Contents

i. LIST OF ACRONYMS

BAC:	Brikama Area Council
BCC:	Banjul City Council
BOQ:	Bill of Quantity
CRM:	Customer Relation Management
CT:	Current Transformer
DG:	Diesel Generator
EC:	Electro Conductivity
ECOWAS:	Economic Community Of West Africa State
EEP:	ECOWAS Emergency Project
G1:	Generator Number One
GBA:	Greater Banjul Area
HE:	His Excellency
HFO:	Heavy Fuel Oil
HR:	Human Resources
HRDA D:	Human Resources Development and Administration Division
ITD:	Information and Technology Division
KM:	Kilo Metre
KMC:	Kanifing Municipal Council
KPS:	Kotu Power Station
KV:	Kilo Volt
KVA:	Kilo Volt Amperes
KVAR:	Kilo Volt Amperes Reactive
LFO:	Light Fuel Oil
LV:	Low Voltage
LAP:	Local Administrator Password
M3:	Cubic Metre
MSG:	Management Services Gambia Limited
MWH:	Mega Watt Hour
MV:	Medium Voltage
NASA:	NAWEC Staff Association
NAWEC:	National Water and Electricity Company
PGD:	Power Generation Division
PPP:	Public Private Partnership
REEP:	Rural Electrification and Expansion Project
SCADA:	Supervisory Control and Data Acquisition
SPSO:	Senior Prepayment Service Office
T&D:	Transmission and Distribution
UNFCC:	United Nation Framework on Climate Change
UG:	Under Ground
VT:	Voltage Transformer
WAN:	Wide Area Network
WHO:	World Health Organisation
WTP:	Water Treatment Plant
WCR:	West Coast Region

i. CHAIRMAN'S MESSAGE

In 2016, we continued to benefit from the consistent pursuit of the Corporate Strategy we rolled out in, as this has already started to reflect in the improved reliability of energy and water production.

a) Increase the generation capacity to be able close the gap between the available and the required;

b) Expand the network and provide replace worn-out within the network;

c) Support Government and private sector efforts to make available adequate generation within the short to medium term.

d) Develop a number of strategic high voltage transmission interconnects with neighbouring countries.

The implementation of the above-mentioned strategies will help achieve the Government's policy for the power sector which includes the aim to achieve more than 70% access to electricity by the population; and the development of infrastructure to generate, transmit and distribution of electricity and water.

The Board of Directors in collaboration with the management of the National Water and Electricity Company (NAWEC) Ltd. in 2016 continued to work diligently towards improving the provision of Electricity, Water and Sewerage services to its valuable customers. There is increasing demand for Water and Electricity due to the phenomenal growth in the economy of the Gambia. The Board ensured the enabling environment is in place for NAWEC developed strategies and plans to provide and extend its services to all Gambians to help achieve

Several Water and Electricity Projects have been developed and implementation is in progress to complement Government's efforts in uplifting the standards of living of the Gambian people. Recognising the importance of its role in providing an enabling environment for poverty reduction in the country, The Board of Directors and the management of NAWEC worked closely with all stakeholders in Water and Electricity sectors of the economy to realise its main objective of providing affordable nationwide Electricity, Water and Sewerage services in a sustainable and environmentally friendly manner.

On behalf of the Board of Directors, NAWEC Management and staff my sincere appreciation and thanks to all stakeholders, including our Private-sector partners and of course our valuable customers.

Mustapha Colley
Chairman – NAWEC Board of Directors

ii. MESSAGE FROM THE MANAGING DIRECTOR

I am happy to report that NAWEC ended 2016 on a good note. We continued to be relentless in our pursuit of maintaining, developing and running the energy system with high operating efficiency which will deliver the quality of services to our stakeholders.

At the beginning of the year, recognizing the need to act decisively and quickly in the face of our dwindling revenue base and uncertainty about the level of tariff increase to expect later in the year, we decided to optimize working capital, implement tight capital expenditure control and reduce our cost base.

We followed to ensure generation and distribution utilities to raise awareness about our operations and the need for public acceptance for a tariff hike to enable us improve our revenue base and recover the cost of operations. Investment implementation of key project and programmes needed to stabilize, expand and build a robust energy and water network that will assure reliability of supply to customers.

The year 2016 witnessed series of developments such as electricity, water expansion and series of projects which brought about massive increment of our customer base. This development boosted both the economic and status of NAWEC so the finalization in the implementation of major water projects to boost the supply of clean water for both the urban and peri-urban population. In the area of Electricity, the major activities in 2015 going into 2016 has been major maintenance works, procurement for consultancies and works of major generation projects both for the urban and rural Gambia for additional MW with a brand new addition to the existing capacity and works have started in earnest.

Like many developing countries and in the ECOWAS sub-region as well, affordable and reliable Electricity continue to be a challenge under the unprecedented demand for Electricity due rapid Development.

Realizing the importance of water and energy in socio-economic development, NAWEC and Government have made significant efforts, in 2015 to ensure the provision of secured and reliable supplies of water and electricity to the population and to the different sectors of the economy. In order to achieve this goal and to overcome the problems of the past, NAWEC with support from The Gambia Government have adopted a strategy which focuses on a reliable, affordable and continuously expansion of water and power system. Steps into renewable energies, reliable medium voltage networks, electrification of all rural areas, interconnection initiatives with neighbouring countries and adequate expansion of the water services are in

progress. The Utility continue to encourage the private sector to be fully involved in the sector for a win-win PPPs. I therefore call on all users of NAWEC services to promptly settle their bills to enable the company meet its obligations including loan repayment and network expansion. Our drive towards industrialisation and transforming the economy cannot be realised without access to affordable and reliable electricity supply. The provision of electricity is capital intensive, and by paying our bills on time, NAWEC will be in a better position to serve us better.

The Year 2016 was characterised with an increase cost inputs which affected the financial capacity of the company. This trend proofs the urgent need for more attention towards practical solutions within the field of renewable energies such as wind and solar power and indeed Public Private Partnership.

The company's operation improved in 2016 as manifested in the rise in power production due to some vigorous maintenance works and additional capacity in the provinces in all power plants and water installations. Some of the major projects include the expansion program of the Water and Electricity networks to major settlements in the GBA.

In general the provision of the power supply to the Greater Banjul Area (GBA) and Diesel Power Stations in the Provinces (Rural) became more stable and vigorous efforts were made by Management through the REEP to ensure that additional generators are available to meet increasing demand. NAWEC continues to operate water wells and treatments plant in order to satisfy the water and sewerage needs of Gambians.

The key driver for all our work in 2016 was the quality of our staff. They have all worked enormously hard in what was a tough, though satisfying year. I want to recognize that enormous collective effort, and to say I appreciate all of you. Thank You.

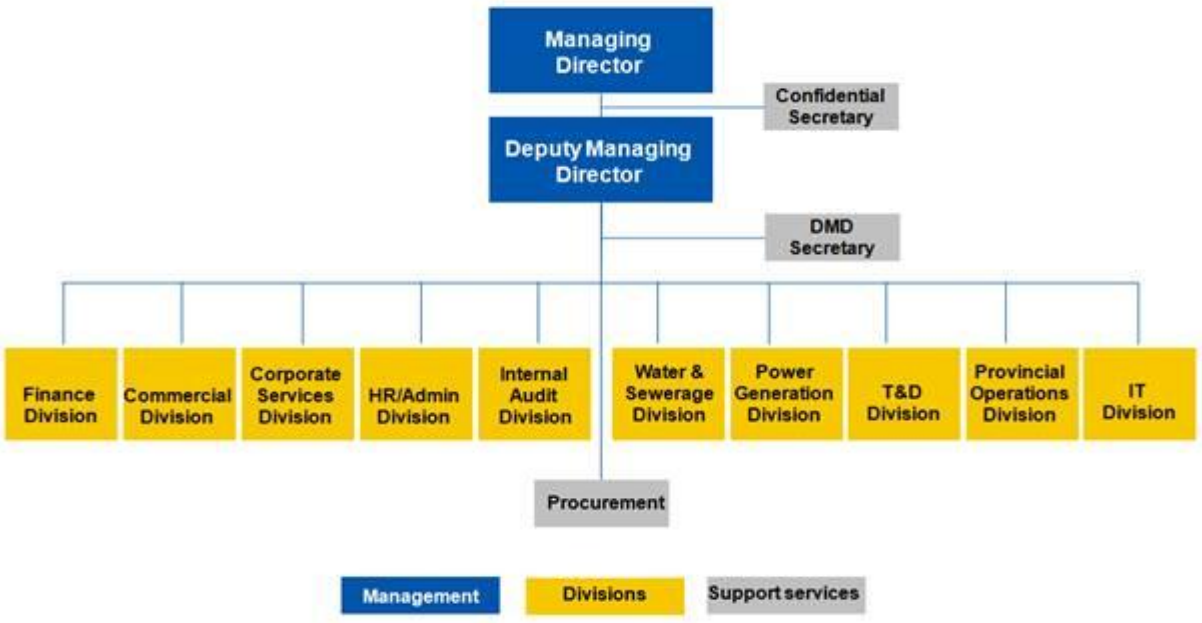
Ebrima Sanyang
Managing Director

1. INTRODUCTION

NAWEC is a Public Enterprise Company responsible for providing Water, Electricity and Sewerage services, and was established under the Companies Act. Energy has a major impact on every aspect of our socio-economic life. It plays a vibrant role in the economic, social and political development of our nation. Inadequate supply of energy restricts socio-economic activities, limits economic growth and adversely affects the quality of life. Improvements in standards of living are manifested in increased food production, increased industrial output, the provision of efficient transportation, adequate shelter, healthcare and other human services. These will require increased energy consumption. Thus, our future energy requirements will continue to grow with increase in living standards, industrialization and a host of other socio-economic factors.

It is pertinent to note that the impact of energy goes beyond national boundaries. Energy supply can be used as an instrument of foreign policy in the promotion of international cooperation and development. NAWEC is overseen by a Board of Directors which is appointed by the overseeing Ministry. NAWEC's organizational structure constitute of ten (10) Divisions, namely: Water & Sewerage, Power Generation, Finance, Commercial, Human Resources and Administration, Corporate Services, Provincial Services, Internal Audit, IT and T&D. Other support services are in place to complement the structure.

COMPANY ORGANOGRAM



1.1 Composition of the Board

The Board of Directors comprises:

- A Chairman appointed by the HE President of the Republic in consultation with the Minister of Energy.
- Two Representatives from the private Sector, with background or knowledge in utilities.
- Legal Practitioner, Representative from the National Assembly, Permanent Secretaries Ministry of Energy and Finance and Economic Affairs,
- Managing Director of NAWEC as Secretary to the Board.

1.2 Corporate mission statement

To ensuring safe, effective provision of affordable nationwide electricity, water and sewerage services to satisfy consumer requirements, generate reasonable rates of return on investments and contribute to the socio-economic development of The Gambia.

1.3 Core Values

Motivated to become a well-reputed company, NAWEC staff is directed towards observing corporate Core Values that includes:

- Customer focus and Service Orientation
- Honesty and Integrity
- Transparency and Accountability
- Commitment and Loyalty

The company operates thermal power stations that run mainly on heavy fuel oil for the provision of the power supply to the Greater Banjul Area (GBA) and diesel power stations in the provinces (rural).
There are three (3) power stations within the GBA:

- Kotu Power Station - KPS
- Brikama Power Station (I) BPS I
- Brikama Power Station (II)

2. POWER GENERATION

2.1 BACKGROUND

Despite being a very challenging year for the Power Generation Division, 2016 witnessed some improvements in the generation capacity. These challenges were mainly as result of major mechanical breakdown of the Wartsila Engine at Brikama II in June 2016 followed by a similar breakdown of G7 at Kotu Power station in December of the same year, as well as cracked foundation of Generator No. 1 at Kotu.

Early in the year the maintenance of G9 at Kotu was concluded following the procurement of spare parts under the ECOWAS Emergency Power Supply Grant (EEPS). A major boost was also realized towards the end of 2016 with the coming back online of Generator No. 1 at the Brikama I Power Station, after it was repaired following the procurement of the spare parts also under the ECOWAS grant. The rehabilitation of G1 was as a result of change of scope since the funds were not sufficient to carry out the rehabilitation and maintenance of G8 at Kotu as originally planned. It should be noted that G1 at Brikama I was not operational since 2011 when it was then under the IPP.

The construction phase of the11.1MW Kotu Power Project had experienced some delay in the early days of 2016 due to the closure of Amdalai -Karang border due to the fact most of the civil work materials had to be ordered from Senegal. In addition to the above, a specialised sub-contractor for the construction of recommended piles for the engine foundation was also be outsourced from Senegal and due closure of the border the contractor was forced to outsource these specialised services all the way from Nigeria, a process that needed more time and resources. All these combined resulted in the delay of the commissioning of this project for about five (5) months.

Despite the earlier mentioned breakdowns resulting in the non-availability of these engines, the energy produced by the stations in the GBA increased by 5.6 % compared to 2015.

The main challenges for the PGD throughout the 2016 were mainly centred on timely procurement of spare parts, supply of adequate quantity of HFO, lubricating oil and management of the environment especially the sludge handling.

