Radioactive Waste Management Facility were drafted. The draft Spent Fuel and Radioactive Waste Management Strategy for Uganda was reviewed and dated. Procurement process for removal of Cobalt-60 Disused Sealed Radioactive Sources (DSRS) from Uganda was initiated by IAEA. A member of staff was trained on reuse and recycling of disused sealed radioactive sources from 7th – 11th November 2022 in Sarajevo, Bosnia and Herzegovina with support from IAEA.

Bilateral and multilateral cooperation coordinated

Supported the Ministry of Foreign Affairs (MoFA) during the visit of H.E. Sergey Lavrov, Minister of Foreign Affairs of Russian. Field visits were conducted in Masaka, Gulu and Lira Cities from 12th to 16th December 2022 to assess the status of the Regional Animal Disease Diagnostic Laboratories. Baseline data was collected to guide the drafting of the CPF 2024/30. Projects designs for IAEA TC cycle 2024/25 were updated. Preparations for the Africa Nuclear Business Platform conference and exhibition scheduled for 14th to 17th March 2023 continued. A team led by Hon. Minister of State for Energy participated in the 5th International Ministerial Conference on Nuclear Power in the 21st Century in USA from 26th to 28th October 2022. The detailed analysis for the performance of the sub-programme interventions is in Table 3.3.

Table 3.3: Performance of the Generation Sub-Programme by 31st December 2022

Intervention	Output	Annual Budget (Ug shs)	% of budget received	% of budget spent	Annual Target	Physical score (%)	Remark
Undertake preliminary development of large generation plants	Construction of Nyagak III HPP	13.50	41.12	96.3	100.0	84.7	Nyagak III works progressed to 87.4% with dam civil works completed.



Intervention	Output	Annual Budget (Ug shs)	% of budget received	% of budget spent	Annual Target	Physical score (%)	Remark
	Construction of Karuma HPP	295.29	45.29	99.3	0.4	0.0	Overall progress at 99.6%. Commissioning had commenced for some units.
	Completion of defects liability Period for Isimba HPP	67.88	16.72	95.2	100.0	60.0	Project was still under defects liability monitoring until March 2023.
Finalize plans and approvals for nuclear power generation	Atomic Energy Amendment Bill prepared	0.16	53.75	85.6	100.00	40.00	Draft bill for the atomic energy under cabinet review.
	Awareness on the nuclear energy conducted	0.16	26.88	171.2	100.0	40.0	100 PAPs in Buyende sensitized.
	Preparation for construction of a Centre for Nuclear Science and Technology conducted	0.16	26.88	85.6	100.0	50.0	Project profile prepared for construction of center.
	Local content strategy for nuclear energy development prepared	0.16	26.88	85.6	100.0	50.0	Draft local content strategy prepared.
	Spent fuel and radioactive waste management strategy for Uganda prepared and implemented	0.08	26.88	85.6	100.0	50.0	Location of power plant identified in Buyende.
	Bilateral and multilateral cooperation coordinated	0.08	26.88	85.6	100.0	100.0	
		377				52.74	Output performance

Source: Field Findings and MEMD Q2 Reports

Challenges under the Sub-programme

- The remedying of defects on the Karuma HPP and Isimba HPP was yet to be fully achieved. Failure to address the existing defects and the continuous emergence of new defects puts these projects a risk of not serving well until the end of the planned operational life.



- Several contractual disputes between the EPC and the Government concerning the Karuma HPP were still unresolved due to refusal by MEMD to appoint an adjudicator.

Conclusion

Overall, although the Generation Sub-programme continued to make progress towards increasing the power generation capacity on the grid, there were delays in the delivery of the planned outputs notably works at Karuma HPP. The operations of Isimba HPP continued to be monitored but the delay in completion of previous and emerging defects on the project might affect the useful life of the generation plant. There is need for UEGCL and MEMD to intensify efforts to ensure that these projects are concluded.

Recommendations

1. The UEGCL and MEMD should pay closer attention to ensure that all pending identified defects and issues at Karuma and Isimba are resolved.
2. The MEMD should without further delay appoint an adjudicator to help resolve the various contractual disputes on the Karuma HPP as soon as possible.

3.3 Transmission and Distribution Sub-programme

The sub-programme is responsible for promoting increased investment in power transmission and rural electrification. The sub-programme contributes to the programme outcome of “*increased access and utilization of electricity*”. The outcome indicators for the sub-programme are increased electricity access, and reduction in losses on the grid.

The planned interventions under the sub-programme include: expand and rehabilitate the transmission network, expand and rehabilitate the distribution network and reduce end user tariffs. The sub-programme performance was fair at 65.1% with a budget of Ug shs 261.824bn, of which Ug shs 120.707bn was released and Ug shs 119.23bn spent.

Implementation of the transmission and rural grid extension projects was hindered by the challenges in acquisition of RoW, delays due to material delivery and increasing cases of vandalism on ongoing projects. The targeted level of electricity access of 35% was not achieved, with 20% registered due to non-completion of several grid extensions and the low level of connections.

Performance of interventions

The overall performance of the interventions under the sub-programme was fair at 63.1% (Table 3.4). Under the intervention to expand and rehabilitate the distribution network, 450km and 680km of medium voltage and low voltage lines were built against an annual target of 1,000km for both. The intervention to expand the transmission network performed poorly with only 700km lines added to the grid against a target of 2,600km. The other intervention to establish mechanisms to reduce the end-user tariffs performed poorly adding only 12,728 of the planned 300,000 new connections to the grid with access to grid electricity at 20%.