The above is summarised as follows:

2.2 Kotu Power Station

Meggering of Transformer windings

Kotu A; with four medium speed engine, G1, G2, G3 and G4`

Kotu B; with one slow speed engine, G6

Kotu D; with three medium speed engines, G7, G8 and G9

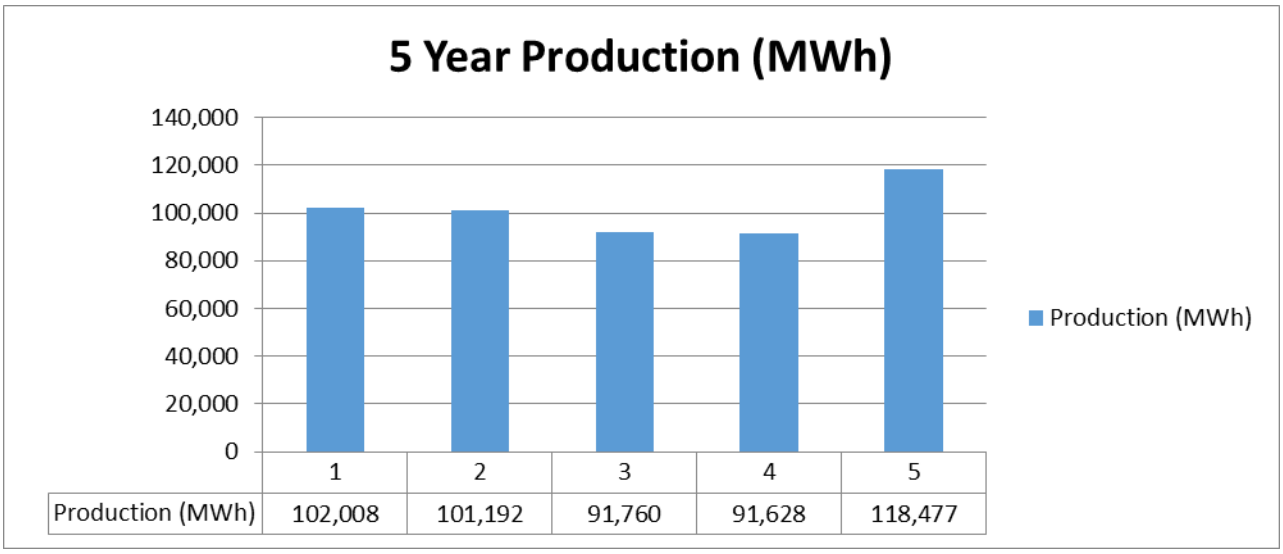
The table below gives the summaries of the DG sets at KPS and their status as at 2016:

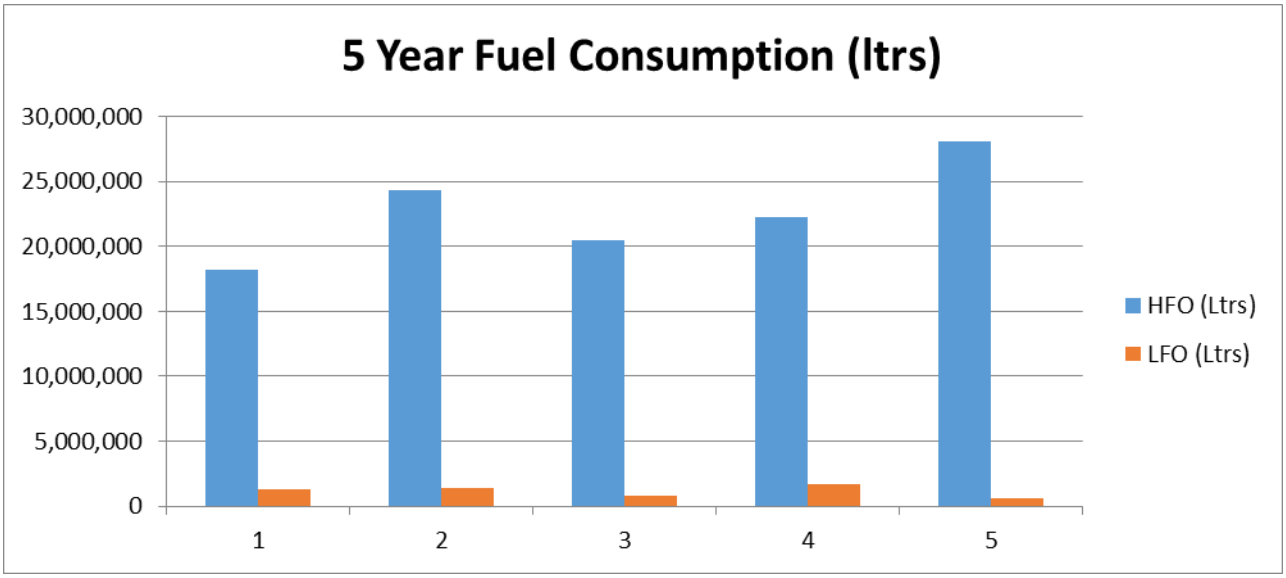
Generator No.	Installed Capacity (MW)	Available Capacity (MW)	Make	Fuel Type	Commission Date	Status in 2016
G1	3.0	2.5	Mirrless	LFO	1981	Partially Operational, shutdown due to cracked foundation at the alternator end
G2	3.0	0	Mirrless	LFO	1981	Not Operational, already decommissioned in 2014
G3	3.4	0	Mirrless	HFO	1997	Not Operational. The planned maintenance was postponed due to non-procurement of the supplementary spare parts.
G4	6.4	5.5	Deutz	HFO	2001	Operational
G6	6.4	5.5	Man B&W	HFO	1990	Operational

G7	6.4	5.5	Deutz	HFO	2001	Operational
G8	6.4	0	Deutz	HFO	2001	Not Operational due to recurrent main bearing failures. The engine earmarked for rehabilitation under the ECOWAS Grant but was suspended and funds used to rehabilitate G1 at Brikama I.
G9	6.4	5.5	Deutz	HFO	2009	Operational. Major overhaul was carried out following the procurement of spare parts under the ECOWAS grant.
TOTAL	41.4	24.5				

Power Production at KPS for the Past Five Years

Year	Production (MWh)	HFO (Ltrs)	LFO (Ltrs)
2012	102,008	18,202,522	1,322,062
2013	101,192	24,374,735	1,415,667
2014	91,760	20,445,818	786,834
2015	91,628	22,249,500	1,678,988
2016	118,477	28,076,738	633,920





2.3 SUMMARY OF MAINTENANCE ACTIVITIES AT KPS

The planned 24,000 hrs maintenance for G9 which was started in the later part of 2015 was concluded in March, 2016 following the procurement of the required spare parts under the ECOWAS grant. The 12,000hrs maintenance of G4 was postponed due to resource constraints.

In 2016, G7 experienced a mechanical breakdown in December 2016 during which the crank pin of cylinder number No. 1 was damaged again resulting in the pin being severely cuffed with deep hairline scratches. The same pin had the same problem in 2014 and was repaired by ABCCO of Philippines. This time around investigation revealed that the crankpin can no-longer be repaired. A replacement for the crankshaft was thus recommended.

G4, G6 and G9 remained the main available engines in 2016. For G7, it was also available for most part of the year before it broke down in December. G1, as an LFO engine, due to cost was used mostly for black starting and during emergency situations prior to the damage of its alternator foundation.

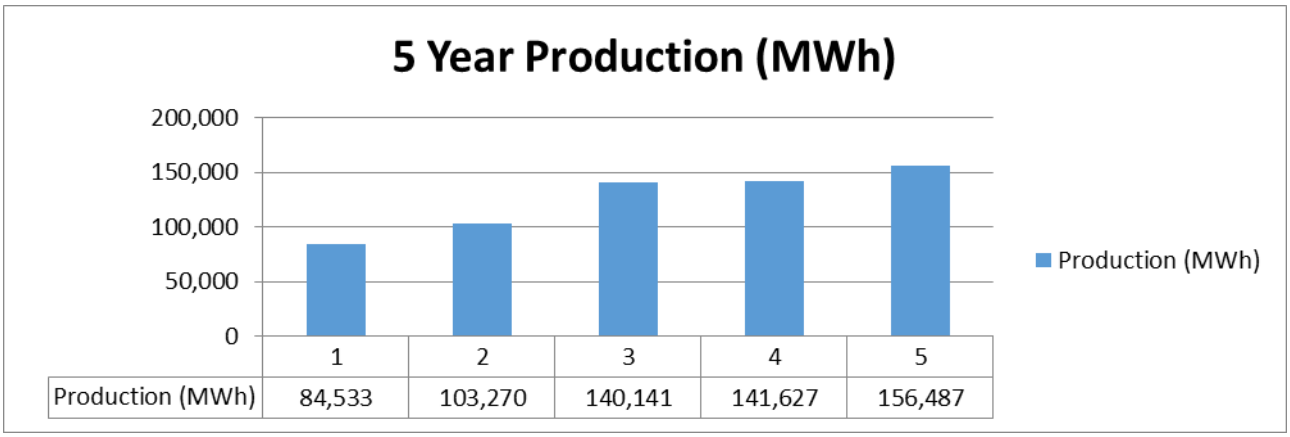
2. Brikama I Power Stations

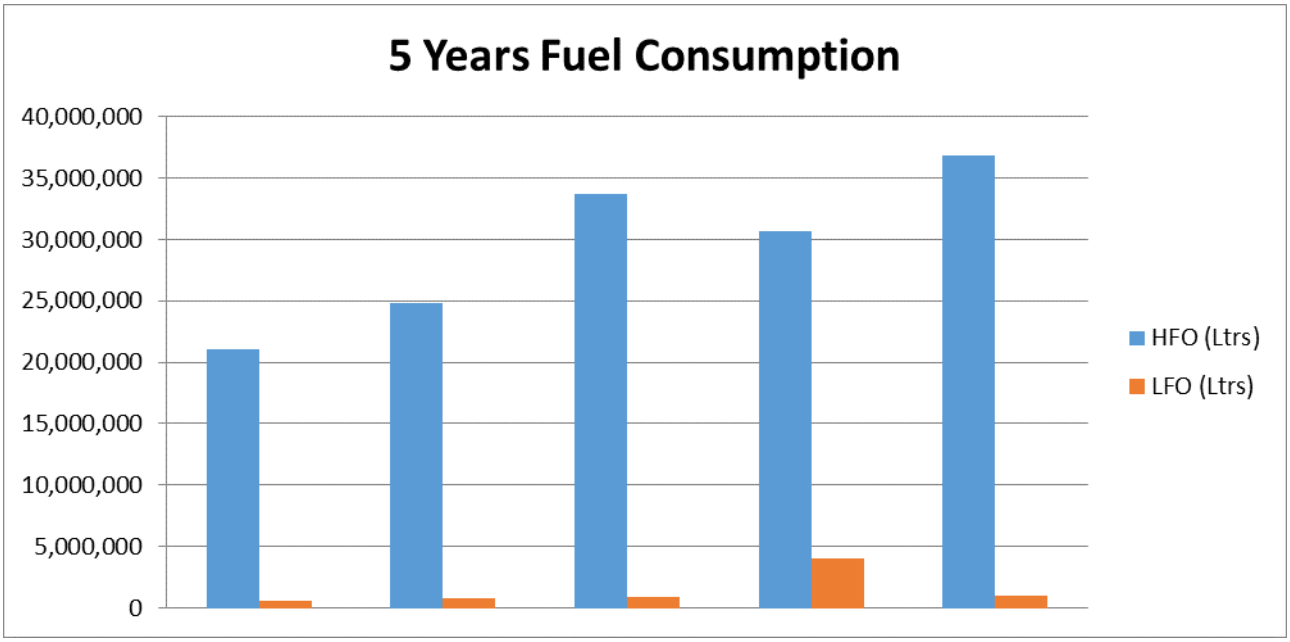
Generator No.	Installed Capacity (MW)	Available Capacity (MW)	Make	Fuel Type	Commission Date	Status in 2016
G1	6.4	0	Deutz	HFO	2006	Operational towards the end of the year
G2	6.4	5.5	Deutz	HFO	2006	Operational

G3	6.4	5.5	Deutz	HFO	2006	Operational
G4	6.4	5.5	Deutz	HFO	2006	Operational
G5	6.4	5.5	Deutz	HFO	2013	Operational
G6	6.4	5.5	Deutz	HFO	2013	Operational
Total	38.4	27.5				

2.4 Power Production at Brikama I Power Station

Year	Production (MWh)	HFO (Ltrs)	LFO (Ltrs)
2012	84,533	21,084,476	542,839
2013	103,270	24,792,522	824,346
2014	140,141	33,688,483	857,459
2015	141,627	30,695,448	3,976,856
2016	156,487	36,824,815	1,010,476





2.5 SUMMARY OF MAINTENANCE ACTIVITIES AT BPS I

Since the taking over of the IPP facilities in mid-2013 and the power plant renamed as BPS I, NAWEC had to continue operating and maintaining the plant at its own cost.

It was only the 12,000 hours overhaul of Generator Nos. 3 that was carried out as planned. The 24,000 Hours overhaul of G6 was postponed alongside the 12,000 hours overhaul of G4 due to resource constraints.

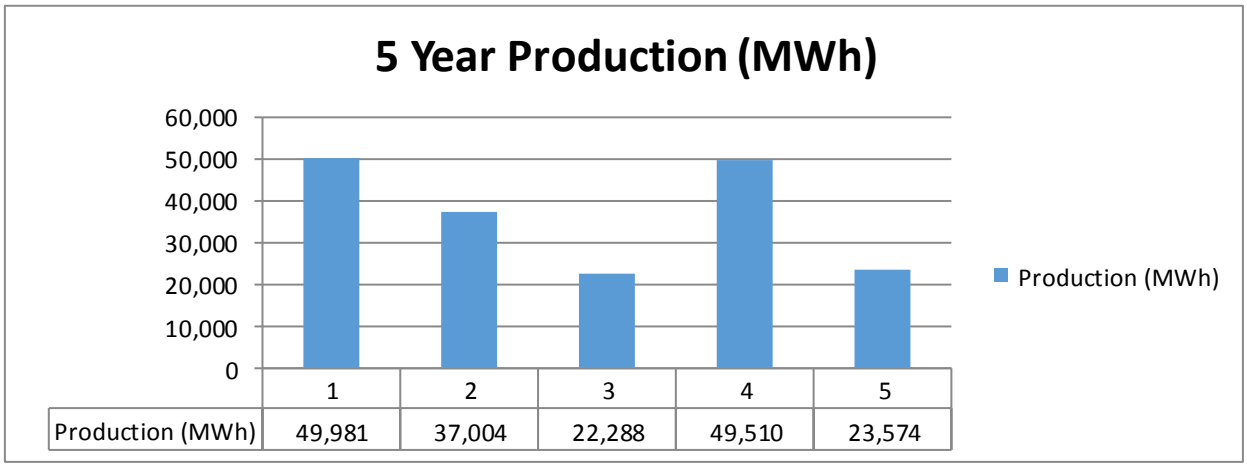
G2, G3, G4, G5 and G6 were all available for production during the year. G1 was also available by the last quarter of the year following the rehabilitation of the engine.