**Table 3.4: Intervention performance for Transmission and Distribution Sub-programme**

Intervention	Performance Rating	Remarks
Expand and Rehabilitate the Transmission Network		Fair performance of 700km of planned 2,600km of transmission network completed
Expand and Rehabilitate the Distribution Network		Fair performance. 450km of MV and 680km of LV achieved against a target of 1,000km
Reduce End User Tariffs		Poor performance. Only 12,728 new free connections made out of planned 300,000 annual target
Overall intervention performance		Fair performance at 54%

Source: Authors' Compilation

3.3.1 Expand the Transmission Network to Key Growth Areas

The intervention is the responsibility of Uganda Electricity Transmission Company Limited (UETCL) and Ministry of Energy and Mineral Development (MEMD). The performance indicators under the intervention were: number of kilometres of high voltage lines added to the grid, and distance in km of rehabilitated transmission network. The major planned outputs under the intervention were the following transmission projects:

- i. Entebbe-Mutundwe Expansion Project
- ii. 132kV Mirama-Kable Transmission Project
- iii. Grid Expansion and Re-enforcement project
- iv. Gulu Agago Transmission Project
- v. Other planned transmission projects include the Masaka-Mbarara Expansion, Kampala Metropolitan project, Kikagati-Nshongezi and power supply to Industrial parks.

The intervention performance was fair at 57.1%. During the first half of the FY2022/23, the long delayed Lira-Karuma transmission line was completed and energized. There were delays experienced on all other ongoing transmission projects due to RoW and projects like the Gulu-Agago were affected by the limited capacity of the contractor.

Entebbe-Mutundwe Expansion Project

The Entebbe-Mutundwe Expansion Project aims to construct a 24km double circuit 132kV transmission line from Mutundwe to Entebbe to provide reliable and quality power to Entebbe town and its environs. The budget for GoU funding was Ug shs 0.5bn, of which Ug shs 0.19bn was released and spent.

Overall performance of the Entebbe-Mutundwe project by the end of FY was fair. The cumulative progress of the works was at 95% with only 3 special towers pending erection in the Nambigirwa

wetland (Wakiso District). The stringing of 24km of the planned 27km of the transmission line was completed with only a short section of the line pending in Nambigirwa swamp. The materials for the two modified towers for crossing Nambigirwa swamp were pending delivery to the country.

Overall progress of the substation works on the Entebbe-Mutundwe project was 95%. All major installation of equipment were completed at the Entebbe and Mutundwe substation. Construction of the switchyard tarmac access roads and gravelling was completed, while works on the access road to Entebbe substation was ongoing and 70% of the work complete.



Acquisition of land for the transmission line corridor was progressing slowly. The percentage of the paid transactions was at 85% of the 1,053 PAPs in the 23.8km long and 30m wide corridor. There were also delays with the acquisition of the corridor for the main access road to the substation because some of the PAPs built in the reserve.



Completed Entebbe 132kV substation at Kabale in Entebbe Municipality

Construction of 132 kV Mirama-Kabale Transmission Project

The scope of the project is to construct an 85km transmission line from Mirama substation and connect it to a newly constructed substation at Kabale with funding from GoU and the Islamic Development Bank (IsDB) loan of USD 83.7 million. The project budget was Ug shs 20.13bn, of which Ug shs16.63bn was released and spent.

The overall progress of construction works on the Mirama-Kabale transmission line during the first half of the FY2022/23 was fair. By half year, 182 of the planned 294 foundations had been completed, and 83 of the planned 294 towers were erected. The progress of the works was affected by RoW and 45 tower locations could not be accessed for works to commence.

Works on the Mirama and Kabale substations had not commenced because UETCL had just concluded procurement for the EPC contractor. However, only 83% of the land for Kabale substation was acquired which risked delayed commencement of the works.



Completed towers on the Mirama-Kabale Transmission Line in Mirama, Ntungamo



The RAP implementation on the Mirama-Kabale Transmission Project had progressed well with 2,254 of the 2,511 (90%) PAPs for the transmission line compensated. Works on three of the ten planned resettlement houses was ongoing. Acquisition of the substation site in Kabale was yet to be finalized with only 83% of the required land acquired by half year.

Grid Extension and Re-enforcement Project

Under the Grid Extension and Re-enforcement Project (GERP)¹, works were ongoing to connect West Nile to the national grid through construction of 294km of 132kV double circuit transmission line from Kole, through Gulu and Nebbi, to Arua as well as new four substations at Kole, Gulu, Nebbi and Arua with a transmission interconnection from Gulu to Olwiyo

Overall progress of the project by half year remained behind schedule. Under Lot1 (transmission line), progress was at 68% as against the target of 95%. Overall tower construction on all the sections of the project was erection of 630 (70.2%) towers completed out of the planned 897 towers. The stringing of the 289km T-Line commenced and 62.2km were done. The T-Line works were affected by delayed compensation and the low level of mobilization by the contractor. Works on the four (4) substations at Kole, Gulu, Nebbi and Arua was progressing well but remained behind schedule because of delays at the initial start of the project.

Progress of works on Lot 2 (Kole and Gulu substations) was at 65%, with the target at 98% and Lot 3 (Nebbi and Arua substations) was at 65% with a target of 99%. At all the substation sites, the casting of the equipment foundations was completed, power transformers installed, construction of the control buildings was at roofing level, and works on cable trenches and water drainage was at advanced stages.



Ongoing works at the 132kV Arua substation at Muni in Arua Municipality

Overall progress of the RAP implementation was at 91% for the 3,364 PAPs. Land acquisition for the Kole-Gulu line corridor acquisition stood at 98%, Gulu-Pakwach Line corridor acquisition at 89%, Pakwach-Nebbi Line corridor acquisition at 91%, and Nebbi-Arua section acquisition at 82%.