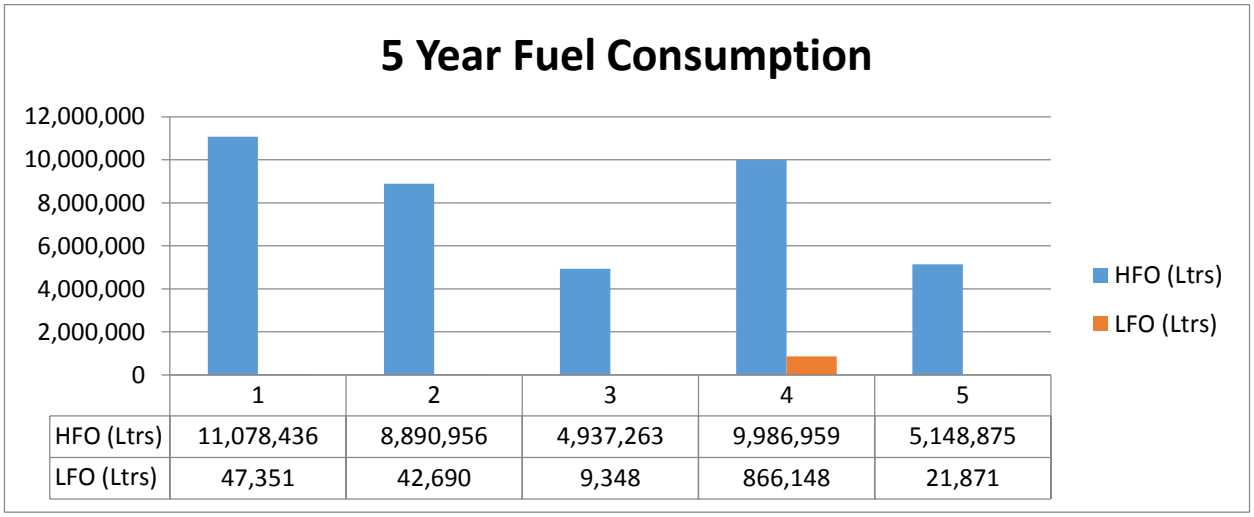
Brikama II Power Station

Generator No.	Installed	Available Capacity	Make	Fuel Type	Commissi	Status in 2014
Wartsila	8.9	8.5	Wartsila	HFO	2011	Suffers at major breakdown in June 2016 after its first repair in 2014 for
TOTAL	8.9	8.5				

2.6 Power Production at Brikama II Power Station

Year	Production (MWh)	HFO (Ltrs)	LFO (Ltrs)
2012	49,981	11,078,436	47,351
2013	37,004	8,890,956	42,690
2014	22,288	4,937,263	9,348
2015	49,510	9,986,959	866,148
2016	23,574	5,148,875	21,871





2.7 SUMMARY OF MAINTENANCE ACTIVITIES AT BPS II

The Generating Set was operating very well up till June 2016 when it developed another mechanical breakdown similar to the one experienced in late 2013 for which NAWEC was fully indemnified by the Engine Manufacturer who was also the main contractor for the EPC. This time around the manufacturer declined to indemnify NAWEC and therefore the utility had to mobilise adequate

resources for the replacement of the engine as recommended by the manufacturer. The insurance was also being pursued for claim payment.

Total Annual Production 2015 VS 2016

	Production 2015 (MW)	Production 2016 (MW)	% Increase/Decrease
Kotu Power Station	91,627.66	118,476.67	29.3%
Brikama I Power Station	141,626.61	156,486.56	10.5%
Brikama II Power Station	49,510.00	23,574.00	-52.4%
Total	282,764.27	298,537.23	5.6%

2.8 Power Generation Projects

Brikama II Power Expansion Project: Due to some procurement problems encountered during the first tendering process in 2013, after about two years of negotiations and discussions between the government of the Gambia and IDB, an agreement for the retendering of this project of 2 x 10MW was reached in 2015 and by early 2016 the retendering was completed and Consortium comprising of Global Trading Group of Belgium and STX of South Korea was awarded the contract. ONEE of Morocco was retained as the Consultant.

Kotu Power Generation Expansion Project: The foundation work were well advanced with completion of the pile foundation along with the mass concrete. The foundation for the engine auxiliaries were also completed during the year. The factory acceptance test of the engine and alternator were also done and both of which were received at site towards the end of the year.

ECOWAS Emergency Power Supply Grant: - This was concluded with the awarding of the contract for the supply of spare parts component which were delivered by the contractor, GPS. The outstanding installation of the new fuel and lubricating oil separators and the fuel unloading facilities were also concluded. Though there are some outstanding payments to be made to one of the suppliers as the funds were exhausted.

2.9 Challenges

Delays in the procurement of spare parts and lubricating oil

Delivery of HFO and LFO

Training and availability of skilled man power

Management and containment of sludge especially during the rainy season

3. TRANSMISSION & DISTRIBUTION DIVISION

3.1 Introduction

Transmission and Distribution Division entered 2016 with great commitment and dedication to build and improve on the gains achieved during the previous year. The division strived for greater system stability and aimed to extend the network to potential green field areas when technically feasible. The following were the achievements registered during the year under review.

3.2 Electrification of Green field Areas:

As part of the variation works of the EDAE project, the electrification of the following areas; Jambur, Farato Bojang Kunda, Sintet Village, Lamin Daranka, Manyina, Katakor and Kesseng were realised. These works resulted in the extension of the MV network by **2.4 KM** and the LV network by about **37 KM** with installation of **1.30 MVA** total capacity. This has impacted positively on the socio-economic livelihood of the populace within these areas.

3.3 Loss Reduction:

As part of our drive to provide quality electricity supply and to mitigate our technical losses, the Department continued to concentrate its activities in this area. Great progress was registered in the following sub areas:

3.3.1 Installation of Capacitor Bank:

In order to further mitigate our technical losses resulted in the installation of 1250 KVAR capacitor banks as seen on **Fig 1** in all the T&D primary stations. These serve for the compensation of the reactive power within the system and thus improving the power factor.

FIG 4.1

3.3.2 Load Balancing:

The Department continued to have a dedicated load balancing team that endeavour to balance substations with serious load imbalances. This has continued to impact positively by providing greater system stability, curbing losses emanating from low voltage and avoiding outages as a result of fuse blow.

3.3.4 Off-Loading Medina Power Transformer:

The already overloaded power transformer continued to be off-loaded to avert the bottleneck of forced load shedding. The Brikama College transformer has already been transferred to the Gunjur feeder.

The Division also embarked on its normal annual system control, maintenance and cleaning exercise of the entire infrastructure. All the primary stations, 33 KV and 11KV lines were shutdown to effect the required maintenance. These activities normally require outages and in some instance the shutdown of the entire power plant.

The activities normally embarked upon, to improve system stability and reduce associated network energy losses are as follows:

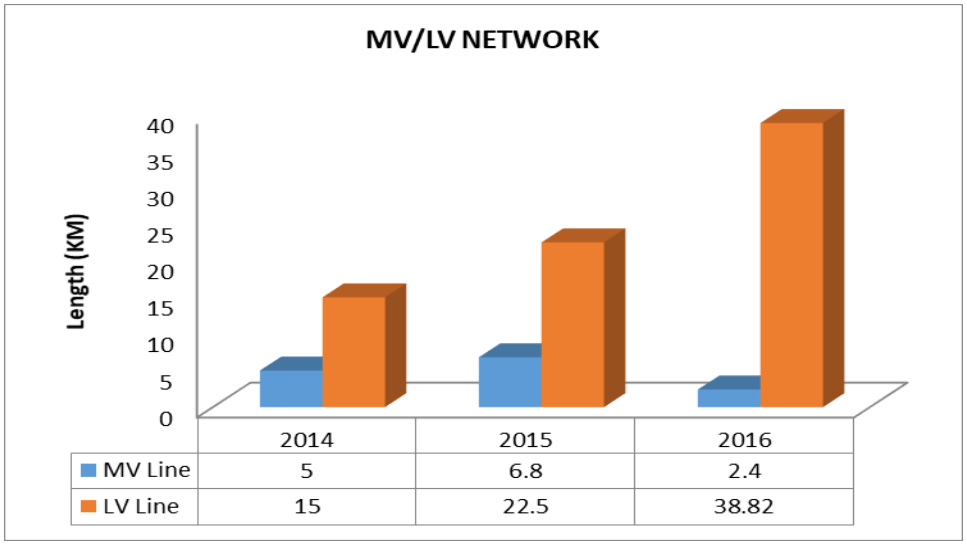
- The inspection, cleaning and replacement of corrosive bolts and defective glass insulators.
- The inspection and cleaning of the 33 and 11KV cubicles

- The cleaning and physical inspections of the U/G cable terminations, CT's, VT's and DC system
- The recycling of the Power Transformers oil as shown below
- MV/LV trimming

FIG 4.2

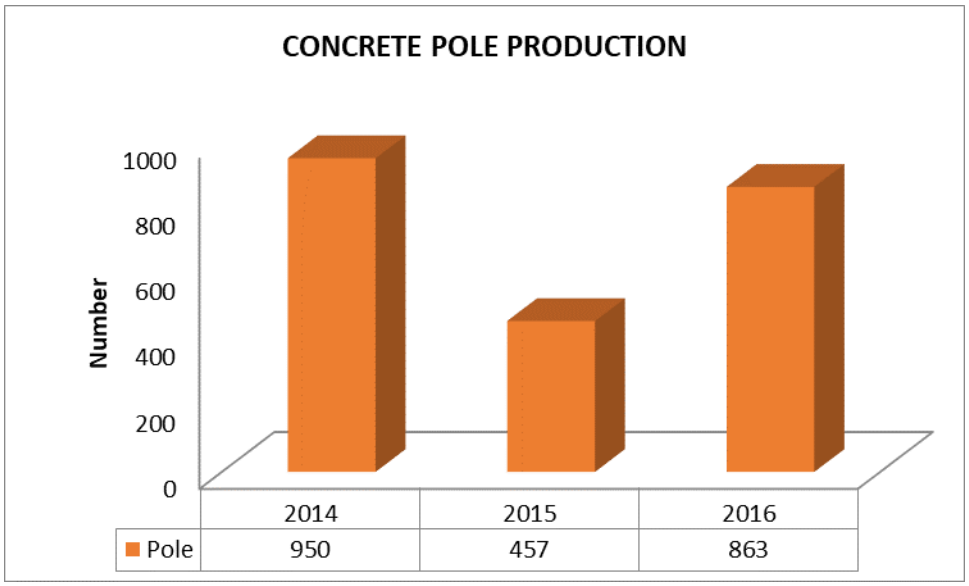
During the year under review, the department also engaged on the following activities and its comparison to the previous years' highlighted.

- The MV/LV network within the GBA and WCR were extended and rehabilitated:



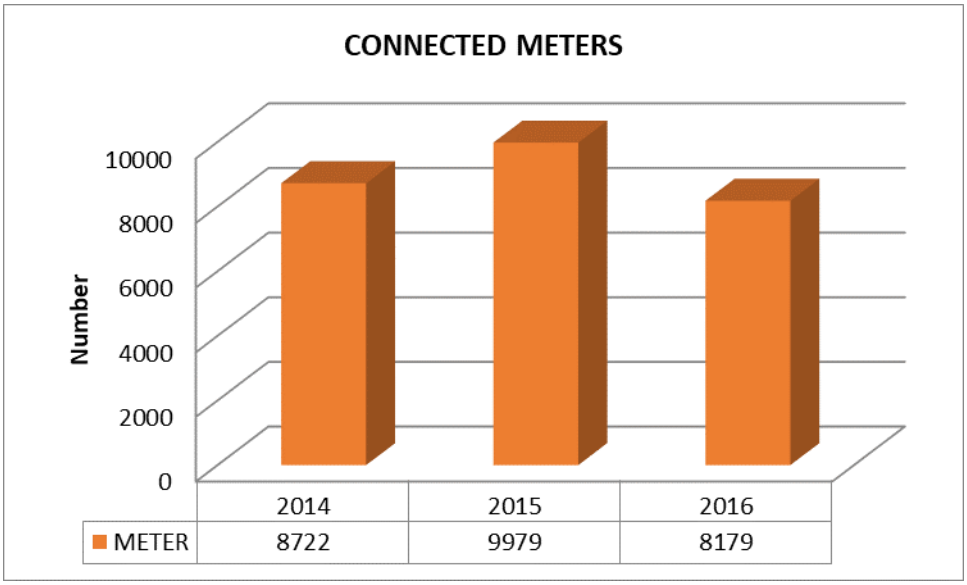
As seen, the MV line extension has dropped by 64% and the LV line extension has increased by 73% compared to the previous year. The increase in the LV line extension is as a result of the variation works of the EDAE project.