¹ World Bank (IDA) funded through a loan of SDR 64.3 Million



All the 65 sites² for the planned resettlement houses were handed over to the contractor. Five of these sites are located between Kole and Gulu, while 60 are between Gulu and Arua. Construction of resettlement houses was ongoing for the 65 houses and the weighted progress of works stood at 58.3% even after expiry of the initial contract period. The contractor experienced cash flow challenges and COVID-19 related restrictions which delayed the construction works. A Lot of 17 completed units were to be handed over to the permanent displaced persons (PDP) in January 2023.

Gulu Agago Transmission Project

During the FY2021/22 works commenced on the Gulu-Agago Transmission Project to construct an 83km transmission line connecting Gulu substation to a newly constructed substation at Agago. The funding of the project is a 40 million Euro loan from KfW and the aim of is to evacuate electricity from Agago and Achwa hydropower plants.

The project works were behind schedule but there was improvement in the first half of the FY2022/23. The overall progress of the works on the transmission line was 75% against a planned progress of 100%. The casting of the equipment foundations was completed and erection of equipment supports was ongoing. Construction of the plant house was at the ring beam level. Works at Gulu substation were yet to commence, while earthworks at Agago HPP switchyard were ongoing. The progress of RAP of the Agago-Gulu transmission project was well advanced and 96.5% of the 472 identified project affected persons had been compensated. Construction of 7 of the planned 17 resettlement houses was ongoing but progress was slow.



Ongoing tower construction works on the Gulu-Agago transmission project in Agago District

Other planned transmission projects

The procurement of bids under the Kampala-Metropolitan transmission network was ongoing and evaluation of bids for Lot and Lot 2 were concluded, awaiting a “no-objection” from JICA. The contract for Lot 3 (mobile substation) awaited clearance from the Solicitor General and the UETCL Board. The RAP progress on the project was good with 87% of the 133 PAPs compensated.

² Five sites between Gulu and Kole, 60 sites between Gulu and Arua



The procurement process for the Masaka-Mbarara Transmission Project was ongoing at the evaluation of bids process. Implementation of the project RAP had progressed slowly with only 58% of the 2,652 identified PAPs compensated.

Under the second phase of power supply to industrial parks, the contractor was undertaking a design review, and UETCL progressed with acquisition of land for the Wobulenzi-Kapeeka and Nakasongola-Kaweeweta-Kapeeka transmission lines. On the other hand, the Kikagati-Nshongezi transmission project was also still at tendering for an EPC contractor and RAP valuation report was awaiting CGV approval.

3.3.2 Establish mechanisms to reduce the end-user tariffs

This intervention aims at increasing the number of consumers connected to the grid through implementation of the free connections policy and provision of credit support facility in support of wiring for on-grid household and SME connections and three phase connections for commercial enterprises. The output indicator for this intervention is number of new connections undertaken. This intervention is being undertaken by MEMD and Uganda Electricity Credit and Capitalization Company (UECCC).

Under the Free Connection Policy³ which was planned to run from 2018 to 2027, a total of 12,728 (4.2%) of the 300,000 planned connections were made country wide using GoU funding and financial support from several development partners⁴. The low connection rate was due to the fact that the Electricity Connections Policy (ECP) had just resumed after being suspended in FY2021/22 and the following initiatives are being fast tracked by the MEMD to ensure full scale resumption of the ECP:

- i. Financing by Agence Française de Développement (AFD) to implement about 43,000 connections was opened up by the funder. Implementation agreements were signed and implementation expected to commence in Q3 of FY 22/23.
- ii. A framework contract for supply of 50,000 connection materials was signed under GoU funding. The first call of orders for 15,000 connections were issued and delivery was expected in Q1 of FY 2023/24.
- iii. Connection materials for about 54,000 connections with funding from the African Development Bank (AfDB) were under procurement. The first set of materials was expected in Q4 FY 2022/23.
- iv. Approval to start production for connections materials to make 172,589 connections under financing from China Exim Bank was issued to the supplier. The first batch of materials to make 18,010 was produced and first deliveries expected in Q4 FY2022/23.
- v. The Electricity Access Scale-up Project (EASP) with plans to finance connections of over 1,070,000 beneficiaries was approved by the World Bank Board, Cabinet and Parliament of Uganda. Once the effectiveness conditions are met implementation is expected to commence in Q4 FY 22/23.
- vi. Financing proposals were sent out to major Development Partners to mobilize funding for the ECP to supplement the available funding from GoU.

³ Potential beneficiary require either a no-pole or one pole service for connection to the grid.

⁴ World Bank, Islamic Development Bank, African Development Bank, Kreditanstalt für Wiederaufbau (KfW).



A detailed report on the breakdown of the free connections made using the different funding sources in the FY2022/23 is given in Table 3.5

Table 3.5 Breakdown of free electricity connections by 31st Dec 2022

UMEME	UEDCL	KRECS	KIL	WENRECO	KIS	EE	PACMECS	BECS	Total
7,633	5,059	0	0	0	0	0	36	0	12,728

Source: MEMD

UMEME and UEDCL achieved the largest number of connections since their network foot print is the largest, and they have the capacity in terms of personnel and financial resources to undertake the connections compared to the smaller distribution network operators.

3.3.3 Expand and Rehabilitate the Distribution Network

The aim of this intervention is to undertake grid expansion and densification, evacuation of small generation plants and undertake quality of supply projects. The expected outputs include: distribution grid in rural areas expanded and rehabilitated, and off-grid and mini grid distribution lines constructed. The output indicators under the intervention are the number of kilometers of low voltage and medium voltage constructed. The target for the FY2022/23 is construction of 1,000km of medium voltage networks and 1,000km of low voltage networks.

By half year, 450 km of medium voltage and 680km of low voltage networks were completed under the several ongoing projects which include: Rural Electrification, Grid Rural Electrification, Energy for Rural Transformation III, Uganda Rural Electrification Access, and Demand Gap through the Accelerated Rural Electrification Programme.

Rural Electrification Project

Under the Rural Electrification Project (REP), works implemented with Islamic Development Bank Phase II funding in the Northern region (Agago, Apac, Dokolo, Katakwi, Kitgum, Kole, Lira, Pader) and Western region (Ibanda, Isingiro, Kabale, Kanungu, Kisoro, Kyenjojo, Mbarara, Mitooma, Kabarole, Kamwenge, Ntungamo, Rukungiri, Rubirizi) were completed. The defects liability monitoring of the completed works was ongoing.

Overall progress of GoU funded schemes under REP (Lots 1, 2, 3, 4, 5, 7 and 8) in the different districts countrywide was very slow but pole erection and dressing was completed. Works under GoU funded Lot 1 (Central and Rwenzori service Territories), Lot 2 (Mid-Western, South and Central service territories) and Lot 3 (Western, South, South Western territories), were at 80% progress. Schemes under Lot 4 (Buliisa and Gulu) and Lot 5 in the Eastern region (Budaka, Mbale, Bukedea, and Kumi) were completed and under defects liability monitoring.

The procurement for GoU funded Lot 6 in Eastern Uganda (Buyende, Kamuli, Mayuge, and Tororo) was not completed due to the administration review by Public Procurement and Disposal of Assets (PPDA). Transformer installation was ongoing under Lot 7 (Kiboga, Kyankwanzi) schemes and schemes under Lot 8 in Central region (Buikwe, Mukono, and Nakaseke) was completed and pre-commissioning undertaken.

For the Kuwait-funded projects, works under Lot 1A in the districts of Kibaale, Kiryandongo and Nebbi were completed and commissioned, although the delivery of meters for connection of consumers was pending. Works under Lot 1B in the South Western region (Bushenyi, Kasese, Mitooma and Rukungiri) were at 70% pole erection for the medium voltage network, and stringing was ongoing.



Energy for Rural Transformation (ERT) III

The construction of rural grid extensions under the Energy for Rural Transformation (ERT) Phase III with funding from the World Bank (IDA)⁵ continued in several parts of the country. The components planned under the project are: off-grid energy access for grid extensions and connections, off-grid energy access for solar PV installation for public institutions in rural areas and provision of credit facilities to enhance electricity access and quality standards enforcement support, and lastly institutional strengthening and impacts monitoring to finance transaction advisor (TA) and capacity development to accelerate electricity access and support the Government to carry out an impact monitoring and evaluation of ERT III.

Overall progress of project works under ERT III was good at 84% although the project was past the planned completion date of FY2021/22 having commenced in FY2015/16. Works were mainly hampered by the slow acquisition of wayleaves by MEMD. The MEMD project team did not put enough emphasis and resources to undertake this activity and the World Bank suspended works on the project in September 2022.

Under package A, works for line 1 in Mubende and line 2 in Mbarara and Kiruhura were completed under DLP monitoring. Schemes for lines 3 and 4 in Arua, Moyo and Yumbe were at conductor stringing. Under Package B, line 11 in Masaka was the least advanced of the package with progress at 79%.

Works under line 12 in Mukono were advanced and most schemes were completed except for small sections that were experiencing wayleaves challenges. Pole erection works for Line 13 in Butambala and Gomba were completed with stringing and transformer installation undertaken.

Construction works for ERT III lines under package C which comprises of lines 14 (Mubende, Kibaale and Kagadi) and line 15 (Kamwenge) Western, Central, Northern and Eastern regions and were behind schedule. The works on line 14 in Mubende were pending transformer installation while those in Kibaale and Kamwenge were completed pending line clearance and commissioning.

Under package D, line 19 in Ibanda was completed and commissioned in FY2021/22. Pole erection and medium voltage (MV) stringing works for line 16 in Rwampara and line 17 in Rukungiri and Kanungu were also nearing completion with line works completed. In addition, most works for line 18 in Ntoroko were also completed pending transformer installation.

Under Package E, works in Northern (Agago, Alebtong, Lira and Otuke) were completed and Eastern regions (Amuria, Dokolo, Kaberamaido, Kalaki, and Soroti) were at 80%.

⁵ Loan of US\$135 million and a grant from the Global Environment Facility (GEF) Trust Fund of US\$ 8.2 million.



Completed grid extension scheme (Line 21) under ERT III on the Dokolo-Soroti road in Kalaki

A summary of the progress of line construction under the ERT III is given in table 3.7.

Table 3.7: Overall progress of rural electrification of line under ERT III as at 31st December 2022

Package	Lot	Lines	District (s)	% Completion
Package A (Fast track Lines)	Fast Track Lines	Line 1	Mubende	100
		Line 2	Mbarara, Kiruhura	100
		Line 3	Arua, Yumbe, Moyo	83
		Line 4	Arua	90
		Lines 5 –10	Iganga, Bugweri, Jinja, Busia, Bududa, Mbale, Butaleja	Cancelled due to insufficient funding
Package B	Lot 1B	Line 11	Masaka	79
	Lot 2B	Line 12	Mukono	80
	Lot 3B	Line 13	Gomba, Butambala	99
Package C	Lot 1C	Line 14	Mubende, Kibaale, Kagadi	72
	Lot 2C	Line 15	Kamwenge	84
Package D	Lot 1D	Line 16	Rwampara	78
		Line 17	Kanungu, Rukungiri	92
	Lot 2D	Line 18	Ntoroko	54
		Line 19	Ibanda	83
Package E	Lot 1E	Line 20	Lira, Alebtong, Agago, Otuke	99
	Lot 2E	Line 21	Dokolo, Kaberamaido, Kalaki	80
Overall average progress				84

Source: Field Findings

Bridging the Demand Supply Gap through the Accelerated Rural Electrification Programme (BDSGAREP)

Under Bridging the Demand Gap through the Accelerated Rural Electrification Programme (BDSGAREP)⁶, the government was targeting to electrify a total of 287 sub-county headquarters and surrounding areas in all the regions of the country.