- The manufactured concrete poles for replacements and extensions as compared to previous years:



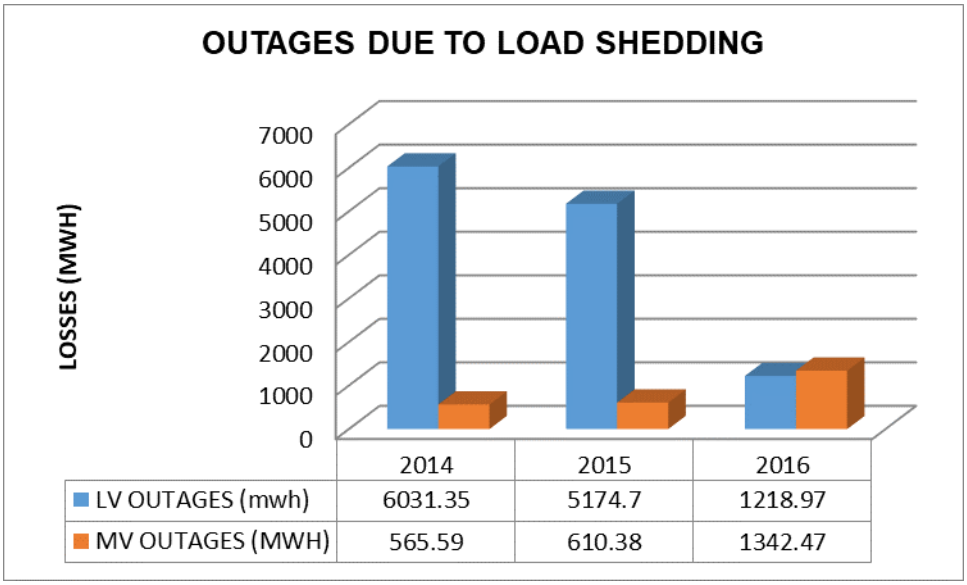
The pole production increased by 89% from 457 to 863, this is as a result of the LV extension works on the EDAE project and others within the GBA and WCR.

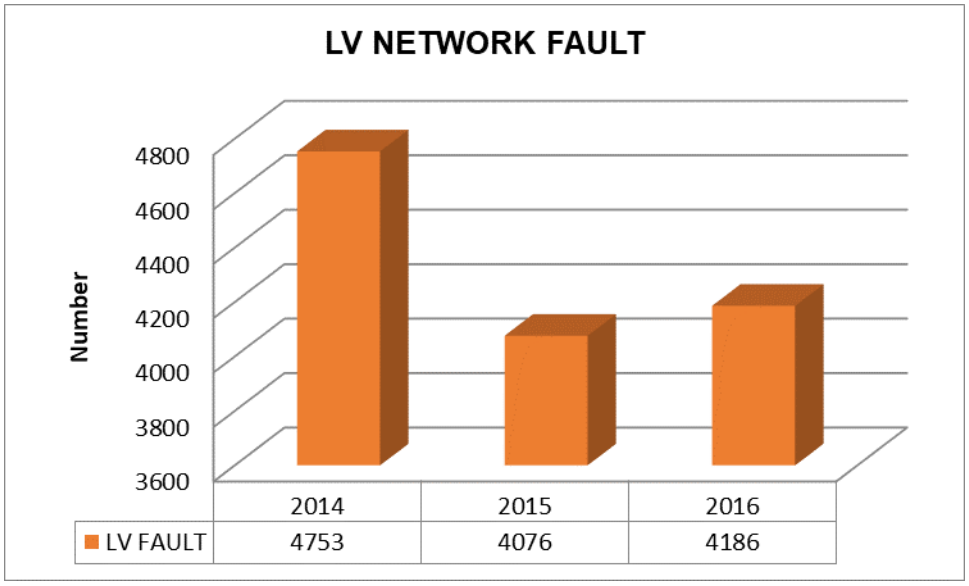
- The number of installed meters for new customers compared to the previous years:



The demand for service connection continued to be high but there was a decrease of **18%** in 2016 as compared to 2015.

As a result of all these achievements, coupled with effective annual maintenance program and an improvement in the generating capacity, losses associated with substation load shedding have dropped by **76%** from **5174.70** to **1218.97**, losses associated with MV forced/involuntary outages have increased by **120%** from **610.38** to **1342.47** and the low voltage faults have increased by **2.7%** from **4076** to **4187**. These are shown below:



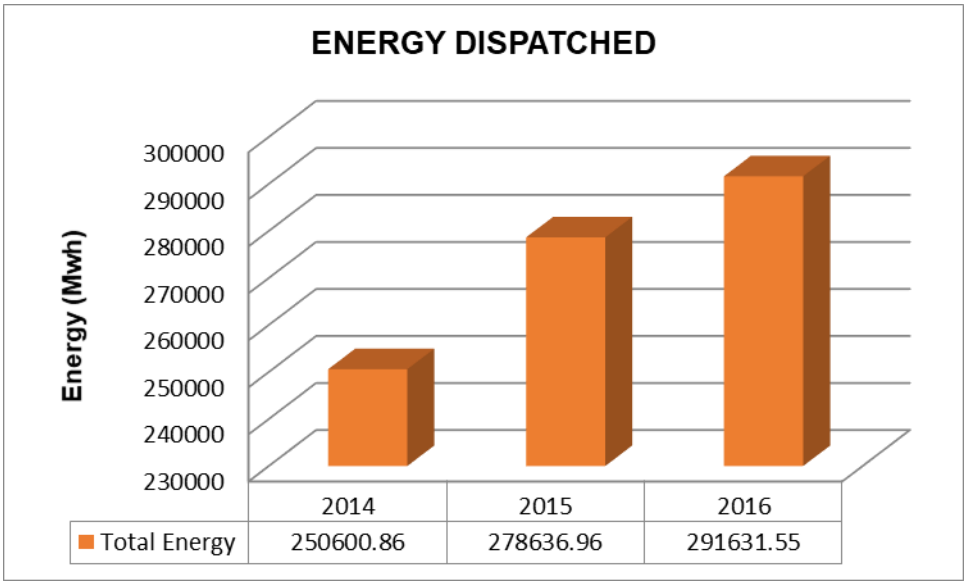


As seen above, there has been a significant drop in losses associated with substations load shedding and an increase on the MV outages. This is mainly due to an improvement in the generating capacity and re-strategising on our load shedding operations. In order to effectively maximise the distribution of the available energy, the feeder load shedding along with the normal substations load shedding mechanism was adopted. This has proved to be effective and efficient in managing the public expectation and safeguarding our infrastructure and vehicle fleet from the wear and tear of excessive load shedding. The low voltage fault increased as a result of being constrained with materials to intervene on key identified areas that are prone to fault due to the dilapidated nature of the network.

The table below summarized the energy dispatched for distribution:

Table 4.1

	Opening (MWH)	Closing (MWH)	Difference (MWH)
Feeder 1	**31764.94**	**51946.37**	**20181.43**
Feeder 2	**107180.12**	**120944.64**	**13764.52**
Feeder 4	**21304.03**	**30982.23**	**9678.20**
Feeder 5	**50793.60**	**79036.70**	**28243.10**
Mile 5	**40183.00**	**59117.00**	**18934.00**
Mile 2	**36131.00**	**68087.00**	**31956.00**
Wellingara	**113330.20**	**26700**	**31770.68**
Medina	**36377.84**	**62252.94**	**25875.10**
Bijilo	**327292.60**	**385650.30**	**58357.70**
BPS F1	**112736.60**	**119098.25**	**6361.65**
BPS F2	**131675.00**	**136289.42**	**4614.42**
Gunjur	**10942.24**	**24997.68**	**9586.30**
Kanilai (WCR)	**15411.38**	**18588.69**	**7646.45**
Mandinari	**12995.00**	**37657.00**	**24662.00**
TOTAL			**291,631.55**



As seen above, the energy dispatched during this period increased by **4.7%** from 278,636.96 to 291,631.55. This is as a result of an increase in generation capacity, with the **Wartsila set** coming into operation from a major maintenance.

3.4 Constraints:

Despite all these achievements, the Division encountered serious challenges in the following areas;

- The need for specialized training and tools on the operations and maintenance of the T&D infrastructure.
- The lack of redundancy in our transmission system.
- The lack of materials to carry out effective upgrading and maintenance within the T&D system.
- Inadequate mobility and aging fleet hampering work productivity.
- Wear and tear on the secondary substations due to excessive load shedding

3.5 Summary:

These interventions continued to positively impact in the following areas:

- Improve the socio-economic livelihood of the population especially those in the peri-urban areas who benefitted on the EDAE project.
- Technical losses tend to be impacted as it is on a downward trend.
- Power quality distributed to consumers

3.6 PLANNED ACTIVITIES FOR 2017

Table 4.2

ACTIVITY/TARGETS	**MATERIALS REQUIRED**
MV Modification works at BPS, for third transmission line	Poles, Conductors and associated MV/LV accessories
Wooden pole replacement at BSS, BMT, BH9 and SCS	Concrete poles
Creation of new substation at Nawec HQ, FajiKunda and Tallinding Sicap	Transformers, poles, conductors and associated accessories
Off-loading of the Gallilee and Brikama College substation from the Brikama Town feeder to the	33/0.4 Transformers, U/G cables and associated accessories

Gunjur line	
LV rehabilitation and re-conductoring within the Greater Banjul Area	LV poles, conductors and associated accessories
Installation of sectionaliser on the 11KV feeders	MV poles, section Switch and associated accessories
Linking Borehole and Airport feeder, Linking Tallinding and Kanifing feeder, MV diversion on Airport Wellingara feeder from Nature Reserve to LaminGalp filling station	MV poles, Cross arms, Conductors and associated accessories
Replacement of 33KV glass insulators to silicon composite	Silicon composite insulators

4. WATER & SEWERAGE

4.1 INTRODUCTION

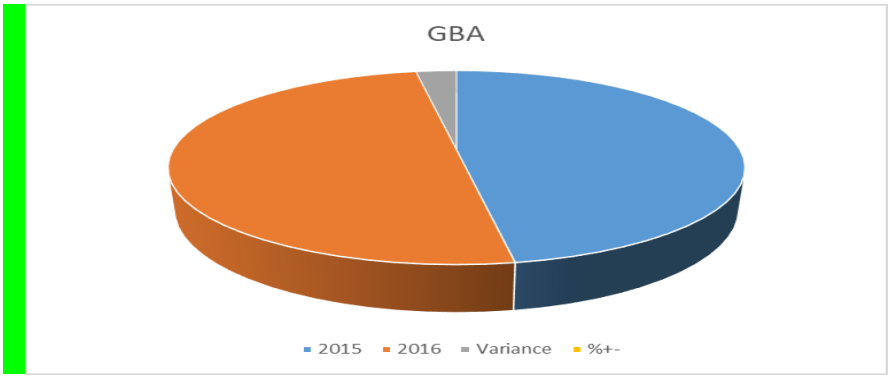
The Water and Sewerage Division under the National Water and Electricity Company is tasked to ensure supply of reliable potable water and sewerage services.

The division comprises of Water Production, Distribution and Sewerage Departments with a total staff of 234.

Water production in the years of 2015 and 2016

Table 4.1

Year	2015	2016	Variance	%+-
GBA	34,587,665	36,565,828	1,978,163	5.409868



From the statistics above, water production increased over the reporting period from 34,587665 m^3 to 36,565,828m^3. The variance amounted to 1,978,163 m^3 and it shows a significant increase in water production which resulted to 5% increment during year under review.

4.2 Treatment Plants and Boreholes

During the year under review, there were 69 operational boreholes distributed amongst five water treatment plants in the GBA and nine standalone systems as follows:

TABLE 4.2

Item No.	Water Treatment Plant	No. of Boreholes	Capacity M3/Hr.	Boreholes in Operation	Actual Capacity M3/Hr.
1	Fajara Water Treatment Plant	6	316.8	6	316.8
2	Serekunda Water Treatment	12	792	11	720

	Plant				
3	Sukuta Water Treatment Plant	20	1425.6	18	1295.6
4	Brikama Ballast Water Treatment Plant	17	1278	16	1198.6
5	Gunjur Water Treatment Plant	2	72	2	72
	Sub - Total	57	3884.40	53	3603
	Standalone Systems				
1	Mandinary	2	162	2	162
2	Yundum	3	165.6	3	165.6
3	Kerr Serign	1	36	1	36
4	Kanifing Tank	1	68.4	1	68.4
5	Kembujaye	1	36	0	0
6	Brikama Kabafita	1	79	1	79
7	Brikama Old Tank	1	29	0	0
8	Brufut	1	36	0	0
9	Bwiam	1	36	1	36
	Sub – Total	12	648	9	547
	Total Capacity	69	4,532.40	62	4,150

62 production boreholes were available for operations out of the 69 stated above. The total production capacity of those 69 boreholes was over 108,000 cubic meters per day compared to just 99,000 m^3 of the available 62.

4.3 Main Challenges in the Water Production Sector:

4.3.1 Aging Boreholes:

It is worth noting that some of these boreholes have served over 37 years. Considering the nature of our aquifer and other geological parameters, the expected useful life of boreholes in these catchment areas is about 25 years. Recent problems encountered at some of these boreholes such as the presence of large amounts of silt and fine sand suggests that some of them have been used beyond their useful life span resulting to low yield from the boreholes. Therefore, there is need to consider replacement of some of these boreholes. Example of some of these boreholes include Boreholes 8, 9, 14, Kanifing Tank Borehole, PN 2, 3, 4, 5 and 6 which have all served us over three decades.