Overall progress of BDSGAREP was good at 87%, with construction of electricity networks completed by half year. A total of 1,832km of the 3,449.1km of medium voltage; 3,227km (59%) of 7,131.61km of low voltage lines, and installation of 903 out of 1,926 distribution transformers

⁶ Funding by a \$212.669 million loan from China-EXIM Bank

were completed. Most schemes for the different sub-counties in the Central region⁷, Northern region⁸, Western region and Eastern regions⁹ (Budaka, Bugiri, Bukedea, Buyende, Kapchorwa, Jinja, Kumi, Namutumba, Kamuli, Mbale, Ngora, and Tororo) were completed.

The commissioning of completed schemes under BDSGAREP were initially delayed by lack of harmonization of construction standards between the Rural Electrification Agency (REA) and UMEME which took long to resolve. However, progress on the project was later also hindered when the supervising consultant (Eptisa SpA) absconded from the contract which affected the certification of issued invoices. Last mile connections had not commenced but the procurement of the materials (meters and service conductors) were completed and manufacturing was on-going in China.

Uganda Rural Electricity Access Project (UREAP)

Under the Uganda Rural Electrification Access Project (UREAP)¹⁰, the scope is to construct a total of 1,427km of medium voltage lines, 1,170.7km of low voltage lines, installation of 500 transformers, and a 33kV submarine cable connection to Bugala Island in Kalangala District and 10,739 last mile connections at commissioning. The project consists of Lot 8 (lots 1-8) and additional Lots 10-13 for additional works.

Overall progress of UREAP was good at 84%. Construction works under Lot 1 and Lot 5 in the districts of Nakasongola, Luuka, Bugweri and Iganga were completed with some of the schemes already commissioned. Works under Lot 2 in Central region (Luwero, Wakiso) were completed and commissioning had commenced.



Completed grid extension at Acumet TC in Amuria District under UREAP Lot 3

Additionally, under UREAP Lot 3 in the districts of Bukedea, Mbale, Manafwa, Ngora, Serere, and Soroti, works were completed. Schemes in the Eastern region under Lot 4 in Kaliro progressed well and the works were also completed.

⁷ Bukomansimbi, Butambala, Gomba, Mityana, Mubende, Kasanda, Kiboga, Lyantonde, Lwengo, Rakai, Sembabule

⁸ Adjumani, Agago, Otuke, Omoro, Apac, Kwanja, Kole, Lira, Oyam, Kaberamaido

⁹ Kibaale, Kakumiro, Kanungu, Kayunga, Isingiro, Lyantonde Lwengo, Rakai, Sembabule, Bundibugyo, Isingiro, Kabarole, Kibaale, Kiruhura, Rubirizi

¹⁰ Jointly funded by GoU and African Development Bank (AfDB)



Under UREAP Lot 6 in Kalangala, the line construction of the inland distribution network was completed. The designs and land acquisition for the two switching stations and marine cable were finalized but the delivery of the marine cable was delayed by logistics problems in China.

In the Northern region under UREAP Lot 7, pole erection for section A (Gulu custom corner-Anaka town) and section B (Olwiyo 132/33kV substation- Packwach town) were completed.

Procurement under UREAP Lot 8 of last mile connection materials such as ready boards and prepaid meters were concluded, and an implementation agreement signed with UMEME. By half year 2022/23, cumulatively 87,000 connections were added under UREAP (AfDB-funded) of the total planned 87,500 connections. Delivery of connection materials under Lot 9 was partially done, whereas some materials were pending delivery. The performance of the transmission and distribution sub-programme is summarized in Table 3.8.

Table 3.8: Transmission and Distribution Sub-programme performance by 31st December 2022

Intervention	Output	Annual Budget (Ug shs)	% of budget received	% of budget spent	Annual Target	Physical Score (%)	Remarks
Expand and Rehabilitate the Transmission Network	Distance in km of high voltage lines added to the transmission grid	430	19.7	99	1300	53.85	Works on several transmission projects affected by compensation delays. Karuma-Lira Line completed. Part of completed Karuma-Kawanda T-line was vandalized.
	Transformation capacity added to the grid(MVA)	184	19.7	99	48	63.16	Lira and Olwiyo sub-stations completed and energized.
Expand and Rehabilitate the Distribution Network	No. of km of medium voltage lines added to the grid	366	59.8	5	500	90.00	Several rural electrification projects completed. Under UREAP most of the Lots have been completed.
	No. of km of Low voltage lines added to the grid	157	59.8	5	500	100.00	
Reduce End User Tariffs	No. of Last mile connections made	22	74.9	40	150000	8.49	Implementation of free connections policy resumed. Procurement of some of the materials to undertake the connections had been completed.
						63.10	Output performance

Source: Field Findings and MEMD Q2 Reports



Challenges under the Sub-programme

1. Increased vandalism on ongoing and existing electricity transmission and distribution infrastructure due to high demand for metal scrap from steel factories. The completed Karuma-Kawanda 400kV transmission line was vandalized leading to collapse of five towers in Nakasongola and requires Ug shs 3.2bn to restore the towers.
2. The low rate of electricity connection rates continued to persist due to low funding by Government for this initiative. Another reason was the limited financial capacity of the rural network operators to undertake the connections.
3. Delayed completion of projects due to land acquisition challenges as a result of speculation, exaggerated property values and protracted land cases that were at the courts of law.

Conclusion

The progress of implementation of interventions under the sub-programme by half year FY 2022/23 was fair. Works continued on the transmission network, and the Karuma-Lira section of the Karuma Interconnection Project was completed. Progress was registered on the transmission grid extensions to West-Nile and Northern Uganda, although challenges of wayleaves acquisition and rampant vandalism continue to persist in sections of the project. Progress was registered in the extension of the electricity distribution grid through several projects countrywide with a number of schemes completed and commissioned. However, there is need to intensify efforts to increase the connection rate so that the investments the country has made in extension of the grid benefit the communities.

Recommendations

1. Policies and regulations should be enacted by Parliament and MEMD in consultation with other key stakeholders¹¹ with to better regulate the trade in scrap metal to reduce the vandalism of critical energy infrastructure and the new laws need to be enforced.
2. The Government should create a well-equipped project team for pursuing connections and with the funding ring-fenced to ensure there are adequate resources for undertaking the activities.

3.4 Renewable Energy Development Sub-programme

The objective of the sub-programme is to increase adoption and the use of clean energy with an intermediate outcome of increased consumption of alternative clean cooking energy. The planned intervention under the sub-programme in FY2022/23 is increased promote use of new and renewable energy solutions.

The sub-programme performance was fair at 66.2%. The sub-programme was poorly funded with a total budget of Ug shs 0.68bn, of which Ug shs 0.165bn (24.3%) was released and Ug shs 0.135bn spent by half year 2022/23.

Performance of the intervention

The performance of the intervention was poor at 51.6%. The 15 planned mini-grids in Southern Uganda were completed due to the pending procurement of the solar arrays and land for the installations. The training of 10 local technicians in renewable energy solutions was not undertaken due to lack of funds. Some 400 household cook stoves were also distributed but the institutional cook stoves were not available due to lack of funds (Table 3.9).

¹¹ Ministry of Trade, Steel factories, Scrap buyers



Table 3.9: Performance of Interventions under the Renewable Energy Development Sub-programme by 31st December 2022

Intervention	Performance rating	Remarks
Promote use of new and renewable energy solutions		Fair performance of 51.6%. Construction of the 15 mini-grids delayed and 10 technicians were not trained due to lack of funds.
Average output performance		Fair performance of 51.6%

Source: Author's Compilation

The planned outputs under the intervention are: Increased deployment of new renewable energy solutions; off-grids based on renewable energy solutions promoted; development of grid connected renewable energy systems; electric transport solutions promoted; net metering framework developed and technical capacity in renewable energy solutions developed; increased uptake of improved cook stoves.

Increased deployment of new renewable energy solutions

Using a grant from Hunan Province of China, MEMD supported Nakasongola Health Centre with installation of 5kW solar system, five mosquito killers, and a solar water pumping system.

The Ministry also supported a tea estate in Kabarole with 3kW solar water pumping systems for irrigation, and conducted research studies on rural electrification activities in Kyampisi, Luwero as part of support for development of Renewable Energy Technologies. Technical support was also extended to undertake the feasibility studies for solar project development at Kome Island in collaboration with Uganda Christian University also as part of plans to increase the renewable energy adoption.

Off-grid based on renewable energy solutions promoted

The ongoing activities included: construction of the 14 planned solar mini-grids in the Southern service territory was ongoing; the distribution network was at pole erection; and acquisition of land for the installation of the solar array with 9 of the 14 planned sites acquired. The procurement for 90 mini-grids funded by the Swedish Embassy under the Global Fund for Africa project was in progress. MEMD in conjunction KfW launched the Global Energy Transfer (GET) Access Project that targets to provide off-grid electricity to 100-150 villages.

Development of grid connected renewable energy systems

After completion of the solar 4MW solar installation at Busitema University, efforts were underway to interconnect to the grid and a technical meeting with key stakeholders on grid connection of the solar project was held. The draft power purchase agreement for 4MW solar project signed with UETCL was also initialed and a grid connection license acquired from the electricity regulatory Authority in December 2022.

Electric transport solutions promoted

Stakeholder engagement on e-mobility and exhibition of E-mobility solutions held during the Energy Week, and the Renewable Energy Conference and Expo was held in November 2022.



Net metering framework developed

The MEMD signed an MoU with the Ministry of Defense and Veteran Affairs (MoDVA) and Nexus Green on the piloting of a net metering system at Amber House in 2025. Technical meetings and engagement with Nexus Green and MoDVA on net metering projects commenced preliminary data collection and analysis.

Technical capacity in renewable energy solutions developed

The planned capacity building for 10 technicians was not undertaken because the procurement of the demonstration units needed for the hands-on training was not undertaken due to lack of funds.

Increased uptake of improved cook stoves

Over 400 household cook stoves were disseminated, installation of the planned five institutional cook stoves had not progressed due to limited financing for procurement. The Ministry was finalizing the cooking energy needs assessment in both public and private institutions that shall feed into a frame work for the distribution of the cook stoves in institutions when funding allows. A consultant was engaged to finalize the situational energy needs assessment in the institutions and the roll out strategy and validation for the key documents were also finalized. Submission of the final report and tender design documents delayed due to lack of funds to effect the payment to the consultant.