4.3.2 Water Treatment plants:

In 2016 there were five Water Treatment Plants that were available to Water Production Department, in addition to the 9 standalone systems as mentioned in Table 1 above. The treatment plants and their features are as follows:

Chlorine cylinder

4.4 Water storage tanks in GBA:

TABLE 4.3

Item	Location	Capacity M3	Comments
1	Sukuta	500	
2	Kotu	1000	
3	Serekunda old	477	
4	Serekunda new	1000	
5	Fajikunda	500	
6	Fajara	1500	
7	Kanifing	1500	
8	Latrikunda	585	
9	Mile 2	500	
10	Albion No 2	1206	Out of service
11	Albion No 1	477	Out of service
12	Banjul West	500	
13	Yundum	1000	
14	Brikama new	500	
15	Brikama old	477	
16	BrikamaKembujaye	500	
17	Farato	500	
18	Old Yundum	500	
19	Mandinary	500	
20	Bijilo	2000	
21	Brufut Taf	1000	
22	Brusubi	1000	
23	Gunjur	500	
24	Jambangjelly	120	
25	Sanyang	120	
26	Tujereng	120	
27	Tanjie	120	
28	Brufut village	120	
29	Jambur	120	
Total		18,465	

4.5 Recommendations:

The old Braithwaith tanks of Serekunda, Brikama and Latrikunda need refurbishments as these tanks are very old and have really served more than their useful life.

4.6 SEWERAGE

4.6.1 P4 and P11 pumping stations:

P11 was in a fairly good operating condition. However, the standby generator at this station needs to be changed due to its age (1993). Furthermore, improvements are needed in the area of effluent screening, sump cleaning and sludge disposal system to enhance the system operation. P4 requires a complete refurbishment of the station. The pumps, control panel, riser pipes and generator need replacement to efficiently operate to standard.

4.7 Vehicles and Plant

A good reconditioned tanker with high pressure and jetting machine is required to replace the existing truck to enhance removing of blockages and cleaning of the sewer pipelines. This will

Greatly improve our services. The mini tipper truck purchased by MSG in 1993 (23 years ago) has served us enough and is now regularly in the garage. This truck is very useful in the cleaning exercise of the stations.

The age of our current fleet and conditions are such that the down times are so great that it makes our responses to faults very slow or in some cases impossible within acceptable time frame thus increasing both the real loses and the inconveniency of the customers.

4.8 Water Distribution

The high population growth in the Greater Banjul Area of approximately 900,000 people in 2016, has led to the corresponding high water demand against our daily available treated water for distribution.

The huge difference between demand and supply, the topography coupled with inadequate pipe sizing have resulted to low pressures at certain places like Bundung, Cape Point, some parts of Talinding, Kunkujangs and Sinchus during peak periods.

4.9 Old infrastructure

The transmission and distribution infrastructure in certain areas such Cape Point, Fajara, Latri- kunda German, Serekunda and Bundung comprises of old and aging pipe networks. This old infrastructure network which comprises of asbestos pipes, steel pipes etc is causing a low pressure in the network due to the reduction in steel pipes as a result of deposits and frequent burst pipes in asbestos.

5. PROVINCIAL SERVICES

The provincial division is headed by a Director and assisted by regional managers who are stationed at different regions throughout the provinces.

The Director of Provincial Operations with one of the operators

5.1 North Bank Region

There are three (3) power stations in place with different location in this region, namely Barra, Kerewan, and Farafenni.

- **Barra power station** has two engines with an installed capacity of 1200 kW which were in operation but one of the engines had a breakdown during the period.

  WATER PRODUCTION

  There are two boreholes in Barra supplying both Barra and the surrounding villages with an elevated tank. The tank capacity is 500 m^3 and is located in Kanuma

- **Kerewan power station:**

  This station supplies Kerewan and the surrounding villages such as Saaba, Njaba Kunda and Sallikene.

KEREWAN SUBSYSTEM

Table 5.1

	NAME	ABBRV/LOCATION	RATING (KVA)
1.	Kerewan Step Up Transformer		400
2.	Kerewan Town Transformer	KDT	100
3.	Kerewan Junction Transformer	KCT	100
4.	Saaba Borehole Transformer		100
5.	Saaba Village Transformer	SVT	100
6.	Njaba Kunda Transformer	NVT	100
7.	Sallikene Village Transformer	SKV	100

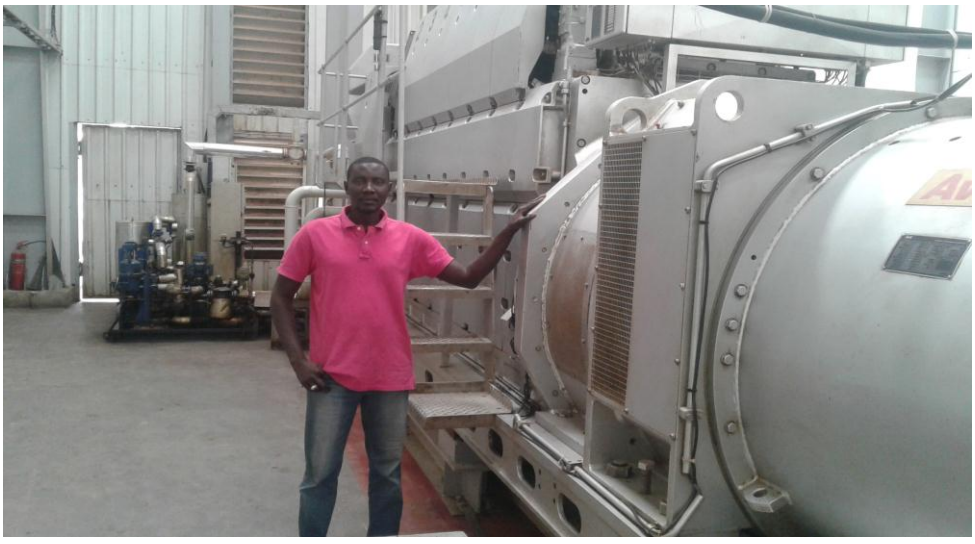
Borehole: They have only one borehole located in Saba that supply Kerewan with an elevated water tank

- **Farafenni power station**, which is the biggest in the region, has two Caterpillar engines (3512B and 3516B) of capacities 1280 and 1820 kVA PRIME respectively. The two are alternated, operating one at a time.

  Borehole: They have 3 boreholes two of which are located in the town and a small one located at the power station

Newly Inaugurated Power Station in Farafenni

This is the newly constructed Power Station in Farafenni,North Bank Region.This Power Station is equiped with a heavy fuel engine that supplies the entire Farafenni and its surrounding villages.



Engineer at Farafenni Station standing by the new gen set.

- **Kaur** had been shut down because its source is coming from Farafenni and the station exists only for emergency.

FARAFENNI SUBSYSTEM
Table 5.2

No.	NAME	ABBRV/LOCATION	RATING (KVA)
1.	Step Up Transformer 1		1000
2.	Step Up Transformer 2		1000
3.	Step Up Transformer 3		1000
4.	New Step Up Transformer 1		3000
5.	Farafenni Mauritani 1	FM1	100
6.	Farafenni Mauritani 2	FM2	100
7.	Farafenni Hospital Transformer	FHT	100
8.	Inside the Hospital		250
9.	Foday Kunda Transformer	FKT	100
10.	Farafenni Marong Kunda	FMT	100
11.	Farafenni Police Transformer	FPT	400
12.	Farafenni Border Transformer		50
13.	Jah Oil Transformer		300
14.	Farafenni Kharafi Transformer		250
Kaur			
8.	Kaur Step Up Transformer		400
9.	Kaur Police Transformer	KPT	100
10.	Kaur Wharf Town Transformer	KWT	100
11.	Kaur Touray Kunda Transformer	KTK	100
12.	Janneh Kunda Transformer	JNK	100

Kaur: There are 3 bore holes in Kaur, one main supplying the town, one supplying the power station and one at the hospital.

5.2 Central River Region – Bansang

- **Power Station:** There are three engines installed in Bansang power station – 2 Deutz of 200kW each and 1 Perkins of 400kW. All are operational except one Deutz engine which is due for overhaul. However, due to their old age they usually been down from time to time due to one form of problem to another. They are due for replacement based on the above mentioned reason. This power station is supplying electricity to CRR North and South.
- **Bore hole:** There is only one borehole in Bansang connected to the water network. This borehole supplies the whole of Bansang and it is located in Bantanto because Bantanto tends to have better water quality than Bansang.

5.3. Upper River Region – Basse

View of the Generator (Basse Power Station)

View of the Tanks and other accessories of the new generator (Basse Power Station)

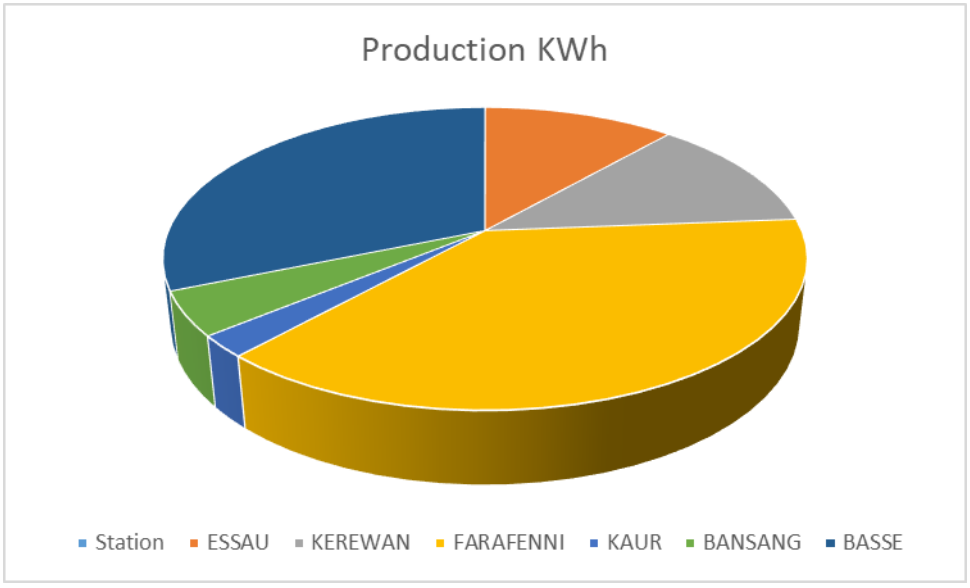
Basse Power Station had faced with downward trend of electricity generation. This is as a result of aging generator sets and high cost of light fuel and its spare parts. In 2016 the station was installed with new, heavy fuel generator set with an installed capacity of 2.7 mw. This did not come with this gen set only but also construction of foundation for another gen set of the same type and capacity. This development impulse the company to fast tract extension of electricity to some communities so that the energy generated can be put into good use. Looking at the table below Basse Power Station has realized an energy production up to 50% increment in 2016 oppose to previous years.

5.4 Electricity Supply in Provinces

Provincial Energy Production

Table 5.3

	Production KWh			
Station	2015	2016	Variance	%+-
ESSAU	1,069,667	1,267,877	198,210	16
KEREWAN	1,144,989	1,344,940	199,951	15
FARAFENNI	3,547,000	9,817,485	6,270,485	64
KAUR	215,010	52,716	-162,294	-308
BANSANG	437,834	1,938,330	1,500,496	77
BASSE	2,921,428	5,804,198	2,882,770	50

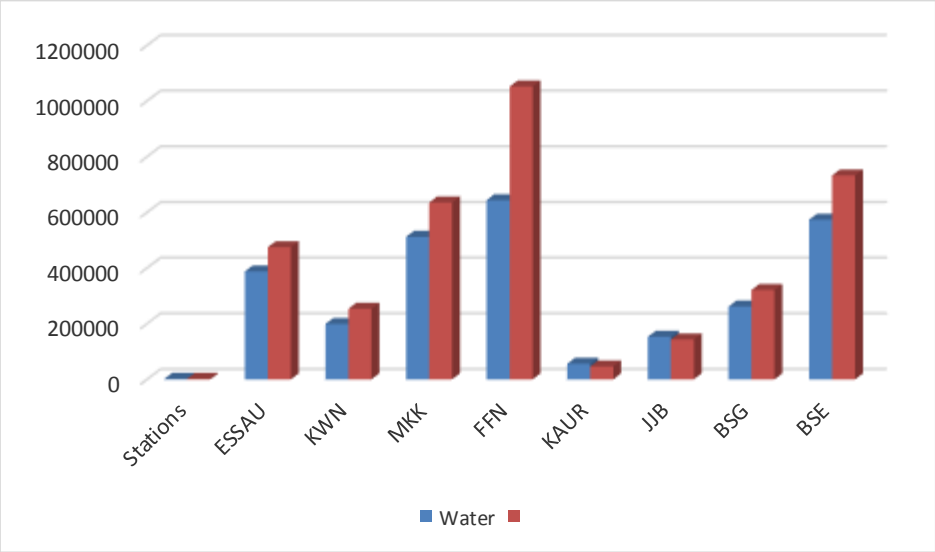


5.5 PROVINCIAL WATER PRODUCTION

Table 5.4

	Water			
Stations	**2015**	**2016**	**Variance**	**%+-**
ESSAU	**387,390**	**475,053**	**87,663**	**18.45331**
KWN	**199,549**	**253,522**	**53,973**	**21.28928**
MKK	**512,177**	**635501**	**123,324**	**19.40579**

FFN	**644,175**	**1,052,572**	**408,397**	**38.79991**
KAUR	**56,548**	**46,749**	**-9,799**	**-20.9609**
JJB	**153,038**	**143,443**	**-9,595**	**-6.68907**
BSG	**261,598**	**321,194**	**59,596**	**18.55452**
BSE	**573,473**	**732,987**	**159,514**	**21.76219**



5.6 Commercial & Financial PROVINCIAL OPERATIONS

5.6.1 INTRODUCTION

The following is a brief situation report of the Provincial Commerce & Finance unit which shows: cash collection, level of arrears meter installation, status of revenue Offices.

5.6.2 METER INSTALLATION

Total meters installed in the provinces as at the end of 2016 stands at fourteen thousand, nine hundred and twenty (**14920)** Electricity & Five thousand, seven hundred and twenty-five (**5725)** water meters. There are still 2789 Credit meters and just over 800 Faulty water meters in the provinces. Plans are in place to replace all credit (except some Government meters) and faulty water meters.

Tables below show number of meters installed/replaced in each month, plus total installation in the provinces as at 31th December 2016.

Table 5.5

METERS INSTALLED / REPLACED FROM JAN 2016 - DEC 2016				
	INSTALLED		REPLACED	
	ELECTTRICITY	WATER	ELECTTRICITY	WATER
JANUARY	26	49	41	8
FEBRUARY	0	23	13	7
MARCH	80	41	34	0
APRIL	44	48	31	0
MAY	13	41	23	0
JUNE	71	32	52	0
JULY	56	20	23	0
AUGUST	468	27	31	0
SEPTEMBER	1025	17	24	0
OCTOBER	354	19	40	0
NOVEMBER	199	26	39	0
DECEMBER	19	18	40	19
TOTAL	**2355**	**361**	**391**	**34**

NUMBER OF ELECTRICITY AND WATER METERS INSTALLED IN THE PROVINCES AS AT 30th DEC 2016

ELECTRICITY

CATEGORY						TYPE			TOTAL ELECTRICITY METERS
Domestic	**Commercial**	**Major Consumers**	**Local Government**	**Central Government**	**Agriculture**	**Single Phase**	**Three Phase**	**M/Demand**	
12562	2188	9	43	107	11	14683	231	6	**14920**

WATER

CATEGORY						TYPE				TOTAL WATER METERS
Domestic	**Commercial**	**Major consumers**	**Local Government**	**Central Government**	**Agriculture**	**15MM**	**20MM**	**25MM**	**Bulk Meter**	
4866	131	55	405	260	8	1872	3798	39	16	**5725**

5.6.3 CHALLENGES

Network failures continue to be a problem in our sales points and quite often create customer dissatisfaction. Putting into consideration the fact that our operations are not 24 hours, being able to buy at any opportune moment is important.

i. Our major constraint still continues to be on the generation side, due to the ageing engines (high speed, light fuel engines over 6 years) and the ever growing demand. It is hoped that the REEP will improve the situation when completed.

ii. Another area of constraint is manpower, especially engineers. The Division still operates with very few number of engineers and the necessary skilled technicians (generation, transmission and distribution and the water production), and this needs will subsequently be solved as we continue to expand and bring in new technology. Transportation is another area of concern, with an aged transport fleet to run such a wide area of coverage.

5.6.4 Way forward

1. Replace and Increase generation capacity with Heavy Fuel Generator sets
2. Upgrade the water treatment plant or an option of River water treatment in Bansang

6. COMMERCIAL DEPARTMENT

6.1 General Overview

The Commercial Division provides the interface between the customer and NAWEC. This includes surveying for service connections, billing and revenue collection. By nature of its mandate, the Commercial Activities cover mainly the Monthly Billing, Credit Control, Meter Reading, Prepayment Services, Customer Relations and Loss Control.

Meters Installation

Table 6.1

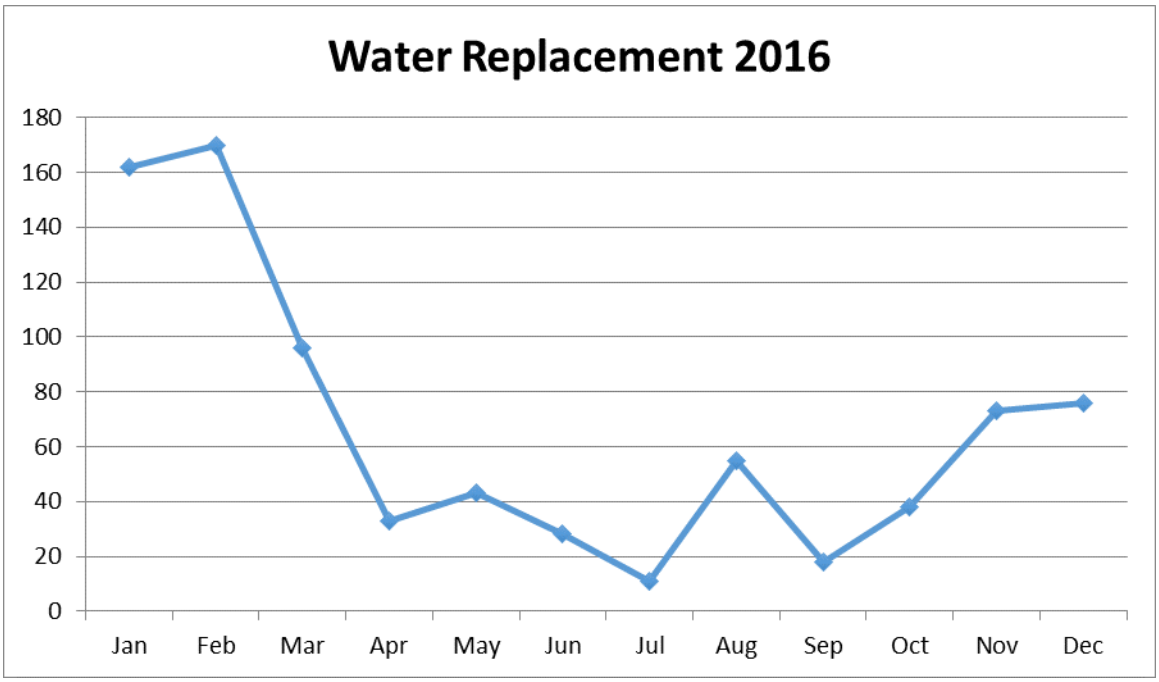
Electricity Connections 2016													
Electricity Connections 2016													
Electricity Service Connections	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	**Total**
Single phase	765	352	217	646	244	379	859	684	823	1040	1107	458	**7574**
Tri - Phase	15	12	16	12	20	17	3	7	10	14	6	7	**139**
maximum demand													**0**
Transfer of meter													**0**
upgrade to 3 phase													**0**
Pending													**0**
Westcoast single phase													**0**
Tri - Phase													**0**
Total	**780**	**364**	**233**	**658**	**264**	**396**	**862**	**691**	**833**	**1054**	**1113**	**465**	**7713**
Tri - Phase													
Water Connections 2016													
water Service Connections 2016	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	**Total**
15mm 3/4inc	8	18	30	22	30	57	20	44	39	127	19	36	**450**
20mm 1inc	212	320	303	438	350	271	121	116	73	14	237	170	**2625**
25mm 1 1/4						0	0		0	0		0	**0**
Total	**220**	**338**	**333**	**460**	**380**	**328**	**141**	**160**	**112**	**141**	**256**	**206**	**3075**

6.2 REVENUE PROTECTION DEPARTMENT

THE REPLACEMENT (WATER METERS)
Table 6.2

MONTH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**TOTAL**

No. of A/C	162	170	96	33	43	28	11	55	18	38	73	76	**803**



VERIFIED COMPLAINTS 2016

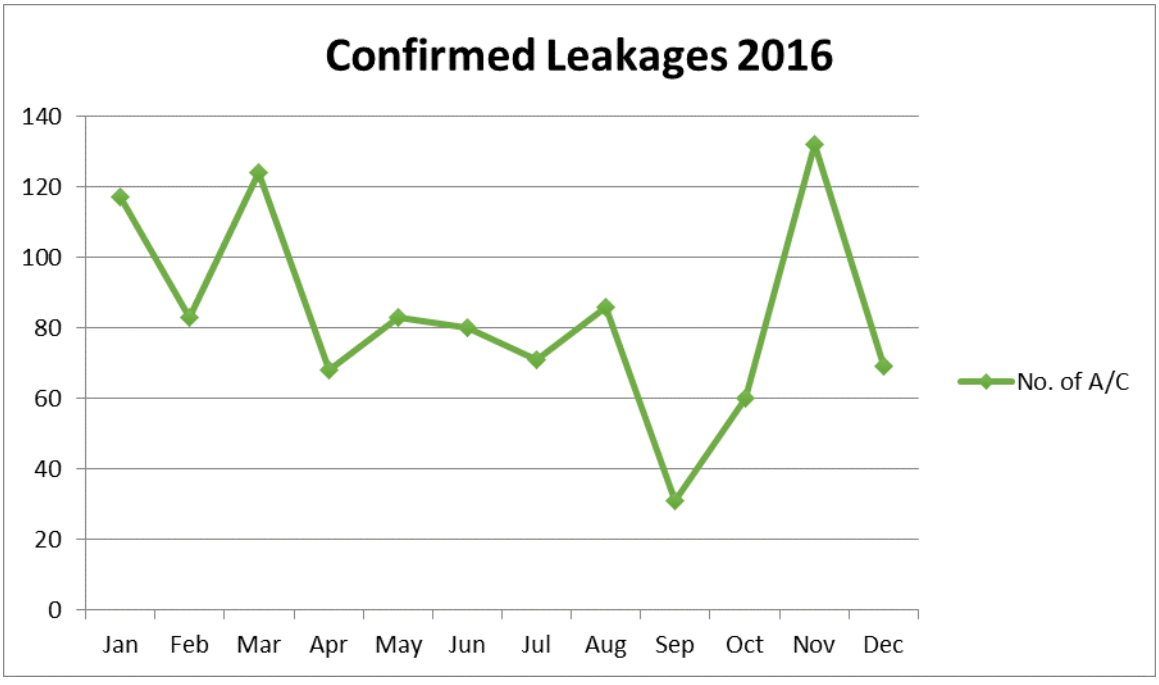
Table 6.3

MONTH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**TOTAL**
No. of A/c	225	155	240	165	199	207	159	181	62	85	253	132	**2063**

CONFIRMED LEAKAGES 2016

Table 6.4

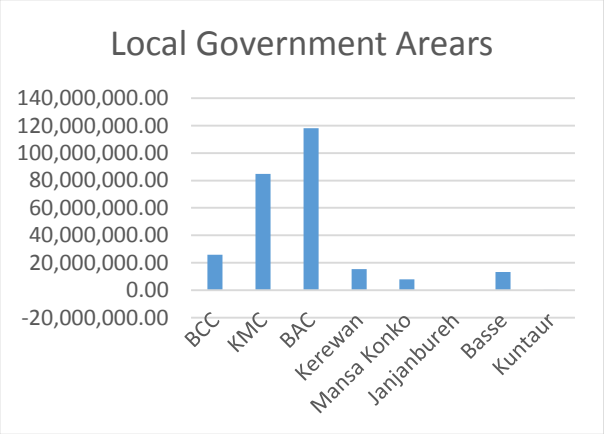
MONTH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**TOTAL**
No. of A/C	117	83	124	68	83	80	71	86	31	60	132	69	**1004**



Local Governments owed NAWEC arrears listed in the table below:

6.5

Local Authority	AMOUNT
BCC	25,880,766.99
KMC	84,914,175.09
BAC	118,080,260.43
Kerewan	15,502,602.78
Mansa Konko	7,993,479.46
Janjanbureh	-244,580.05
Basse	13,261,565.29
Kuntaur	154,452.35
Total Arrears	265,542,722.34



6.3 LOSS CONTROL 2016

Table 6.6

	By-pass		Illegal Conn.		Accidents		Replaced		Stolen		Surcharged		Payments		Bal. from Surchaeges
		cubic	no	cubic	no	charges	no	cost	no.	metres	no	Dalasi	no.	Dalasi	Amount
Jan	0	0	1	197.39	0	0	161	8,400.00	0	0	1	19,000.00	8	52,312.20	33,312.20
Feb	0	0	0	0.00	0	0	169	8,400.00	2	5600	0	0.00	6	30,668.00	30,668.00
Mar	1	450	0	0.00	0	0	96	14,000.00	0	0	1	19,000.00	3	17,940.00	-1,060.00
Apr	1	0	6	3,570.00	0	0	33	11,200.00	0	2700	7	150,400.00	8	151,700.00	1,300.00
May	0	0	0	0.00	0	0	44	4,600.00	1	2800	0	0.00	1	500.00	500.00
Jun	0	0	0	0.00	0	0	28	16,800.00	0	0	0	0.00	1	2,819.20	2,819.20
Jul	0	0	0	0.00	0	0	11	8,400.00	1	2800	0	0.00	1	500.00	500.00
Aug	0	0	0	0.00	0	0	55	14,000.00	2	3,000	0	0.00	0	0.00	0.00
Sept	0	0	0	0.00	0	0	11	8,400.00	0	0	0	0.00	0	0.00	0.00
Oct	0	0	1	240.00	0	0	39	13,800.00	0	0	1	14,800.00	0	0.00	-14,800.00
Nov	1	66	0	0.00	0	0	73	5,600.00	1	2,500	1	11,320.00	2	402,688.28	391,368.28
Dec	0	0	0	0	0	0	74	2,800.00	0	0	0	0.00	0	0.00	0.00
Totals	**3**	**516**	**8**	**4007.39**	**0**	**0**	**794**	116,400.00	**7**	**19400**	**11**	**214,520.00**	**30**	**659,127.68**	**444,607.68**