The performance of the outputs under the Renewable Energy Development Sub-programme is summarized in table 3.10.

Table 3.10: Performance of the Renewable Energy Development Sub-programme for half year FY2022/23

Output	Annual Budget (Bn Ug shs)	% of budget received	% of budget spent	Annual Target	Cum. Achieved Quantity	Physical performance Score (%)	Remark
Increased deployment of new renewable energy solutions	0.07	24.3	82	50.00	40.00	80.00	The solar equipment grant from Hunan, received and equip installed
Off-grids based on renewable energy solutions promoted	0.07	24.3	82	100.00	40.00	40.00	Implementation of 15 mini-grids in southern Uganda on-going
Electric transport solutions promoted	0.07	24.3	82	100.00	40.00	40.00	e-mobility exhibition held during energy week
Net metering framework developed	0.07	24.3	82	100.00	50.00	50.00	Piloting of net metering at amber house on-going
Technical capacity in renewable energy solutions developed	0.07	24.3	82	10.00	0.00	0.00	10 technicians not trained



Output	Annual Budget (Bn Ug shs)	% of budget received	% of budget spent	Annual Target	Cum. Achieved Quantity	Physical performance Score (%)	Remark
Increased uptake of improved cook stoves	0.07	24.3	82	400.00	400.00	100.00	400 household cook stoves given out
Total	0.68	0.17	-	-	-	51.67	Output performance

Source: Field Findings and MEMD Q2 Reports

Challenge

The sub-programme budget allocation was very low which implied that the planned activities are undertaken at a small scale that will not have significant impact.

Recommendation

The MEMD should allocate enough funding in the MTEF for implementation of the activities under the sub-programme such as promotion of LPG and use of renewable energy to reduce on the reliance of biomass.

3.5 Energy Efficiency and Conservation Sub-programme

This sub-programme aims at promoting energy efficient practices and technologies. The planned intervention under this sub-programme in the FY2022/23 is promotion of the use of energy efficient equipment for both industrial and residential consumers. The planned outputs include: utilization of alternative and efficient cooking techniques; promotion of energy management among high energy consuming facilities; awareness on sustainable energy and sustainable energy created; complementary policies on energy efficiency developed.

Performance of the Intervention

The sub-programme performance was good at 75%, although it was poorly funded with a total budget of Ug shs 0.6bn, of which Ug shs 0.18bn was released and Ug shs 0.16bn spent by 31st December 2022. Three draft standards for energy efficiency were completed. The Energy Efficiency and Electric Mobility Conference 2022 to raise awareness on energy efficiency was held in November 2022.

Table 3.11: Performance of Interventions under the Energy Efficiency and Conservation Sub-programme by 31st December 2022

Intervention	Performance rating	Remarks
Promotion of efficient equipment for both industrial and residential consumers		Good performance of 75%. Two energy efficiency standards were drafted
Average output performance		Good performance of 75%

Source: Author's Compilation



Utilization of alternative and efficient cooking techniques

Market research on electric pressure cooking was conducted in Kampala in collaboration with the Centre for Renewable Energy and Energy Conservation (CREEC). A typical weekly menu for a middle class urban Ugandan household was mapped out and categorized the foods to work out which were the most important.

Promotion of Energy management among high energy consuming facilities

Using a list of top electricity consumers, categorization of industries according to products of manufacture was done. The main categories identified included cement, tea, coffee, water production, bottling, drinking water, food and beverages, breweries and distilleries, clay products, rubber, plastics, commercial buildings, educational institutions, police, prisons and UPDF facilities, sugar, textiles, woodworks, edible oils and soaps, plastics, dairy, grain milling, telecom, bakery, paints, coatings and vanishes, hotel and hospitality, pharmaceutical, flower, foam and mattresses, fish processing.

Awareness on electrical efficiency and sustainable energy created

The Energy Efficiency and Electric Mobility Conference 2022 was held at Speke Resort, Munyonyo on 1st November 2022. The purpose of the conference was to reflect on strategies, policies, legal and regulatory issues relating to the efficient utilization of energy as well as electric mobility uptake in Uganda. It presented a two themed far-reaching transformation discussion on policy and market development strategies on energy efficiency and electric mobility, technologies and markets. The conference also featured an exhibition of efficient energy technologies.

Complementary policies on Energy efficiency developed

The MEMD is part of the UNBS technical committee on Energy Management Technical Committee (TC) 120 which is responsible for developing standards for energy efficiency and energy saving products, systems and practices. In Q1 FY 2022/23, the TC developed the following Draft Uganda Standards (DUS): DUS ISO 17741:2016, General technical rules for measurement, calculation and verification of energy savings of projects; DUS ISO 50021:2019, Energy management and energy savings — General guidelines for selecting energy savings evaluators. These DUS are adoptions from International Standards Organization (ISO) standards and were circulated to the public for comments on their suitability for implementation.



The performance of the Energy Efficiency and Conservation Sub-programme is summarized in table 3.12.

Table 3.12: Performance of the Energy Efficiency and Conservation Sub-programme by 31st December 2022

Output	Annual Budget (Ug shs)	% of budget received	% of budget spent	Annual Target	Cum. Achieved Quantity	Physical Performance (%)	Remarks
Utilization of alternative and efficient cooking techniques	0.18	0.054	0.0429	23.83	25.00	50.00	Data on typical menus for urban middle-class collected
Promotion of Energy management among high energy consuming facilities	0.18	0.054	0.0429	23.83	35.00	70.00	Categorization of the different industries undertaken
Awareness on sustainable energy and energy efficiency created	0.18	0.054	0.0429	23.83	40.00	80.00	Energy Week was held in November 2022
Complementary policies on Energy efficiency developed	0.06	0.018	0.0143	23.83	3.00	100.00	3 draft standards developed
Total	0.6	0.18	0.143	0.00	0.00	75.00	Output performance

Source: Field Findings and MEMD Q2 Reports

Challenges

There is no policy to support small and medium enterprises (SMEs) to acquire energy efficient equipment much as MEMD is trying to raise awareness and promote the technologies.