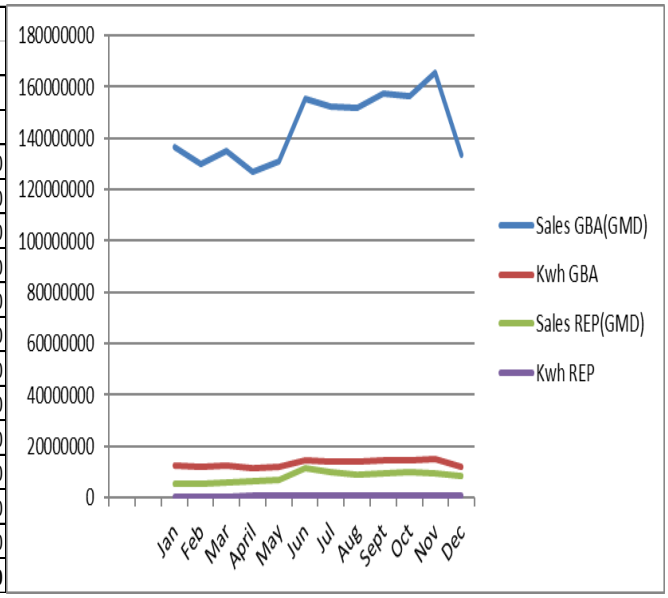
Electricity 2016

	By-pass		Illegal Conn.		Accidents		Replaced		Stolen		Surcharged		Payments		Bal. from Surcharges
	no	kwh	no.	kwh	no	charges	no	cost	no	metres	no.	Dalasis	no.	Amount	Amount
Jan	3	7,602.25	2	2,601.20	1	15,500.00	205	0.00	0	0	6	188,843.17	56	286,456.08	97,612.91
Feb	18	27,120.35	6	7,771.89	1	31,000.00	20	0.00	0	0	26	531,672.78	75	393,267.67	-138,405.11
Mar	8	9,231.96	1	2,868.00	0	0.00	5	0.00	0	0	9	202,709.04	69	395,713.03	193,003.99
Apr	6	7,118.76	2	0.00	0	0.00	10	0.00	0	0	8	194,773.08	59	218,780.21	24,007.13
May	3	10,782.96	1	20.00	1	3,450.00	11	0.00	0	0	5	185,598.67	71	252,314.16	66,715.49
Jun	4	7,660.71	1	0.00	0	0.00	10	0.00	0	0	5	130,179.19	59	201,769.10	71,589.91
Jul	3	3,452.42	0	0.00	0	0.00	5	0.00	0	0	3	55,267.42	41	82,116.94	26,849.52
Aug	8	18,129.07	0	0.00	0	0.00	11	0.00	0	0	8	271,984.32	62	296,648.94	24,664.62
Sept	6	11,182.32	0	0.00	0	0.00	3	0.00	0.00	0	6	173,388.00	41	156,205.45	-17,182.55
Oct	14	64,737.45	2	774.16	0	0.00	7	0.00	0.00	0	15	628,570.66	56	321,384.88	-307,185.78
Nov	6	7,637.02	1	835.02	2	65,500.00	12	0.00	0.00	0	8	177,745.82	58	290,767.03	113,021.21
Dec	2	8,670.90	0	0.00	0	0.00	19	0.00	0	0	2	107,923.00	46	204,637.50	96,714.50
Total	**81**	**183,326.17**	**16**	**14,870.27**	**5**	**115,450.00**	**318**	**0**	**0**	**0**	**101**	**2,848,655.15**	**693**	**3,100,060.99**	251,405.84

6.4 SALES

PREPAYMENT/CASH POWER SALES

Mth	Sales	Kwh	Sales	Kwh
	GBA(GMD)	GBA	REP(GMD)	REP
Jan	136,691,998.78	12,545,791.70	5,347,282.80	490,387.20
Feb	129,922,941.35	11,888,851.20	5,489,091.00	499,195.10
Mar	135,308,488.79	12,355,768.70	5,863,745.00	532,315.20
April	127,141,809.25	11,663,590.60	6,592,536.00	595,183.90
May	130,974,679.00	11,996,605.50	7,122,674.00	653,924.40
Jun	155,167,887.60	14,322,050.30	11,639,545.40	1,067,519.80
Jul	152,400,441.90	14,068,023.50	9,765,816.80	896,903.00
Aug	151,733,597.95	13,970,160.70	9,149,035.96	878,542.20
Sept	157,301,425.40	14,492,598.10	9,455,155.40	862,948.50
Oct	156,306,067.00	14,421,483.20	9,992,861.20	918,527.90
Nov	165,837,794.20	15,269,657.80	9,506,017.10	872,901.80
Dec	133,453,477.20	12,240,459.10	8,505,068.30	779,211.80
Total	**1,732,240,608.42**	**159,235,040.40**	**98,428,828.96**	**9,047,560.80**



WATER SALES 2016

Month	CUM (PROVINCES)	GMD (PROVINCES)	CUM (GBA)	GMD (GBA)
Jan	139,589	1,814,194.28	1,861,085	27,806,202.10
Feb	129,334	1,602,209.84	1,902,352	28,445,283.90
Mar	145,371	1,896,907.82	1,928,049	28,760,723.02
Apr	138,743	1,779,361.97	1,834,029	26,796,741.60
May	144,031	1,835,323.03	1,867,954	27,255,613.40
Jun	161,708	2,176,603.33	2,019,843	29,743,270.10
Jul	125,085	1,547,841.40	1,768,056	24,830,722.70
Aug	125,817	1,536,568.89	1,830,668	26,349,348.99
Sept	136,109	1,736,548.15	1,817,731	25,806,105.97
Oct	133,121	1,610,620.67	1,793,691	25,634,723.39
Nov	135,305	1,639,560.79	1,917,908	28,272,991.78
Dec	141,421	1,793,264.38	1,940,070	28,909,393.99

CONVENTIONAL SALES

	CONVENTIONAL SALES GBA		CONVENTIONAL SALES PRO.	
	Electricity		**Electrcity**	
MONTH	KwH	GMD	KwH	GMD
Jan	5,461,954	69,665,547.59	186,333	2,265,505.32
Feb	5,288,457	66,614,044.43	156,043	1,902,752.24
Mar	5,498,175	69,672,180.37	233,912	2,863,221.97
April	4,932,609	62,271,329.66	168,415	2,045,928.07
May	5,681,942	70,666,064.71	197,219	2,388,100.68
Jun	6,052,011	76,043,313.81	236,678	2,856,533.24
Jul	5,092,384	62,844,149.22	279,771	3,452,056.12
Aug	6,888,868	86,961,275.78	170,122	2,060,939.41
Sept	5,485,819	68,144,575.87	232,182	2,831,837.36
Oct	5,575,778	69,933,630.37	254,359	3,117,403.81
Nov	7,135,711	89,546,214.09	193,528	2,361,205.20
Dec	6,579,134	83,913,113.86	195,325	2,369,698.96

SEWERAGE SALES

	Sewerage	
MONTH	CUM	GMD
Jan	94,498	448,073.54
Feb	95,490	415,213.20
Mar	98,669	468,706.87
April	96,207	432,301.71
May	85,009	393,553.82
Jun	95,717	425,378.71
Jul	94,107	378,453.66
Aug	90,435	403,654.65
Sept	99,818	446,889.19
Oct	88,744	409,247.57
Nov	91,354	445,764.62
Dec	93,458	442,019.44

7. CORPORATE SERVICE DIVISION

The Corporate Service Division is in charge of all Planning Aspects of the System expansion for Water, Electricity and Sewerage Services. In this respect, the Division is the focal point within the Institution for all Studies and Services rendered by foreign engineering and contracting companies. Regular small scale extension of the network is part of the Division's activity. The Division is expected to coordinate all project activities from conception to commissioning. Water and Electricity networks expansion is in progress covering the entire West Coast Region.

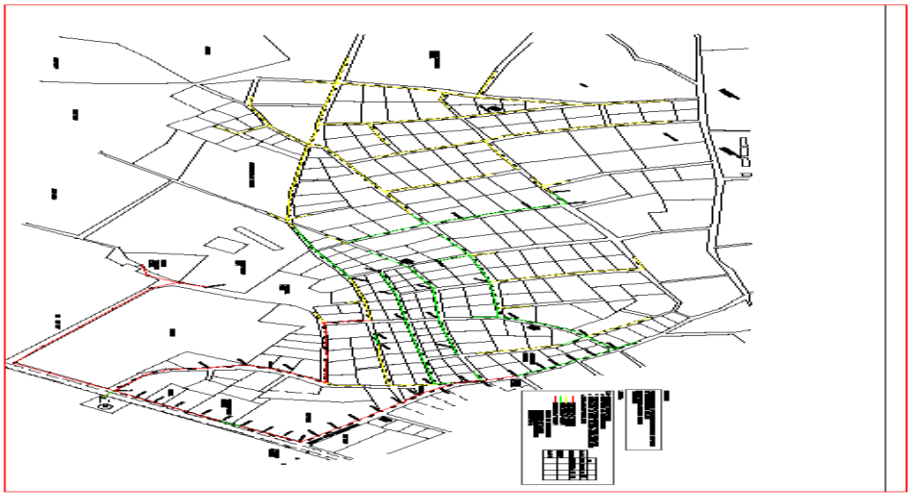
The Corporate Services Division in 2016 has been engaged in Electricity, Water and Sewerage Planning, Corporate Planning and Quality control.

7.1 Electrical Planning

The Electricity planning department among its activities includes survey, designed, costing and supervise Electricity network expansion in the Greater Banjul and Provinces.

- Prepared BOQ & costing for project
- Survey of customer driven extensions prepared BOQ & costing
- Carryout survey works and prepared BOQ and costing for Transmission and Distribution Division on improving the low voltage network,
- Commissioning of electricity network

Proposed sketch plan for electricity expansion in Banjulinding Village.



7.2 Corporate Planning Department

This depart is committed to work very hard in consultation with other department for proper reporting, decision making project development and etc. The department had successfully developed and produced a newsletter for the first time during the last five years. The department also coordinated the preparation of the company`s corporate strategic document envisage the development of the company during the period between 2015-2019 and this document served as blue print document for the company.

The Corporate planning department continue to contribute positively to the company through its cross cutting functions which include, data collection, compilation, presentation, reporting, project development, Monitoring and Evaluation, regulatory function, information sharing with other stakeholders, planning processes and procedures etc., Submission of monthly company activities updates to the Ministry of Energy and other stakeholders, responding to data request, facilitating consulting works, preparation of annual activity report etc.

7.3 Water Planning Department

Water Planning department is committed to its tasks and responsible in improving the water network in the country. The department advises the company on water expansion networks, water system improvements and developing project proposals for NAWEC.

Apart from surveying water mains or extensions services and preparing a BOQ for NAWEC's customers, the department also engaged on major activities in 2016 such as providing maps where especially asbestos pipes are laid for replacement from the project secured and water supply expansions in the GBA for about 50 kilometers and 10km in the Provinces (Farrafenni).

8 additional boreholes were secured and the water expansion network had covered Yonna, Sarri Pateh, Mariama kunda, Latriya, Jambur, Busumba and part of Farato.

8. HUMAN RESOURCE AND ADMINISTRATION DIVISION

The Human Resources Development and Administration Division leads in all matters of staff recruitment, employee and labour relations, administration of employee benefits and wellness programs as well as provide routine administrative and process enhancement support to NAWEC Management. The Division is also charged with the responsibility of providing professional development opportunities for employees, management of employee risk and safety initiatives. It also ensures that there is in place an effective and stable management framework consistent with the overall manpower needs of the Sector.

The Division ensures these are carried out through consultative and inclusive approaches with various HR committees comprising of representatives from various Divisions within the company. These committees include Training, Disciplinary, Recruitment and Selection as well as Loans; they take part in major decision making processes relating to the above.

Due to rapid expansion of the company's operations in both scope and processes over the years, the need for a more elaborate and efficient HR and administrative services becomes all the more relevant. This requires adequate and requisite resources in terms of man power, equipment and the enabling institutional environment. Based on the foregoing, HR Manager was recruited in 2016 to assist and add more specialise expertise to the operations of the Division.

8.1 ACTIVITIES

During the period under review, the Division embarked on the review of the service rules through a specially constituted task force. This exercise was aimed at sanitizing and depopulating the document by fine tuning it to best HR practice and procedure. This has also necessitated the urgent need to come up with more stand-alone comprehensive policies that will serve as guidelines for the day to day operations of the Division. Within the broader framework, the aim was to develop a HR manual for the company.

It must also be noted that as part of the annual work plan, the division had embarked on collating job descriptions for all cadres within the company. This was aimed at not only ensuring that role clarity is issues are addressed but as part of the gradual process of instituting a robust performance appraisal scheme. In addition, the all-important scheme of service for the company was initiated to assist with

recruitments among other issues. The scheme of service is aimed at achieving the following objectives for NAWEC:

- Attract and retain people with the appropriate skills, ambition and integrity by providing well defined career prospects for all employees.
- Ensure uniform standards, norms, procedures and quality of work to provide an efficient and effective service delivery within the company
- Prescribe realistic qualification and requirements (educational, training and promotion criteria) in order to maintain professional standards.

8.2 HUMAN RESOURCE DEVELOPMENT (TRAINING)

Training continues to be central in our pursuit of retaining a well-motivated and competent work force. The training portfolio is handled in a very consultative manner, involving the constitution of the Human Resource Development Committee. The Division has facilitated training for several staff for the purpose of enhancing performance.

During the period under review, tremendous achievements have been registered. The training school has been revived and given a new lease of life. The Division has continued with our strategy of training more Engineers at Bachelor's degree level in Ghana in the areas of Mechanical and Electrical Engineering. In addition, we have favoured the University of The Gambia for all non-engineering courses at the level of Bachelor's degree, as a deliberate policy to cut cost, increase the number of beneficiaries as well as contribute in the advancement of the University. We have also sponsored some senior staff to pursue Masters Degrees in several fields needed for the advancement of the company.

In addition, the Division had made contacts with SENELEC of Senegal on how to share their experience in our quest to upgrade the training school. The Division had also explored means of collaborating with them in hands-on training for our technicians and Engineers.

8.3 Challenges

- The Division is seen and conceptualized as playing a facilitating role rather than a strategic/core function in attaining the overall objectives of the organization. This "perceived" supportive role has affected the central role HR needed to take in organizational development, growth and transformation.

8.4 Way Forward

- Provision of professional refresher training for senior members of the Division to be able to effectively handle strategic issues
- Management empowering the HR and Admin to spearhead institutional transformation and growth.
- Provision of adequate institutional capacity in terms of the right equipment and tools.