Conclusion

Overall sub-programme performance was good at 75 %, albeit with the adequate for the interventions to have high impact on the level of energy efficiency. It is good that the standards for energy efficiency are also being developed, but other policies should be put into place so that energy consumers are motivated to move to the most efficient technologies.

Recommendation

The MEMD and its partners should put in place mechanisms for enabling industrial and domestic energy consumers access the most efficient technologies.



CHAPTER 4: CONCLUSION AND RECOMMENDATIONS

4.1 Programme Conclusion

The overall programme performance was fair at 61.2%. Access to electricity remains one of the Government's priorities, but the level of access was estimated at 20% and only a total 12,728 of the planned connections were added through several initiatives/projects. Some of the key achievements during the first half of the year was the completion of the Karuma-Lira Transmission Line, Lira substation and several Lots 1,2,3,4 and 5 under the Uganda Rural Electricity Access Project (UREAP).

The implementation challenges due to difficulty in acquisition of Right of Way (RoW)/wayleaves continued to hamper several projects notably the transmission and rural electrification projects like ERT III. The programme also continued to grapple with the increasing occurrence of vandalism on the ongoing projects and other completed infrastructure which is delaying projects, increasing network downtime and driving up the cost of providing the electricity services.

The completion of the major works at Karuma HPP experienced further delays and the planned wet commissioning of the generation units was not completed due to the defects observed in the functioning of some of the electromechanical equipment. Planned outputs under the Renewable Development, Energy Efficiency and Conservation sub-programmes continued to be very poorly funded implying that any results achieved will have minimal impact.

4.2 Recommendations

1. The Judiciary and the security agencies should enforce the stringent provisions in the revised Electricity Act (1999) so that the vice of vandalism is discouraged.
2. The MEMD should engage the Judiciary to explore fast-tracking court cases that are holding up key projects to avoid stalling of ongoing works.
3. The Government should allocate funds previously allocated for line construction to the free connections initiative so that more consumers can be added to the grid.



REFERENCES

1. Uganda Electricity Generation Company Limited (2022) Karuma Hydropower project status report up to December 31st 2022.
2. Uganda Electricity Generation Company Limited (2022) Nyagak III Hydropower project status report up to December 31st 2021.
3. Ministry of Energy and Mineral Development (2022), Ministerial Policy Statement, Vote; 017
4. Ministry of Energy and Mineral Development (2022), Quarter 1 and 2 FY 2022/23 reports
5. Ministry of Energy and Mineral Development (2022), Energy for Rural Transformation (ERT) III progress report up to December 31st 2022.
6. Ministry of Energy and Mineral Development (2022), Uganda Rural Electricity Access Project (UREAP) progress report up to December 31st 2022.
7. Ministry of Energy and Mineral Development (2022), Grid Rural Electrification Project IDB I progress report up to December 31st 2022.
8. Ministry of Energy and Mineral Development (2022), Bridging the Demand Gap through the Accelerated Rural Electrification Programme (BDGAREP) progress report up to December 31st 2022
9. Ministry of Energy and Mineral Development (2022), Rural Electrification Project progress report up to December 31st 2022
10. National Planning Authority (2020), Third National Development Plan (NDPIII) 2020/21 – 2024/25
11. Uganda Electricity Transmission Company Limited (2022), Project Progress reports up to June December 1st 2022



ANNEXES

Annex 1: Interventions, outputs and implementing agencies

Intervention	Output	Implementing Agency
Undertake preliminary development of large generation plants	Construction of Nyagak III HPP	UEGCL, MEMD
	Construction of Muzizi HPP	
	Construction of Karuma HPP	
	Completion of defects liability Period for Isimba HPP	
Seek approvals for construction of a nuclear power generation	Energy policy, plans, regulation and monitoring	MEMD
	Atomic energy promotion and coordination	MEMD
	Membership to IAEA	MEMD
Expand and Rehabilitate the Transmission Network	Distance in km of high voltage lines added to the transmission grid.	UETCL
	Capacity of transformer capacity(MVA) added to the grid	
Expand and Rehabilitate the Distribution Network	No. of km of medium voltage lines added to the grid	MEMD
	No. of km of low voltage lines added to the grid	MEMD
Reduce End User Tariffs	No. of Last mile connections made	MEMD
Promote use of new and renewable energy solutions	Increased deployment of new renewable Energy solutions	MEMD
	Off-grid mini-grids based on renewable energy promoted	
	Development of grid connected renewable energy systems	
	Electric transport solutions promoted	
	Net metering framework developed	
	Technical capacity in renewable energy solutions developed	
	Increased uptake in improved cook stoves	
Promote the use of energy efficient equipment for both industrial and residential consumers	Utilization and adoption of efficient cooking techniques	MEMD
	Energy management among high energy consuming facilities integrated and energy efficiency /conservation potential established.	MEMD
	Awareness on energy efficiency and sustainable energy utilization created	MEMD
	Complimentary policies on energy efficiency developed	MEMD

Source: Author's Compilation



Plot 2 -12 Apollo Kaggwa Road
P. O. Box 8147, Kampala - Uganda
www.finance.go.ug