IMPORTANT DATA/STATISTICS FOR THE PERIOD UNDER REVIEW (2016)

Staff Nominal Roll as at December, 2016

Table 8.1

	Department	Permanent Staff	Contract Employees	Total
1	HR and Admin	189	7	196
2	Internal Audit	20	0	20
3	Commercial	281	5	286
4	Corporate Services	21	3	24
5	Finance	165	0	165
6	Generation	354	11	365
7	IT	22	0	22
8	Provincial Operations	234	6	240
9	Water	227	7	234
10	Transmission and Distribution	279	4	283
11	Procurement	7	0	7
	TOTAL	1, 799	43	1,842

There has been a marginal regression of staff numbers from 1,855 by end 2015 to 1, 799 in December, 2015 representing 3% regression in staff turnover. This is largely due to the moratorium placed on hiring of new staff and replacements emanating from the staff audit exercise conducted the preceding year.

8.5 MEDICAL BILLS

The company spent over D12 million Dalasis on medical bills. This represents about 17% reduction in the total costs incurred from the preceding year. The significant reduction can be attributed to the improvements in the monitoring of threshold limits and corresponding deductions for all defaulters.. The control measures have contributed immensely in saving substantial funds for the company. Based on these gains we were able to convince Management to approve the threshold from D6, 000 to D7, 500 for all staff.

9.1 Introduction

NAWEC Financial Statement for 2016 registered a significant improvement from a loss of D493.8 million in 2015 to a surplus of D112.4 million in 2016. This is due mainly to less cost of sales and admin expenses in 2016. HFO being the major cost driver was liberalized in 2015 and the cost went down drastically from 2014 through 2016.

Total Assets went up by 1.3% from D6.2 billion in 2015 to D6.3 billion in 2016 whereas current liabilities went down by 4.3% from D1.6 billion in 2015 to D1.5 billion in 2016.

9.2 Income statement

Statement of Profit or Loss			
for the year ended 31 December 2016			
	Notes	**31-Dec-16**	31-Dec-15
		D.000	D.000
Revenue	2, 1d	**2,887,635**	2,684,802
Cost of sales	9	**(1,484,324)**	(1,838,720)
Gross profit		**1,403,311**	846,082
Administration costs		**(656,884)**	(737,020)
Depreciation charge	10,11, 1c	**(322,824)**	(273,735)
Release of capital grants	8, 1k	**21,628**	514,133
Other operating income	3.	**(15,429)**	284,140
Net operating expenses		**(973,507)**	(212,482)
Operating /profit		**429,804**	633,600
Interest expense and similar charges	6	**(299,061)**	(268,998)
Loss on Foreign Exchange Translation		**(18,329)**	(858,487)
Profit for the year		**112,414**	(493,884)

Statement of Financial Position

as at 31 December 2016			
		31-Dec-16	31-Dec-15
	Notes	**D'000**	D'000
Assets			
Non current assets			
Property, plant and equipment	10, 1c	**4,931,393**	4,823,590
Intangibles	11	**9,320**	10,848
Investments		**5,500**	2,000
		4,946,213	4,836,438
Current assets			
Inventories	12, 1b	**415,279**	420,413
Trade and other receivables	13	**803,724**	908,591
Cash at bank and in hand	19	**181,734**	97,212
		1,400,737	1,426,216
Total assets		**6,346,950**	6,262,655
Equity and liabilities			
Capital and reserves			
Share capital	17	**68,466**	68,466
Revaluation reserve	18	**1,581,375**	1,581,375
Retained earnings	18	**(5,696,309)**	(5,809,539)
		(4,046,467)	(4,159,698)
Non current liabilities			
Deferred capital grants	16, 1k	**574,659**	596,287
Borrowings	15a	**8,257,167**	8,194,029
		8,831,826	8,790,316
Current liabilities			
Trade and other payables	14	**862,382**	971,041
Loans	15a	**556,767**	539,153
Bank Overdraft	19	**142,442**	121,843
		1,561,591 -	1,632,037
		6,346,950 -	6,262,655

10. INTERNAL AUDIT DIVISION

10.1 INTERNAL AUDIT ACTIVITY REPORT FOR THE PERIOD ENDED 2016

In order to give the activity report for the internal audit Division it is also good to remind ourselves the standard definition of Internal audit which is stated below as quoted.

"Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organisation's operations. It helps an organisation accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes".

The Internal Audit Department in NAWEC reports to the Audit committee which is in line with International best practice. There is the Audit Committee charter or Terms of reference for the Audit committee that was approved by the board. Annually the Internal audit prepare it plans and submit to the Audit Committee for approval. The audit plans for 2016 were based upon risk based audit approach after identifying the high risk areas the Division developed audit plans and programs which are the tools used by the auditors to conduct their audit work in the field. The Internal audit approved plan for 2016 is stated later below on this document.

In September 2016 NAWEC Management hired a new Internal Audit Director for the internal audit functions. In 2016 the Division completed the internal audit plans for both the Technical audit unit and the Finance and Commerce unit, indicating at least more than 75% of the internal audit Universe and over 90% of the approved annual audit plan for 2016.

The Internal audit also submitted two audit reports to the Audit Committee which were discussed at the Audit Committee meeting in December 2016. The reports were an internal audit report on Payroll administration that was audited in October 2015 and also internal audit report on Meter Reading that was audited in February 2016. The audit report on payroll administration most of the findings were weaknesses of the payroll administration especially lack of independent review, and unannounced head counts to avoid paying salaries to phantom or deserted employees. There were management responses which were provided to the audit including a new payroll software that was procured from DT Associates that would take care of most of the significant audit findings raised in the report.

Most of the audit findings on the meter reading relates to the provinces, and there were action plans for corrective actions on the findings raised.

In 2016 there was the draft performance audit report on the distribution of Electricity in the Greater Banjul Area by NAWEC issued by the National Audit Office in November 2016. Management looked at the report, discussed it at the management meeting and a committee was set up to look at it in order to give management responses. These reviews were done by management and submitted to the National audit Office. This report was also shared with the Board of Directors and the Audit committee for discussion at the Audit committee meeting. Implementation plans on the recommendations made by the auditors were made that resulted to a follow up report.

The Internal audit developed the Operational risk register and identified the risk areas in NAWEC and classified them into Very High (red colour), High risk (Peach colour), Medium risk (yellow) and Low risks (green colour). These risks were reviewed regularly and the register is updated. The residual risk are those risk that cannot be manage. However, the organization identified the risk and also the risk appetite which are those risks that the organisation is willing to accept. The risk mitigation strategy were also stated which were those risks that could be avoided, transferred, reduced or accepted. The risk owners were also clearly identified and copies of the register was given to each risk owner who are the Directors and a copy was also given to members of the Audit Committee.

10.2 THE TECHNICAL INTERNAL AUDIT UNIT 2016 PLAN

AUDITS AREAS SELECTED ON THE BASIS OF RISK SCORING

Table 10.1

1. Corporate Social Responsibility Audit
2. Quality Control
3. Follow - up Audit on Electricity Generation & Distribution
4. Projects Management & Implementation Audit
5. Prepayment Services Management (Cash Power)

10.3 THE FINANCE AND COMMERCE INTERNAL AUDIT UNIT 2016 PLAN

AUDIT PRIORITIES SET BY SENIOR MANAGEMENT

1. Pre -Audits (LPOs, Cheques, Transfers etc)
2. Cash Surveys (Nationwide)
3. Annual Stock Taking
4. Year end cash count

AUDITS AREAS SELECTED ON THE BASIS OF RISK SCORING

1. Fixed Assets Management
2. Financial and Management Reporting
3. Stores Management
4. Customer Service Delivery
5. Petty Cash and Imprest
6. Follow-up Audit on Billing and Invoicing
7. Credit control and bank reconciliation audit.
8. Follow-up Audit on Procurement of Goods and Services

11. INFORMATION TECHNOLOGY

11.1 Introduction

The business value of information technology lies in the automation of business processes, provision of information for decision making, connecting businesses with their customers, and the provision of productivity tools to increase efficiency. Thus from the dynamism of the technology NAWEC also need to play in consonance to the tune of the day to achieve those deliverables. Our focus of the year in review is the achievement therein of the processes how we need to change or sustain the achievements.

Information technology (IT) plays an increasingly larger role in determining how an organization conducts business. For this reason, it is important to periodically assess where technology is heading in general and then plan for the appropriate use of technology for NAWEC.

As provider of technology the IT Division stands out to be:

- Strategically directed,
- Customer focused,
- Forward thinking,
- Results driven, and
- Outward looking.

The division accomplishes the above through a highly skilled, diverse, professional workforce.

11.2 Strategic Goals and Objectives for the year 2016

The IT goals supporting the above were:

- Provide an IT Infrastructure that Works Everywhere, All the Time
- Improve Customer Satisfaction by replacing the current legacy Billing and Accounting System with a modern and Better Application Systems
- Improve Business Processes through the Use of Technology
- Manage Information for the Corporation

- Improve the Efficiency and Effectiveness of IT Management
- Establish E-commerce Relationships with third party Institutions and customers.

11.3 The activities and operations accomplished for the year 2016 for the above goals and objectives were:

Achievement 1: Expanded IT Infrastructure that improved and provided the right physical and logical network technologies to meet the corporate and Customer needs.

Established IT operations and problem management processes such as remote access to applications to reduce the problems that adversely affect the distributed computing environment, (ITM, Prepayment Technicians can securely log on from home and manage specific centrally located systems)

- Implemented, in a timely fashion, vendor supplied core software component updates and fixes that address reliability and performance problems. (Inova fixes and MacAfee Antivirus software updates and fixes).
- Identified and corrected causes of infrastructure unreliability
- Regularly replaced aging equipment and software
- Continually researched evolving technologies, such as wireless computing, multimedia, biometric access systems, and if advantageous, incorporate them into NAWEC systems
- Improved the functionality for remote users
- Perform advanced network planning to provide an environment with flexibility and scalability for managing the anticipated or unanticipated needs.
- Provided technology that enables and supports a diverse workforce
- Developed a process to ensure, once a decision has been made to introduce new applications technology, that the technical environments are in place to support the new technology
- Provided a secure infrastructure
- Emphasized security awareness
- Provided secure financial transactions, data transmissions, and data storage, both within and outside of the Corporation

- Optimized the scope of IT backup/recovery capabilities to encompass all NAWEC computer platforms, including desktops and laptops, to serve the requirements of NAWEC business continuity plan
- Implemented security monitoring to detect and respond to network intrusions as they occur
- Defined work process for security initiatives as related to the corporate technical infrastructure
- Provided optimum customer service
- Coordinated with staff in an effort to provide IT support for corporate users in a more cost-effective manner

11.4 Improved the User and Customer Satisfaction by Delivering Better Application Systems as detailed below:

- The IT Division implemented a major computerization initiative at the new training center block at KOTU Power station to enhance computer literacy for staff and students alike.
- Upgraded and enhanced the HMI of application systems of the 'internally developed applications' around the Billing and accounting systems,(Billing and Finance Apps, Credit Control App, Galatee report App, CRM App, Medical App, HRDAD service Incentives App, Civil Works App, NASA App, IT Help Desk App,, Water borehole SCADA App.)
- Improvement carried on the finance application to cater for Budget spending measures to avoid unnecessary spending thus giving priority to the most significant area as per the need.
- The use of the internet volume increase resulting in the need to critically increase the capacity to 5MB up from 2MB.

11.5 Network Infrastructure Security

- The expansion made on the Network on both wireless and cable made it all possible for vulnerability to the security of the facilities, thus stringent measures were taken to curtail access of portable devices by both staff and customers alike for the protection of both personal and office data. Also LAP (Local Administrator Password Solution), an Active Directory based utility that randomizes and stores local administrators' passwords was

introduced. In addition to the MacAfee, Kaspersky Antivirus was used to protect our servers from infection.

11.6 Improve the Efficiency and Effectiveness of IT Management

- Improve the Management of Human Resources
    - Implement a comprehensive program for the training and retention of technical personnel
    - Maximized opportunities to create a diverse workforce
- Managed IT Costs
- Establish new IT policies, Third Party collaboration/ecommerce, operations and problem management processes
    - Tremendous achievement in, engaging several third party vending outlets (QCEll VPN, Qpower, GTBank ATM, Elton Oasis, Trust Bank Vending Outlets, Gamcel/Gamtel Scratch Power and Fiber Connection) that made services easily accessible to all customer. This also helped in putting off the pressure at the usual NAWEC outlets.
    - Tested all software in an environment in which it is expected to run before the final implementation rollout. (Qcell, QTBank, Gamcel, Africell partnership)
    -
    - Expedited the acquisition and delivery of IT hardware and software
    - Streamline the ordering process for standard software and hardware purchases
    - Managed the Corporation's IT investments
    - Continue to improve the IT strategic and tactical planning processes
    - Studied IT costs in other Divisions
    - Strengthened the inventory of the Corporation's IT equipment and software assets
    - Ensured consistent, timely communication within NAWEC
    - Improved communication between NAWEC and its CUSTOMERS

Improve on a private radio communication system for T & D, and Generation operations by installing new internal batteries on all sets.

The upgrade of the Galatee Billing System for better HMI and optimal functionality.

Expansion on a Wide Area Network (WAN) for data to include more remote Revenue Offices in rural settlement.

Successful Billing Printer parts acquisition and installation by the Senegalese Expert in collaboration with IT engineers.

The Kotu training center was successfully networked and computerized.

The Global call out success rate of 9 out of every 10 was registered during 2016 that saw drop in replacement of laptops and computers.

12. SUPPORT SERVICES

The Support Services cover:

- Procurement Management
- Transport Management

The procurement unit continue ensure smooth and prompt procurement of goods and service. The Procurement Management is responsible to the local and Overseas Suppliers to ensure stocks are replenish on time. Major achievements include introduction of good policies and procedures.

The Transport Management is in charge of the Garage located at the Headquarters and the vehicle fleet entirely controlled by the Transport Unit.

13. ANNEXES: