

# Building A Sustainable Future

**EGBIT** Sustainability Report 2015





# Our Sustainable Footprints

## ABOUT THIS PUBLICATION

This is the First Sustainability Report for Egbin Power PLC. Data in this report covers the period of January, through December, 2015. Financial Information is given in U.S. dollars and Nigerian Naira. This report was prepared using the Global Reporting Initiative Sustainability Reporting Guidelines (GRI guidelines) G4.1 Reporting Guidelines. The mission of the GRI is to promote international harmonization in the reporting of relevant and credible corporate economic, environmental and social performance information to enhance responsible decision making. The GRI has not verified the contents of this report, nor does it take a position on the reliability of information reported herein.

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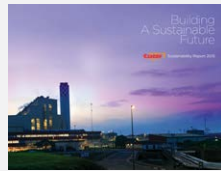


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Egbin Sustainability  
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# Welcome



## Board Chairman's Notes

As part of our continuous efforts in ensuring transparency and that the assets, operations and relationships of the organization are satisfactorily and responsibly managed, through adherence to international best practices



**E**gbin Power plc was officially handed over to KERL in November 2013 by the Bureau of Public Enterprises ("BPE") as part of the Federal Government power sector privatization program. Despite the wide-ranging challenges and increased operating costs, KERL has turned around the plant and operated the assets efficiently and satisfactorily, investing substantially in the plant since take over.

As part of our continuous efforts in ensuring transparency and that the assets, operations and relationships of the organization are satisfactorily and responsibly managed, through adherence to international best practices, we operated on the following key priorities:

- » Environmental Management
- » Business and Governance
- » Social Relations and Management



**Kola Adesina**

Chairman, Board of Directors  
Egbin Power PLC.

Board Chairman's Notes

CEO's Message



Egbin Power Plc is Nigeria’s largest power plant not only by the virtue of our generating capacity, but also because of the quality of employees we possess.

Egbin Power Plc is using this medium to reach out to all our stakeholders on how we have taken these situations as an opportunity to take a leap forward by striving to achieve sustainable growth and bringing service delight to all our stakeholders.

The report provides more information on major activities and performances that are aimed at creating and implementing a sustainable system, whilst also providing guidance on some of our future plans for business sustainability to our stakeholders.

## Environmental Management

### Greenhouse Gas Emissions Environmental Compliance

Egbin power plant is a dual fired power



plant, with the option of generating power through the use of Natural Gas or High Pour Fuel Oil. In ensuring our commitment to a sustainable environment through reduction of greenhouse and smog gas emissions, the power plant operates mainly on Natural gas, thereby minimizing the use of High Pour Fuel Oil (HPFO) in the generation process. In order to manage future natural gas availability and ensure the minimal use of HPFO, thereby avoiding any crisis relating to power generation in the country, Egbin has signed several forward gas contracts, to ensure gas supply to the power plant for optimum electricity generation for the country.

### Zero Spills Compliance

With the establishment of Egbin Power Plc health and safety initiative since take over in 2013, the employees through outstanding initiatives and proactive measures, have been able to ensure the least amount of spill by the

end of the 2015 reporting year. Some of these initiatives and measures include

- » Tripled compliance checks and tests
- » Investment in an environmental spill management system.
- » Continued awareness campaigns and programs for all staff of the company

## Business and Governance

### Rebranding of the Organization

KERL’s understanding of the need to build a sustainable organization prompted the decision to sign an “Operation and Maintenance” agreement, with Korea Electric Power Company (KEPCO) a world class electric power operator in Korea, as a technical partner.

This partnership brought with it the needed rebranding of the organization which focused not only on the technical

aspects of the organization – such as plant upgrades and rehabilitation, but also employee’s welfare through improved working environments and standard of living.

With combined efforts of all our internal stakeholders, Egbin power plant presently operates at an increased efficiency of 32%, exceeding the target of 28% for 2014.

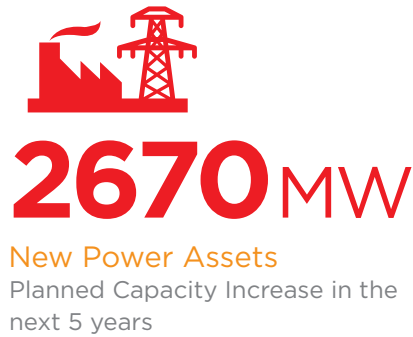
## Sound Governance and Fair Corporate Conduct

In alignment with international recommendations and best practices on governance, Egbin Power Plc has developed and approved a corporate governance framework and operational business principles to protect the company and the employees. This frame work encapsulates an anti-corruption compliance program, whistle blowing mechanism, human rights management and the company code of ethics. The implementation and operations of the corporate governance framework will take effect in January, 2016.

## Infrastructure Investment

### New Power Asset

In our quest for increased power supply to the Grid, KERL will be investing in a new power project “Egbin 2”. This is a proposed combined cycle power plant (Gas & Steam), with a capacity of 1350MW. The project is expected to



be completed over a five-year period, which will increase the total generation capacity to 2,670MW.

**Egbin Industrial Park**  
Considering the organizations’ sustainability initiatives through effective community relations, Egbin Power Plc will

be investing in an industrial park, with the aim of boosting the economy of the local community, through creation of job opportunities and strategic infra-structural developments.

## Social Relations

### Employee Management, Development and Motivation

Egbin Power Plc is Nigeria’s largest power plant not only by the virtue of our generating capacity, but also because of the quality of employees we possess. In 2015 considering the fact that Egbin is a company transiting from government management to private sector management, we were saddled with the responsibility of ensuring adequate learning and development which covered areas such as soft skills and managerial competencies, computer proficiency and new technical knowledge trainings. These learning and development initiatives were facilitated locally, regionally and internationally.

As an ethical organization, we understand the need to identify, recognise, reward and and continue to motivate our employees to achieve outstanding performance. We birthed the “Employee of the Month” initiative in 2015, where employees are beneficiaries of the benefits that accrue to this title as a reward and recognition for hard work and efforts.

## Responsible Relations with the Communities

Today, sustainability requires several commitments in creating lasting values which includes close relations with key local stakeholders in the environment and society where our organization operates. In this regard, we embarked on several corporate social responsibilities, which were not limited to: vocational trainings, supply of electricity to the health facility, rehabilitation of school facility, donation of communication equipment’s to the police area command.

Our passion in ensuring the zeal to excel, which we believe abounds among the younger generation has inspired a scholarship scheme initiative. This scholarship initiative will be coming on board in 2016.

As we continue on our sustainability journey, it is pertinent to note that as an organization, we are not excluded from the current economic realities. This is especially true as it relates to the continued increase in foreign exchange rates and our organizations ability to source for foreign exchange from the Central Bank of Nigeria.

This coupled with the expected increase in the country’s inflation rate poses a huge challenge as most of the equipment required for smooth operations are sourced from the international markets. However, we believe that this



Egbin Power Plc will make all necessary efforts towards attaining our goals as a company that will be respected by the society in embracing change in the dynamics of power generation in Nigeria as we continue to pursue higher stakeholder value.

threat would not jeopardise our business sustainability, but may impact gravely on some of our sustainability strategies either in the short or medium term, one of which is the proposed increase in generation capacity.

In terms of our strategic initiatives towards ensuring sustainability, we have through our partnership with KEPCO ensured that in the short term, there is the technical capacity to maintain our operations. We have also partnered with the National Power Training Institute of Nigeria (NAPTIN) to ensure that over the medium term that we are continually training and developing young engineers who will over the next five years become the main stay of the organization through our Graduate Engineering Program (GEP). This program, which is the first in the history of the power sector in Nigeria would provide continued human capital requirement for the organization.

In conclusion, Egbin Power Plc will make all necessary

efforts towards attaining our goals as a company that will be respected by the society in embracing change in the dynamics of power generation in Nigeria as we continue to pursue higher stakeholder value. To that end, we will continue to maintain open communication with all our stakeholders and pay close attention to what they have to say about our relationships.

I use this medium as an inaugural and continuous opportunity to ask for the support and encouragement of all our stakeholders towards achieving our goal of “being the provider of choice wherever ENERGY is consumed”

Thank you

**Kola Adesina**  
Chairman, Board of Directors  
Egbin Power PLC.



“As an ethical organization, we understand the need to identify, recognize, reward and continue to motivate our employees to achieve outstanding performance.”





# CEO's Message

Our commitment to building and improving the relationships with our surrounding communities and the society in general is key part of the company's sustainability targets

The 2015 Sustainability Report for Egbin power Plc is the first of what will subsequently be an annual report on the impact of our business, following the transition from a government owned and managed organization to one owned and managed by private investors in November 2013.

The report addresses our corporate responsibility and stakeholder engagement and addresses areas of

achievements and potential concerns as regards our business operations.

The report has tried to capture major milestones and concerns and provides guidelines to the strategic initiatives that have been conceptualized and developed over the last two years since takeover of the business operations in a bid to ensure we operate responsibly despite several challenges that has come about as a result of the change in orientation from a



**Dallas M. Peavey Jr.**  
Chief Executive Officer  
Egbin Power PLC.

government managed business to one that is managed by private investors.

## Major Accomplishments and Disappointment Employment of Trainee Engineers

Upon coming on board in 2013, we recognized the fact that though the organization had an assembly of experienced employees, there was a gap as most of the technical operators and management employees of the plant had several years of experience without enough pool of replacements in the event of succession, if there was the need for exits. In view of this and our commitment to sustainability, we developed and implemented the first ever Graduate Engineering Program in collaboration with Ikeja Electricity Company where over 100 graduate engineers were trained to strengthen our work force of engineers, with 33 young men and women. Our Trainee Engineers have been exposed to technical and management trainings. With the combined effort of National Power Training Institute of Nigeria (NAPTIN) , Integral Assets Limited and technical partners KEPCO, we have developed and are currently implementing a career management model that will bring about proper succession plans for all the departments of the organizations, preparing them as

solution providers, for the challenges of the power sector.

### Energy Efficiency

In comparison to the previous years of operation, the household lighting consumption within the plant complex has reduced significantly by 55%. This reduction in consumption is credited to the energy management program adopted by the organization, when we embarked on the installation of energy saving bulbs and proper maintenance of photocells on the street lights.

As part of our efforts, in reducing energy consumption, we partnered with KEPCO in the refit of 3 generating units within our asset. The aim of the refit was to bring the facility up to date with the latest technology in power generation. The refit included the upgrade of the control system to the Emerson™ Ovation Distributed control system.

With this giant stride, we not only exceeded the set target for efficiency for by 4%, we were also able to increase our available generating capacity by about two times from an average generation capacity of 550MW to about 1000MW.

### Improved Generation

Before the takeover and up until the early part of 2015, Egbin had been unable to generate averagely beyond 45% of its installed capacity. However,

In our continuous efforts “To be the Provider of Choice where Energy is Consumed” the organization is investing in a Combined Cycle Power Generating asset which is expected to be completed by 2020

## 1100MW

### Milestone Achieved

Egbin exceeded the 45% average generation for the first time in over a decade after takeover

considering the improvement in the assets undertaken between the last quarter of 2014 and the first quarter of 2015, Egbin exceeded the 45% average generation before takeover and in the second quarter of the year hit a milestone of 1100MW generation. This had not been archived by the organization for over a decade.

### Financial Strength

Since the transition from a government managed organization to one managed by private investors, the organization has embarked on major rehabilitation of the generation plant and other facilities within the power plant complex.

In 2015, about 25 Billion Naira was invested in the rehabilitation and upgrade of the plant facility to the modern digital technology control system. This rehabilitation is inclusive of the sixth generating Unit, which has been dis-functional for about a decade.

As it relates to human capital development, the organization has invested the sum of 153 Million Naira in the recruitment, training and development of the employees.

Despite these huge achievements - human capital investments and plant facility development towards



generating more power for the country, we have been faced with the major challenge of receipt for the sale of energy sold from the major stakeholder. During the year, the levels of receivables peaked at N57 Billion of which we had received about N11.4 billion representing about 20% of the receivables. However, we believe this is no deterrent to our sustainability as we are continuously dialoguing with all the relevant stakeholders to ensure payments for the outstanding receivables.

## Our Commitment Towards Building a Sustainable Organization

In our continuous efforts “To be the Provider of Choice where Energy is Consumed” the organization is investing in a Combined Cycle Power Generating asset which is expected to be completed by 2020. This project with an estimated capacity of 1,350MW would be the biggest combined cycle power generating asset in Nigeria. This investment will increase the installed generation capacity of the organization’s generating asset by 100%.

Asides the proposed investment, the integration of Sustainability into Egbin’s operational strategies has triggered new conservatory objectives, for the protection and safety of our environment and society.

As such, the organization has embarked on revamping its sewage treatment facility. This facility has been in a dilapidated state for several years before takeover and transition in 2013. The revamping was fostered from the need to further protect the aquatic life of our surrounding water body, through improved quality of the waste disposed from the generating plant.

Although we have put in place international standards for management of oil spill, in April 2015, we recorded a minor (Tier 1) spill according to NOSDRA classification on oil spills. The spill was adequately contained and reported to government agencies responsible for the management of such activities for further investigation in line with our governance practices. Following their report on their findings, the organization has adopted several preventive measures to ensure a “Zero Spill Compliance” going forward. These initiatives will be highlighted in the next reporting year.

As an organization that believes in a system that encourages the participation and involvement of our people in its operation, we are working on improving the diversity of our employees to be more reflective of gender. Though we are yet to attain the desired level of our gender diversity initiatives, we have started the implementation from the management team where we have 2 female members in the execu-

tive management team comprising of 7 members. Our goal in respect of gender diversity is to increase the current population of women in our work force from the current level of 10% to at least 20% over the next five years.

Our commitment to building and improving the relationships with our surrounding communities and the society in general is a key part of the company’s sustainability targets. In view of this, we have continued to embark on projects and programs that will continually provide us with a social licence to operate within our society. These corporate responsibility initiatives have led to increased ability to generate power and also helped in improving the standard of living within the communities around the power plant.

Building on the rebranding and reorientation of the organization, which kicked off in Egbin following the takeover by KERL in 2013, the Board of Directors of Egbin have approved fusing transparency and effective governance through several policies, in the long term vision of the business. These policies will be adopted by the organization in 2016.

Though our journey of reporting on our path to continuous sustainability has only just begun, it is believed that the report will provide an insight into our strategic initiatives that have been conceptualized and developed in our bid to ensure we operate responsibly in

implementing these initiatives.

***We would be appreciative if we receive any and all objective feedback on this report through our website - [www.egbin-power.com](http://www.egbin-power.com) or through our Corporate Governance email address at [corp.gov@egbin-power.com](mailto:corp.gov@egbin-power.com).***

Thank you  
**Dallas M. Peavey Jr.**  
Chief Executive Officer  
Egbin Power Plc.







# Profile



Overview

Living Our Core Values

Corporate Governance

Business Blueprint

Egbin Plant Description



**E**gbin Power Plc (Egbin) which is located within Egbin Town, in Ikorodu Local Government of Lagos State, South West Nigeria, is the largest power generating plant with over 30 years of operation. Egbin contributes over 20% to the overall generation output of electricity in the country.

In 2013, The Sahara group, through a special purpose vehicle – KEPCO Energy Resources Limited (KERL) acquired 70% shareholding in Egbin. The asset was officially handed over to KERL in November 2013 by the Bureau of Public Enterprises (BPE) as part of the Federal Government power sector privatization program. As at December 2015 Egbin electricity generating portfolio had an in-service capacity of 1320 megawatts (MW).

Egbin Power owns and operates Six 220 megawatts (MW) Steam Turbines, one 24 megawatts (MW) Gas Turbine and one 1.5 megawatts (MW) Diesel Generator. The steam turbines are dual-fired (natural-gas and high pour fuel oil).

Egbin operates a closed cycle system of power generation. The process involves getting ground water from the wells, after which the water is pre-treated and separated into Portable water (Human Consumable) and Process water. The process water is further treated, through different resin vessels, rang-

ing from anion, cation, mix-bed resin vessels, etc., after which it comes out as demineralized water. The demineralized water is pumped into a 705 tons/hour boiler, where it is heated through a series of convoluted tubes, to attain a temperature of 541 degrees centigrade at a pressure of 12,500Kpa. At this temperature and pressure, the fluid is termed superheated steam.

The superheated steam is sent into the steam turbines, which shares the same shaft with generator rotor. The steam sent into the turbine, causes the rotation of the shaft.

The steam turbine is divided into three - High Pressure turbine, Intermediate Pressure turbine and Low pressure turbine. The superheated steam leaves the boiler and passes through the High pressure turbine, which has 8 stages (Blade and Nozzle). Upon leaving the High Pressure turbine (HP Turbine), it is resent into the boiler for further heating to gain more heat energy, before passing through the 6-stage Intermediate Pressure Turbine (IP Turbine). The steam at this temperature and pressure, still possessing some energy, passes through a cross-over pipe into the 10-stage Low Pressure Turbine (LP Turbine) for further energy extraction.

Once sufficient energy has been extracted from the steam, having passed through the three turbines, the steam falls into a shell and tube condenser,

where it is cooled by lagoon water, till it is turned into liquid (condensate) in the hotwell. The condensate is pumped from the hotwell, through a series of heaters, to improve the temperature before it is sent into the boiler for further heating, and the cycle continues.

Due to the fact that the steam turbines and generator rotor share the same shaft, the rotation caused by the passage of the steam, through the stages of each of the turbines, causes a rotation of the generator rotor at 3000 revolutions/minute (RPM), which is enclosed by stator windings. The generator converts the mechanical energy in the rotation of the shaft into a set of 3-phase Alternating Current electric voltage of 16KiloVolts, one from each of the windings of the generator, which are further stepped up, by a generator transformer to 330KV, before being exported to the grid system.

Due to the effects of friction, and also heat generated in the process of the electricity generation in the generator, hydrogen gas is used for cooling the windings. Their unique property, such as high thermal conductivity, high specific heat capacity and low density has made hydrogen most suitable for cooling.

Egbin produces hydrogen gas through the process of electrolysis of water, thereby separating hydrogen from oxygen. Hydrogen gas was selected over other gases with higher thermal

conductivity, in order to ensure that the cost of generation is at its minimum in order to be able to deliver electricity to all our various stakeholders at the least possible costs.

## Key Timeline

1985  
Date established

2007  
Initial acquisition date

2013  
Final Handover to private management

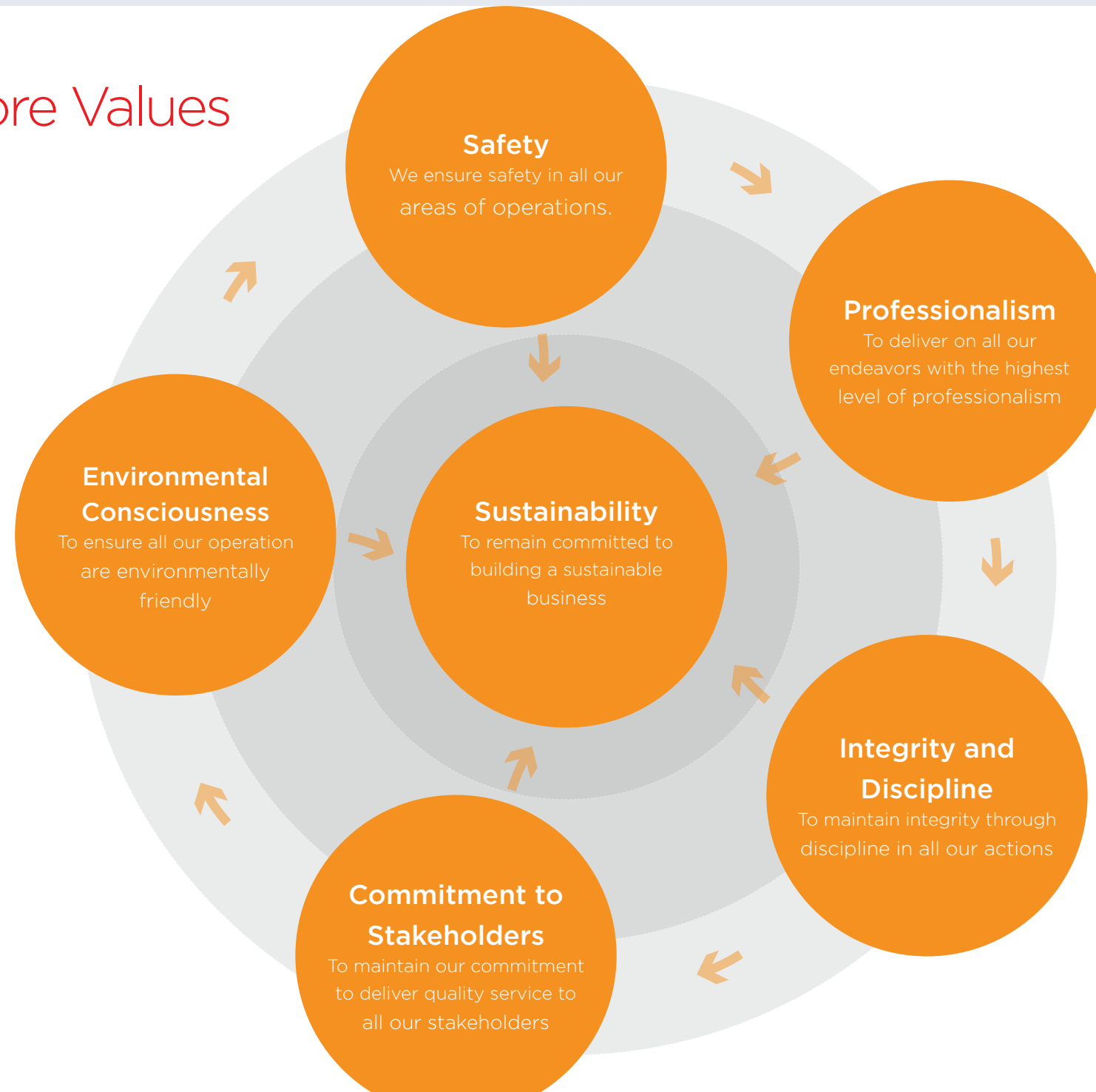
2015  
First time ever to generate over 1000MW of electricity after take over

## Living our Core Values

Following our transition from a government agency to a full-fledged private commercial organization, Egbin Power PLC's perspective to sustainability is gradually transforming to one of stakeholder value creation.

Sustainability is at the heart of our operations, services and maintenance programs, by these means, we ensure that we are always living our core values.

This is captured through **SPICES**



## Our Vision

Our vision is “To be the provider of choice where energy is consumed”

## Our Mission

We transform through sustainable and reliable innovation in energy generation, connecting lives and positively impacting livelihoods.



# Corporate Governance

Egbin as presently constituted has instituted corporate governance structures to enable effective implementation of the company's processes, procedures and policies.

In controlling, directing operations and implementing processes, the responsibilities of the relevant stakeholders are explicitly expressed in a way that assures operational excellence whilst functioning in a regulatory and social environment.

The Egbin corporate governance framework defines professionalism, establishes our Code of Ethics, professional and business conduct, and operational value systems, that clearly set out the principles and guidelines by which we conduct our business with all our stakeholders.

Our codes and core values have been embedded in our systems in order to form a mechanism through which sound governance is provided from the most senior decision making level – the Board of Directors, to the executive management and down to the line managers and employees.

**Our codes and core values have been embedded in our systems in order to form a mechanism through which sound governance is provided**

## Board of Directors

Upon takeover of Egbin Power PLC by KEPCO Energy Resource Limited (KERL) – the preferred bidders for the power asset, the organization held its inaugural board meeting in November 2013, where a new 7-member board was inaugurated and the Board charter guiding the operations of the Board approved.

In line with the Board Charter, some of the main responsibilities of the Egbin Board of Directors include – company policy formulation, enterprise risk management framework design, performance accountability and responsibility, corporate governance and MEMART adherence.

Others are ensuring effective internal control system, performance appraisal of senior management and board members, and overseeing a sound communication mechanism through the Board approved communication policy and effective stakeholders' dialogue.

The instruments of sound corporate governance are designed and approved by the Board of Directors of Egbin Power PLC for implementation and execution by the Corporate Governance and Compliance Department of Egbin Power Plc to foster the values, principles, standards and norms of behaviours enshrined in our corporate governance guidelines, codes of ethics and human resource guidelines.

In addition to the traditional roles of setting the pace and having an oversight responsibility for current and future development; and determining and reviewing company strategies, goals and policies, the Board which consist of seven members, ensures that there is a system through which the Board Committees (Audit, Risk and Governance Committee; Finance, Investment and General Purpose Committee; and Technical and Operations Committee) oversees the efficiency, effectiveness and adequacy of the organization's internal control systems. This includes and is not limited to the provision of an Enterprise Risk Management Framework and the delegation of authority matrix to guide the executive management in managing the day to day operations of the Company.

Accordingly, the procedures and structures that are functions of our internal controls and risk management system are geared towards assuring our stakeholders on the achievement of our set objectives in operational effectiveness and efficiency, reliable regulatory and financial reporting, and compliance with laws, regulations and policies.

By this, we identify, assess and prioritize risks in order to mitigate, monitor and control the potential chance of liability and loss, whilst maximizing the realization of opportunities.

# Business Blueprint

The business of power generation in Nigeria is one that requires substantial financial and professional commitment. As such we have realigned and created an environment that works and functions with integrity and compliance with relevant guidelines and regulations, considering the fact that the company operates in a firmly regulated industry that demands adherence to industrial regulations as stipulated by the Electric Power Sector Reform Act 2005, the Nigerian Grid Code, the Nigerian Electricity Regulatory Commission (NERC) guidelines and Code of Corporate Governance, the directives of the Federal Ministry of Power amongst others.

As a result, the company operates its business in compliance with the highest safety, operational and maintenance standards required to position the company in tangent with internationally acclaimed best practices.

Considering the nature of our business, we are typically at the center of the energy value chain in Nigeria. This is because, we generate power using natural gas from the Nigerian Gas Company, and then wheel out the power to

the Transmission Company of Nigeria, who then transmits it through the grid to the electricity distribution companies and onward to the consumers.

For a power company like ours, we basically deal with the Transmission Service Providers, the Nigerian Bulk Electricity Trading Plc and the Market Operators. Others are the System Operators, the Nigerian Gas Company and the Nigerian Electricity Regulatory Commission.

The Transmission Company of Nigeria's Switch Yard



## Executive Management

In ensuring that the goals, objectives, policies and corporate strategy established by the Board of Directors of Egbin Power PLC are completely executed and achieved, the daily operations of Egbin Power PLC have been consigned to the direction and control of the executive management team led by the Managing Director and Chief Executive Officer - Dallas Peavey Jr.

In optimizing our business operations and processes in order to make certain that our business strategy is efficient and sustainable, the management team have broadly categorized our employees into two major divisions: Technical Services and Business Support Services.

The Technical Services division are the departments that are involved in the operation and maintenance of the power plant, whilst monitoring its conditions, ensuring its optimal efficiency and assuring a safe work environment.

The Business Support Services division are the operations departments which are focused on ensuring the smooth run of the day to day activities. They ensure that human resources are adequately allocated; the information technology infrastructure functionality is maintained, the safety and security of staff and equipment is guaranteed; and projects and investments are funded and monitored while ensuring employees are timely paid.

The management team comprises of the Chief Executive Officer, and the heads of departments: - Operations, Instrumentation and Control, Turbine Maintenance, Boiler Maintenance, Electrical Maintenance, Management

Information System, Human Capital Management, Finance and Accounts, Procurement and Information Technology.

The executive management team meets on a weekly basis in order to avail the opportunity to chart paths needed to accomplish the goals, targets and objectives set by the board for the organization.

For a sustainable stakeholders' value creation, the organization structure of Egbin has been redesigned to reflect the ensuing departments and their various units:

### Executive Management

- » **Chief Executive Officer**
- » **Chief Financial Officer**
- » **Plant Director**
- » **Human Resource Manager**
- » **Operations Manager**
- » **Chief Security Officer**
- » **Legal Adviser**

A cross section of some of the Egbin Executive Team and Management Team



### Management Team

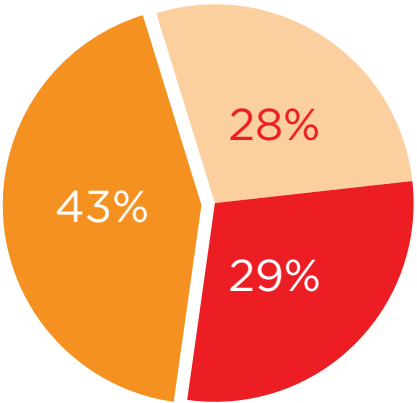
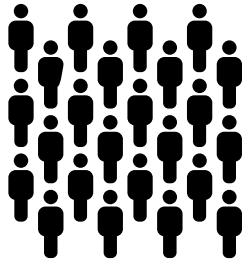


- Chief Executive Officer – CEO
- Head Information Technology - IT
- Head Projects
- Head Management Information System - MIS
- Head Legal
- Head Procurement
- Head Operation
- Head Operations Training
- Head Maintenance
- Head Compensation
- Chief Security Officer



- Chief Financial Officer – CFO
- Head Human Resource
- Head Health, Safety & Environment - HSE

### Number of Staff



● 30 - 40 ● 41 - 50 ● Above 50

### Technical Services

- » **Boiler Maintenance**  
Responsible for the maintenance and repair works on the steam generator, including its pressure parts, valves, furnace, tubes, piping and the boiler auxiliaries.
- » **Turbine Maintenance**  
Responsible for the maintenance of the high pressure, intermediate pressure and low pressure turbines; boiler feed pumps, power house equipment, water intake area pumps and equipment, hydrogen plant and other turbine auxiliaries.
- » **Electrical Maintenance**  
Responsible for the maintenance of power transformers, circuit breakers, plant electrical system, electric motor valves, and other electrical equipment.
- » **Shift Operations**  
Operate the boilers, turbines and generators (BTG) in order to generate power. The local plant operators operate the plant from within it, while the BTG operators operate the plant from the central control room.
- » **Efficiency**  
Responsible for the condition monitoring of the plant in order to guarantee optimal plant efficiency.
- » **Instrumentation and Control Maintenance**  
Responsible for the maintenance of the distributed control system, process equipment, the equipment protection systems and automatic controls.
- » **Health Safety and Environment**  
Responsible for reducing hazards and risks as low as reasonably practicable.
- » **Chemistry Operations**  
Responsible for the production of demineralized water, fresh water and potable water. Also responsible for boiler water quality assurance and quality control.

### Business Support Services

- » **Human Resource**  
Responsible for the allocation of personnel to their functional areas.
- » **Maintenance Planning**  
Responsible for scheduling, planning and monitoring maintenance programs and outage jobs.
- » **Projects**  
Responsible for the initiation,

planning, execution, monitoring and control of projects.

- » **Procurement**  
Responsible for our supply chain management system and procurement management process.

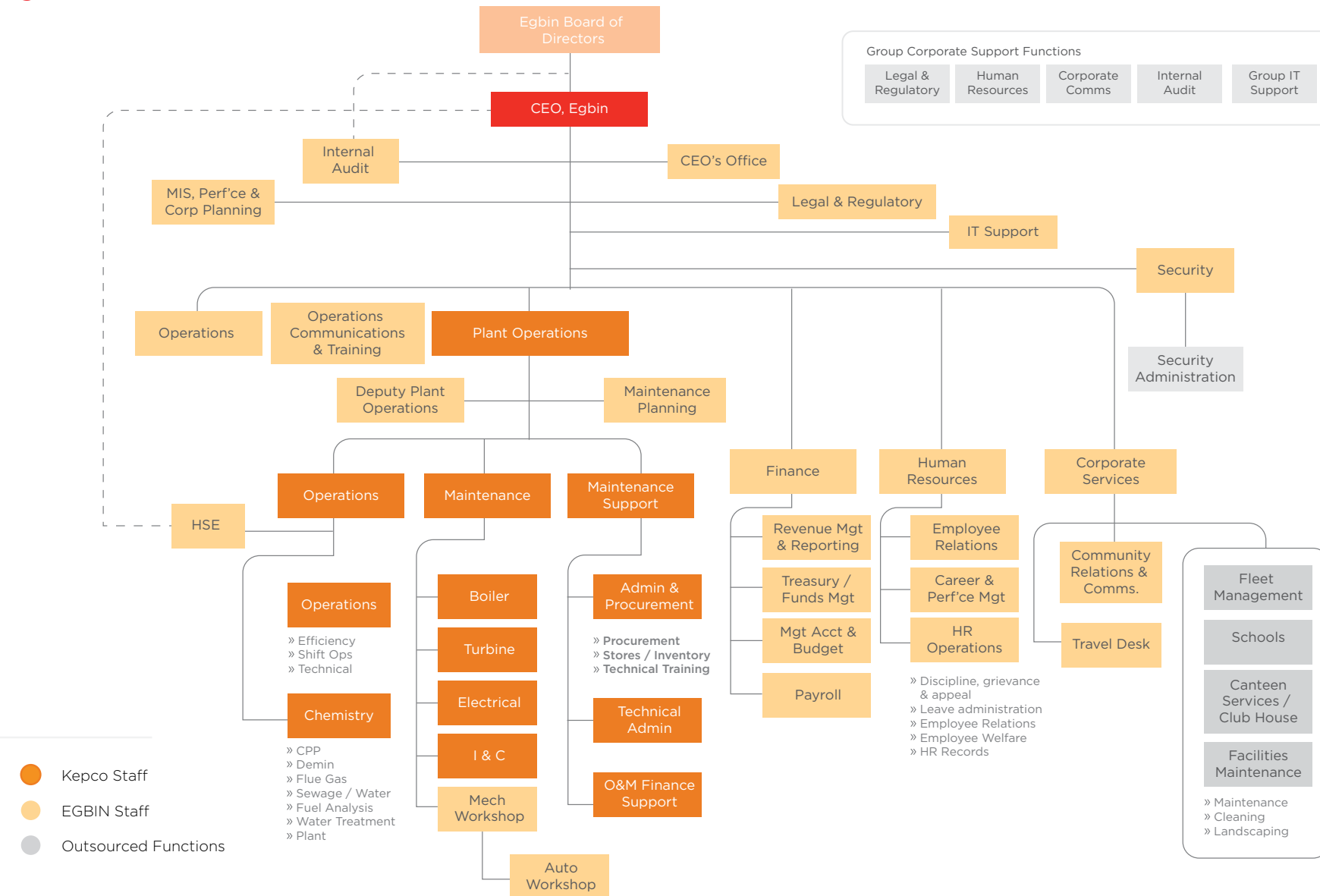
- » **Information Technology**  
Responsible for internal and external communications, emailing system and internet maintenance.

- » **Security**  
Responsible for providing a safe and secure work environment that is free from threat and danger.

- » **Corporate Finance**  
Responsible for controlling expenditures and revenues, manage investments and account for assets and project expenditures.



## Organizational Chart



## Egbin Plant Description

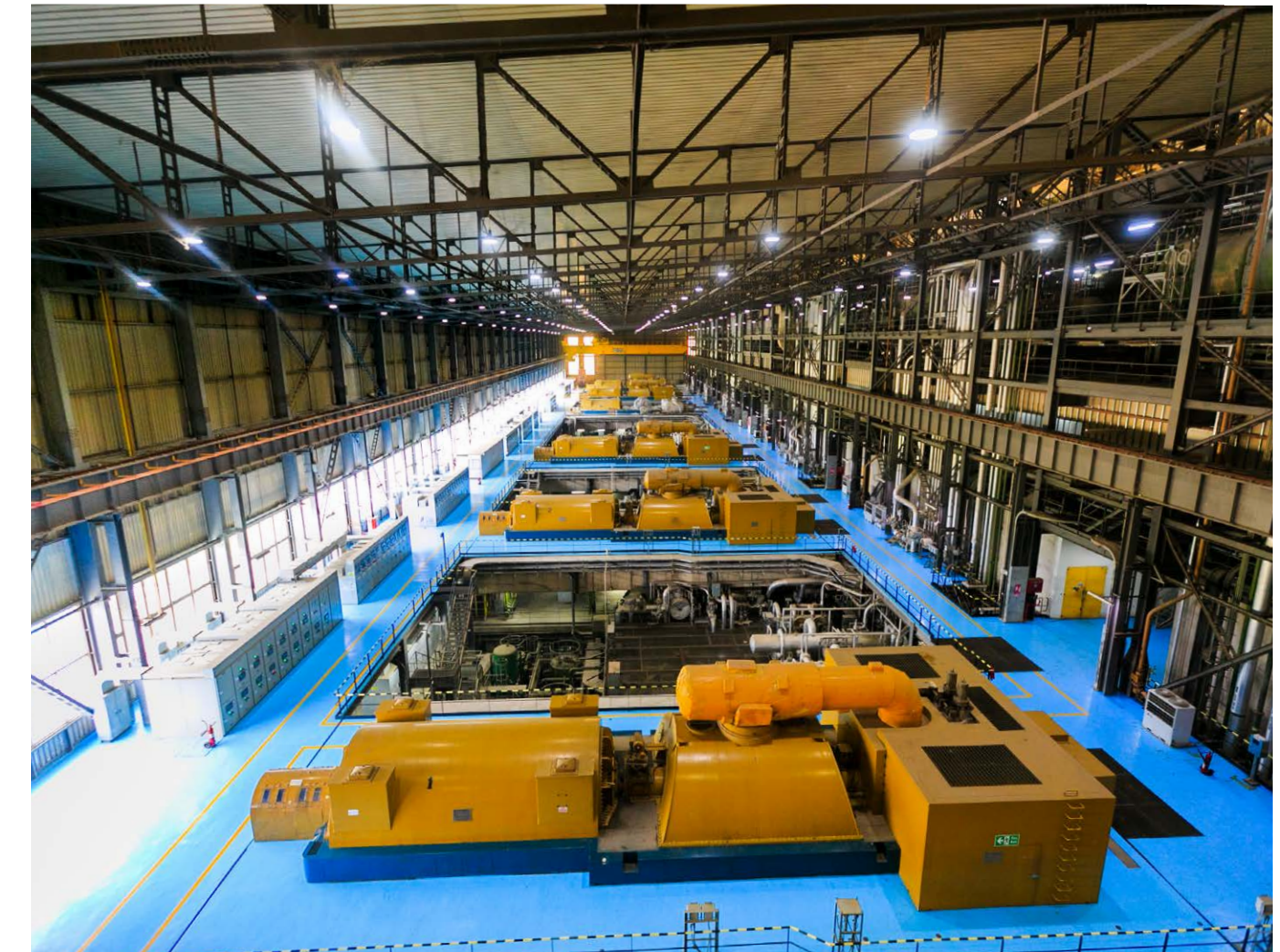
Egbin power station is a self-contained gas and oil fired steam electric generating station, with an associated housing colony for staff, owned by the Egbin Power PLC, Lagos Nigeria.

The station has an initial capacity of 1320MW with provision for future expansion. The initial capacity consists of six steam generators -turbine generators of 220MW nominal capacity each, housed in a single support structure and enclosure.

Each unit comprises a steam generator with reheat and super heat cycles, an extraction steam turbine with automatic run-up and supervisory systems and a hydrogen cooled generator with auto synchronization and voltage regulation.

Combustion air is provided by two 50% duty forced draft fans, the feed water cycle comprises a steam surface condenser with air ejectors, tube cleaning equipment, two 100% condensate extraction pumps, three 50% duty electric boiler feed pumps and feed heating trains of three low pressure heaters; one deaerator and two high pressure heaters.

Fuel is supplied to the units from com-



The Six 220 Megawatts (MW) Steam Turbines



mon handling systems. Fuel oil is stored in four main storage tanks and distributed to the unit via six intermediate storage day tanks. Natural gas is provided via a high pressure gas line; however pressure is reduced before distribution to the units. The units are capable of full load operation on both natural gas and fuel oil. Natural gas is used for burner start-up and liquefied petroleum gas is available from storage to permit operation with oil if natural gas is unavailable for burner start-up.

Water is required to make up losses due to blowdown, vents and drains is provided from a common water treatment plant. Raw water is available from a series of deep wells. Cooling water is supplied by a circulating water system, a closed circuit cooling water system, and a common services cooling water system. The circulating water system draws cooling water from the lagoon for the turbine surface condenser and the closed circuit cooling system heat exchangers. The closed circuit cooling system services the steam generator and turbine auxiliaries. Two 50% duty circulating water pumps are provided for each unit. The pump discharges are interconnected as follows:

- » Discharges of unit 1 and unit 2
- » Discharges of unit 3 and unit 4
- » Discharges of unit 5 and unit 6

These interconnections allow three circulating water pumps to supply two units. The common services cooling



system services the station and compressors, the hydrogen generation plant and the Heating Ventilation and Air Conditioning (HVAC) facilities.

The flue gas, after passing through gas/air heaters, is exhausted to atmosphere through one of the two stacks. Instrumentation is used to monitor the flue gas and ensure its compliance with environmental requirements. The station is operated from a central control room with provision for control of ix units, common services, electrical distribution and high voltage switchgear. Telephone, public address and



clock systems are provided for the coordination of control activities remote from the control room.

The station electrical distribution system is engineered with a minimum of two alternate supplies to each voltage distribution level. A 415V emergency diesel generator is provided to supply the power for a safe shutdown of the unit in case of unit trip and external sources of power are not available. A gas turbine is provided to supply power for station auxiliaries during a black start.

A high voltage switchyard is controlled from the central control room. Individual unit transformers, three station

service transformers and a black start transformer are provided to ensure the availability of power within the station and to control the connection and dispatch of load to the grid system. 6.6KV station boards, which are connected to the 330KV or 132 KV systems through the station service transformers, feed common services such as air compressors, fuel oil transfer pumps, general plant lighting, HVAC etc. thus utilizing the grid to supply the station auxiliaries.

The electrical arrangement is such that during normal operation, unit auxiliaries are fed from the 6.6KV unit board, which is connected to its own generator through a unit service transformer. For start-up purposes, the auxiliaries of







each pair of units are also served by a 6.6KV station service board.

In line with this concept, the transfer of load is from the 6.6KV station board to the 6.6KV unit board after start-up and synchronization with the system, and from the 6.6KV unit board to the 6.6KV station board prior to shut down.

The black start gas turbine is connected to the 11KV board and provides a source of 6.6KV start-up power through the black start transformer and 6.6KV black start board. A 33KV local-infeed is connected to the 11KV board through a 33/11KV substation transformer and provides back-up power to the housing colony loads and fresh water wells.

415-volt unit auxiliary boards are connected to the 6.6KV unit boards through unit auxiliary transformers and feed 415-volt station loads. 415-volt station auxiliary boards are connected to 6.6KV station boards through station auxiliary transformers and feed 415-volt station loads. The emergency diesel generator (EDG) is connected to the 415-volt EDG service board and provides an emergency source of 415-volt power for essential services. The following station auxiliary systems are provided which do not participate directly in the generating process but are necessary for plant operation:

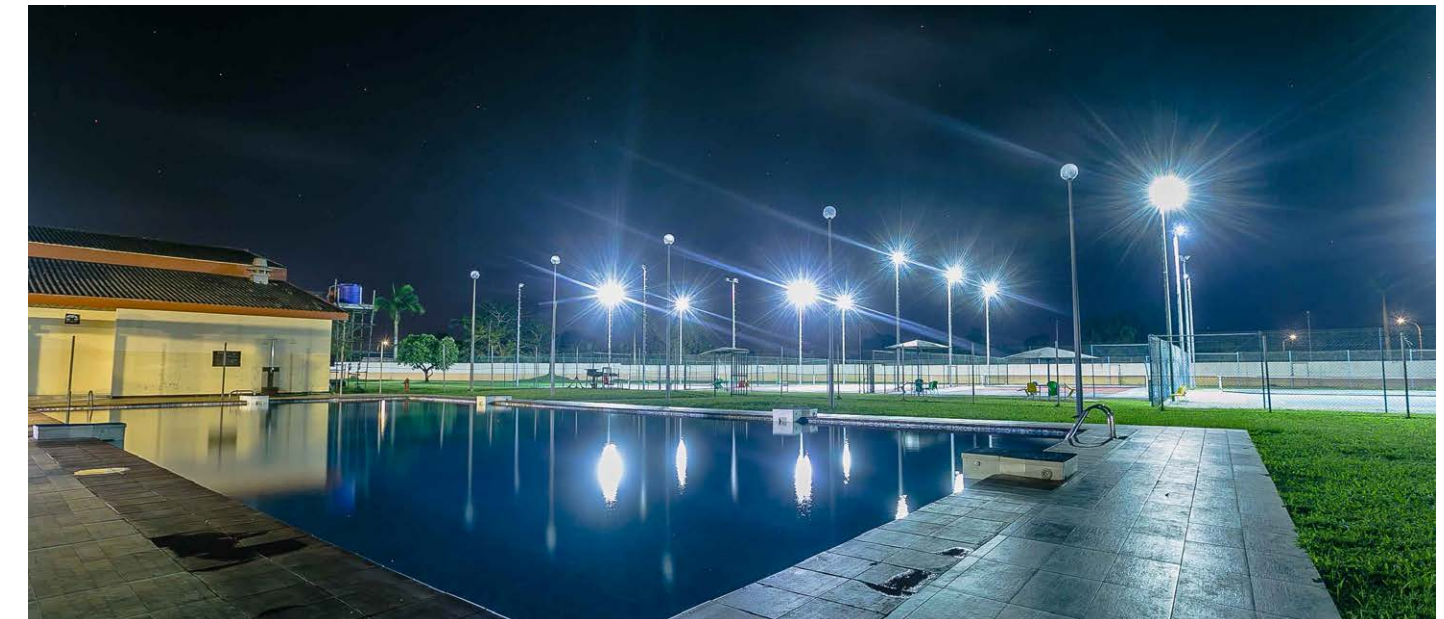
- » HVAC system
- » Firefighting system
- » Plant Waste water system
- » Plant sumps



- » Hydrogen generation
- » Water Treatment
- » Sewage facilities
- » Fuel unloading and transfer facilities

These facilities are controlled locally.

A self-contained housing colony is provided for the convenience of operational staff. Full community and recreational facilities include a staff club, medical treatment centre and sports field. Provisions are made for a shopping centre, police station, bank and post office. Utilities and sanitary services are provided to internationally accepted standards. Access to the station is available by road, by sea to the station wharf and by air via the helicopter landing area.



















# Key Figures



**₦46.3  
Billion**

Outstanding  
Debts Due To  
Egbin



**1100  
MWh**

Generation  
milestone  
achieved



**5.47  
Million  
MWh**

Total amount of power  
generated in 2015  
reporting year



**98%**

Capacity test score  
achieved for first  
time in 12 years



**388**

Total number  
of staff in  
Egbin



**107**

Number of  
graduates trained in  
the Graduate Trainee  
Programme



**10**

Community  
CSR Programmes  
implemented



**0**

Amount of Spill  
incidents in  
reporting year



# Sustainability Development Goals (SDG)

	GOALS	SPECIFIC PROJECT(S)
	<b>Alleviate Poverty in all its forms in the community</b>	» Economic empowerment project in Ijede.
	<b>Prevention of Malaria Outbreak in the community</b>	» Upgrade of Community Health Center Facility » Montly Donation of Malaria prevention Drugs
	<b>Ensure Sustainable quality education for all ages</b>	» Establishment of Powerfield Group of Schools for Children » Economic Empowerment Project in Ijede for boat technicians, boat drivers, and tailors
	<b>Archieve Gender equality empowering females in the Industry</b>	» 10% of total staff strength are females » Vocational Skill Training for Women in the Community » Management positions occupied by women
	<b>Ensure availibility and sustainable management of water for all communities</b>	» Provision of Boreholes and water handling faciilites within every surrounding community
	<b>Ensure access to affordable and clean energy for all</b>	» Clean electricity production using Natural Gas

	<b>Promote Sustainable Economic growth and productive employment</b>	» The overhaul projects on the Plant, provided employment for indigenes of the local communities » Recruitment 33 young engineers, 15% being beneficiaries from the local communities
	<b>Develop quality, reliable, sustainable and resilient infrastructure, to support economic development</b>	» Upgrade of Steam Turbine Control System to a digital Distributed control system
	<b>Ensure access for staff to adequate, safe and affordable housing and basic services</b>	» Donation of Communication equipments to Local Police station » Upgrade of recreational and hosuing facilities within housing colony
	<b>Ensure sustainable management and efficient use of natural resources</b>	» Installation of water consumption totalizers
	<b>Integrate climate change measures into company policies, strategies and planning</b>	» Establishment of Green Areas in the power station » Clean electricity production using Natural Gas
	<b>Prevent and significantly reduce marine pollution of all kinds.</b>	» Oil spill management training and awareness of staff member » Installation of containment boom





# The Egbin Sustainability Report

## Commitment to Sustainability

**A**s a power company, we at Egbin understand that we have a tremendous role to play in the growth of the Nigerian economy. As studies have shown that the continuous increase in energy consumption is quite consistent with Gross Domestic Product (GDP). However the energy consumption in Nigeria is increasing at a quicker rate than the GDP. Therefore, in view of the privatization of the power assets in Nigeria and our takeover of Egbin Power PLC, we have started to meet the energy needs of our stakeholders and consequently have become the major power generator to the national grid.

Our unwavering commitment to the sustainable development of Egbin may be gauged from the fact that shortly after the takeover of the power asset from the Federal Government of Nigeria, Egbin in collaboration with our technical partner - Korea Electric Power Corporation (KEPCO) undertook the major overhaul of three out of our six boilers, steam turbines and generators. In the course of the overhaul, corrective and preventive maintenance were also carried out, as old and defective parts were discarded and replaced.

Consequently, having applied highly

In this 2015 sustainability report - being the maiden edition, we focused on significant and material issues that outlines Egbin's commitment to sustainable development.

**98%**  
Capacity test score achieved for the first time after 12 years

effective management tools in a system that was restructured by KPMG, and also utilizing our redesigned maintenance management system, we maintained peak energy generation output for an extended period. This feat drew the attention of millions of Nigerians who experienced improved power supply. Also impressed were the Nigerian

Bulk Electricity Trading PLC (NBET), Nigerian Electricity Regulatory Commission (NERC), National Control Centre (NCC) and the System Operators - who out of incredulity visited Egbin in November 2015 to perform a capacity test on all six steam turbine units.

Having established such a well governed and sustainable system, our credibility is not in doubt and have proven that we can operate and sustain all six units. It is worthy to note that the operations and sustenance of all six units has for the first time after twelve (12) years come to effect, which has resulted in a capacity test score of 98%. In addition, we provided on an hourly basis an average of 200 Mega-Watt spinning reserve. In the same vein, our frequency responsiveness was also tested by the West African Power Pool and was certified worthy in November 2015.

Even as we face several challenges in the Nigerian power industry in the calendar year 2015, from natural gas limitation to restricted power evacuation and many more, we nonetheless are undoubtedly committed to bring energy to life in Nigeria because we believe that we have the capacity and are well positioned to help grow the Nigerian economy with availability of electricity.



## Focus on Material Subjects

In this 2015 sustainability report - being the maiden edition, we focused on significant and material issues that outlines Egbin's commitment to sustainable development and presents the environmental, social and economic performance of our power generation business activities in our facility, locality and national economy. The focus of this report is on the sustainability issues that are most material to Egbin's stakeholders and the company's achievement of strategic goals. These materials issues were formally identified in an assessment undertaken by means of which environmental, social and economic issues related to Egbin business were evaluated and ranked, based on their impacts on the business and importance to stakeholders. Internal stakeholders input was obtained through questionnaires and interview with senior Egbin operation and maintenance management leaders to identify and discuss the issues they consider to be the most important to Egbin's present and future power generating operations. The views of Egbin's external stakeholders were assessed by evaluating materials such as survey and questionnaire results, obtained from topics discussed at community meetings, environmental agencies' priorities and requests for information submitted to Egbin.

## Data Credibility

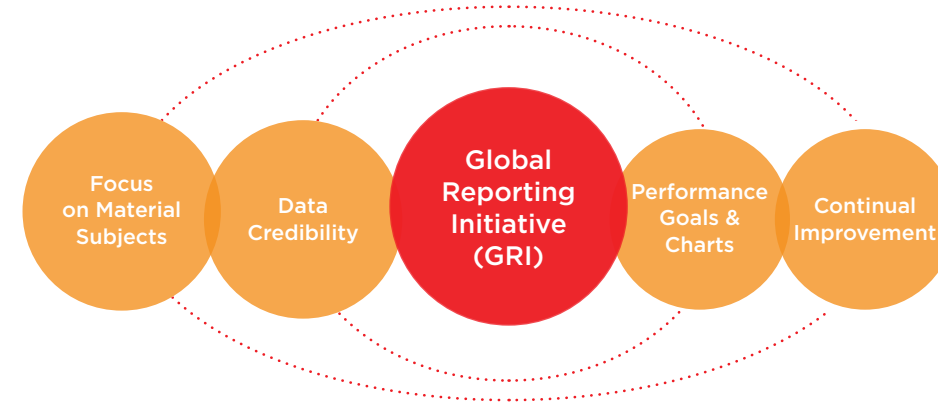
Accuracy of the data provided in this report is assured through internal reviews. Operational and performance data is validated by line management reviewers, and prescribed data is subject to assessments and audits as part of Egbin's commitment to transparency.

Egbin is a major stakeholder in the Nigerian electricity market, therefore Egbin's sustainable development data and practices are periodically verified by an independent auditor as part of industry regulations to ensure information is accurate and credible. Efforts are being made to ensure that subsequent sustainability reports are subjected to reviews by third-party and independent assessors.

Furthermore, an audit of Egbin's consolidated financial statements by independent external auditors concluded the statements present fairly the financial position of Egbin. The consolidated financial statements and management analysis can be accessed as by internal and external stakeholders.

## Performance Goals and Charts

The graphs in this report provide a visual presentation of information



and high-level conclusions related to performance. The graphs tend to summarize overall performance trends. Consistent with international standards, Egbin has established targets for select parameters to measure and monitor performance and drive continual improvement.

## Continual Improvement

Bearing in mind that Egbin's subsequent sustainability reports will be evaluated by independent third-party agents against criteria for best practices in sustainability reporting, hopefully it will be ranked as having better than average achievement. Recommendations from evaluations will be taken into account for succeeding sustainability reports, and improvements will be made to identify Egbin's key sustainability issues and to more explicitly review stakeholder engagement framework,

with the intention for advancement and sustainable development. Comments and suggestions about this report are encouraged and may be sent to: The Egbin Power Plc Corporate Governance and Compliance Department *Email: corp.gov@egbin-power.com or the Egbin Stakeholders Platform: expressyourself@egbin-power.com*

## Global Reporting Initiative

The Global Reporting Initiative's fourth generational (GRI G4) principles and guidelines for the "Core Option" for sustainability reporting were employed as reference in the preparation of this report. These guidelines provided the basis and configuration for the 2015 Egbin sustainability report. This we hope makes the report analogous to internationally acceptable sustainability reports. Please refer to the Appendix for a mapping of the Global Reporting Initiative criteria to this report's content.

# Sustainability across the value chain





# Business Approach

## International Operating Standards

In our quest to be the biggest power company in Africa in terms of power assets value and gross installed capacity; we are committed to ensuring that international best practices are applied in all areas of our operations so as to guarantee the sustainability of our business.

To this end, our Quality Health Safety Security Environment (QHSSE), Plant Operations, Equipment Maintenance and Asset Management systems, have been designed to be consistent with global operating procedures and practices.

Our determination to operate a sustainable business has propelled us to imbibe international operating ideals which have now become our corporate culture and way of life. In promoting international standards in power generation in 2015, we achieved remarkable safety performance of zero fatality rate, extremely low emissions which are dimmed within internationally acceptable limits; increased safety awareness and trainings, increased investment in employee healthcare, and an upgraded emergency management system amongst others.

In order to ensure that our business remains sustainable, Egbin Power PLC embarked on an efficient energy performance drive. This was to reduce the energy wasted at different points and terminals. This drive reduced our internal energy usage from 7% to 5.5%. Considering the sizable amount of energy, we generate on a daily basis

Our determination to operate a sustainable business has propelled us to imbibe international operating ideals which have now become our corporate culture and way of life



from our 1320 mega-watt power plant, 1.5% was an enormous energy saved.

Our energy performance improved tremendously because we leveraged on international best practices to identify energy saving opportunities that are implementable in order to maintain and improve our energy

management system, thus increasing our energy efficiency whilst decreasing energy consumption.

## Excellent Asset Management

In the wake of the inefficiencies and ineffectiveness of the operation and maintenance systems, which was evident from the minimal energy supplied to the national grid, and low plant availability and reliability prior to take over by new investors and management of Egbin Power PLC, the new management team reorganized and restructured the asset management system in order to strengthen management capabilities, improve strategic utilization of management resources and establish systems to support efficient operations.

The foregoing resulted in the strategic implementation of structured business processes and models for asset reliability and integrity needed to achieve long term sustainability.

As an organization that believes that our people the most valuable asset, our first area of focus is creating an environment where our people positively impact on reliability and asset integrity, improved team behaviour towards



The Unit Auxiliary Transformers

We believe that our people the most valuable asset, our first area of focus is creating an environment where our people positively impact on reliability and asset integrity,

error reduction and development of outstanding performance through well designed and implemented key performance indicators (KPIs).

The evaluation of the maintenance management system was carried out, whilst the establishment of benchmarks, KPIs and other metrics used to drive performance development and improvement were adopted.

Presently, the maintenance task delivery system has been optimized by the creation of the Maintenance Planning Unit, whose duty it is to coordinate the plant maintenance management system

by applying project management and planning techniques for the selection, scheduling and assignment of maintenance jobs in order to reduce downtime and increase plant efficiency and reliability.

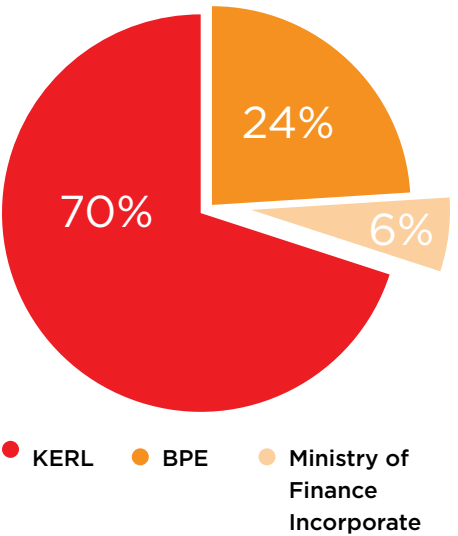
For assurance of a sustainable maintenance system, the Maintenance Planning Unit also identifies the relevant management controls that are required to guarantee plant integrity; develop the details of the maintenance process and ensure that an effective maintenance process is established and monitored. This is as it evaluates asset maintenance management and inspection practises and techniques; identify, define and critically review maintenance and inspection strategies; and perform optimisation of asset maintenance and inspection strategy using relevant records and data.

## Strong Financial Performance

Following the bid exercise by the Federal Government of Nigeria for the sale of the Government owned power assets, KEPCO Energy Resource Limited (KERL) emerged the preferred bidder for Egbin Power PLC.

In line with the sale requirement, KERL paid a total of \$400 million for the acquisition of the asset and took over the management of the power plant in November 2013.

## Egbin Ownership Structure





KERL investment in Egbin Power PLC significantly changed the ownership structure of the company as highlighted below;

KERL - 70% Shareholding

BPE (Bureau of Public Enterprises) - 24% Shareholding

Ministry of Finance Incorporate – 6% Shareholding

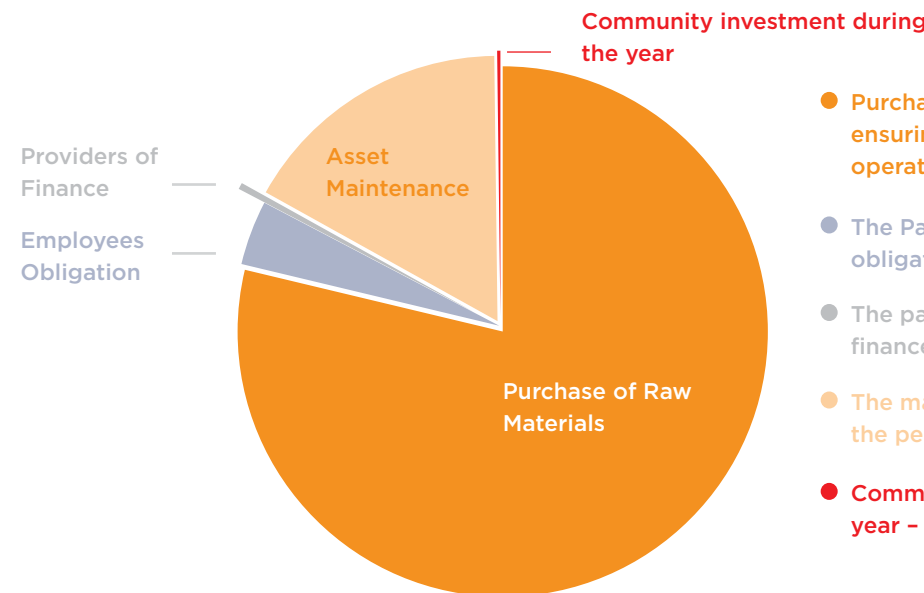
Considering the sub-optimal state of the plant, the company in its sustainability drive increased its investment in the organization which culminated in a total capitalization of \$1.061 billion (Equity and Debt) at the end of 2015 financial year.

The company has also through its investments in renovations, plant upgrade, maintenance and new asset installations increased the Total Asset of the plant to N211.35 billion (\$1.608 billion) billion at the end of the reporting period.

Also during this reporting period, the company earned revenue of about N51.7 billion (\$259.5 million). This was utilized in settling its obligations towards its improved operations as follows:

- » Purchase of Raw materials towards ensuring smooth operations – 80%
- » The Payment of employee obligations – 4%

## Egbin Committments



- **Purchase of Raw materials, towards ensuring Raw Materials smooth operations – 80%**

- **The Payment of employee obligations – 4%**

- **The payment to the providers of finance – 0.4%**

- **The maintenance of assets during the period – 17%**

- **Community investment during the year – 0.2%**

- » The payment to the providers of finance – 0.4%
- » The maintenance of assets during the period – 17%
- » Community investment during the year – 0.2%
- » Loss for the period in review – 1.5%

Despite the increase in investments and strong earning, the company still faces the challenge of outstanding receivables in the region of \$230 million during the reporting period. This receivables amount to about 87% of the company's earning and as such

could impact on the rate at which the company continues its investment drive towards achieving one of its goals of being the biggest power company in Africa in terms of asset value.

Also in line with the company's sustainability drive, upon takeover of the management and operations has adopted the International Financial Reporting Standards (IFRS) which is now being used in the presentation of the company's financial statements.

The company has also adopted the

defined contribution pension scheme in accordance with the Pension Reform Act of 2004 of the Federal Republic of Nigeria and maintains its pension obligations in line with the provisions of the Act as amended in 2014.

The Newly Installed Steam Turbine 4 Digital Console





# Defining our Material Aspects

## Energy Conservation and Efficiency

### Adoption of simple products (LED & APPLIANCES)

- » Energy saving bulbs has been installed in the entire plant facility to ensure adequate and reduced energy consumption.
- » Photocells have been installed on all street lights to ensure reduced energy consumption during the day.
- » Use of energy saving devices such as office and home appliances, washing machines, fridges, freezers, TVs, etc.

### Installation of Complex Products

- » The Digital Control System (DCS) has also been installed on some units in the power plant to ensure easier operation of the units, quicker troubleshooting for maintenance engineers, and increased efficiency of the manpower in local operation of the units
- » Modification of the organizations switching system to enable the three station boards utilize available energy generated from the organization, rather than importing energy from the grid by 2020.
- » Purchase and installation of energy saving pumps for the plant.
- » Installation of solar cells to power station boards and black start by 2025.

### New Energy Efficiency Solutions

- » Installation of Digital metering system (DMS) in 2016 to enable measurement of the quantity of energy imported and exported to the grid system



### Energy Efficient

Implented energy conservation processes through the plant by using energy efficient appliances & LED

# 100%

Planned increase in revenue in 2020

- » Installation of totalizers on the gas lines of each unit, to record the exact volume of gas consumed by each unit in 2016.
- » In 2015, the organization ensured strict adherence to the use of one cooling water pump, boiler feed pump, etc. on loads below 110mw to save power.

## Sound Governance and Fair Corporate Conduct

### Constant alignment with international recommendations and best practice on governance

- » The adoption of the approved corporate governance framework in alignment with international recommendation and best practice on governance in 2016

### Introduction of anti-corruption Compliance Program and enhancement of the whistle-blowing channel in 2016

### Further extension of training on Code of Ethics, Zero Tolerance of Corruption Plan and Human Rights Policy in 2016

## Financial Strength

### Operational efficiency: Optimization of capital allocation and reduction of cash costs

- » To maximise efficiency and increase the value created by the company to the country, the organization is embarking on expansion of its Generating Plant, with a project called (Egbin II). The project will be financed with equity and debt.

### Adoption of International Reporting Standards

- » The adoption of the International Financial Reporting Standard (IFRS) in reporting the Annual Financial reports of the organization effective from take-over.

### Financial forecast of the company

- » The organisation forecasts to increase its revenue by 100% by 2020.
- » Egbin Power Plc. is presently operating at a gross margin of about 10% with an estimated gross margin of >25% by 2020.
- » The organization is working towards maximising its operational net profit to >20% by 2020.

### Pioneer status

- » The Company will be filling for pioneer status in 2016, to earn a tax relief from the government. The Company's future plan is to re-invest the savings from Pioneer status in the Company, with the aim of improving the economic benefits to the citizens.

## Responsible Relations with the Communities

### Implementation of new projects for the socio-economic development of the communities

- » Vocational Trainings (Boat driving and repairs, Soap and bead making) for empowerment of the local communities
- » Constant supply of drugs to Ijede General Hospital to reduce malaria outbreak in the local community
- » The constant supply of electricity from the power station (Egbin Power Plc.), which started in 2014, has been sustained, to improve the facility and reduce the cost of maintaining the General Hospital at Ijede.
- » Installation of Bore Hole water supply, to improve availability of good water supply to the 3 communities surrounding Egbin Power Plc.
- » Furnishing of Nigerian Police Force with communication equipment's to improve security in the local communities
- » Donation towards building project to expand the police area command headquarters in Ijede by supporting the Police Community Relations Committee (PCRC) to embark on the project
- » Rehabilitation of School facility (Power field Group of Schools) to improve quality of education for the local communities,
- » Skilled and Unskilled employment of local community's indigenes



Full scholarship award to students from the host communities



Egbin Eye Care Programme



### Education for Locals

Planned implementation of scholarship schemes for local indigenes to support their academic endeavours



### Promotion of Cultural Values

The organization promotes the cultural values of the country as well as the local communities through show-case of cultural heritage and values

## Definition of projects to support the community

- » A scholarship scheme is scheduled to be implemented in 2016 for local indigenes, to support students who are academically strong, in both the primary and secondary schools.

### Initiatives for the dissemination of a culture of energy

- » The organization promotes the cultural values of the country as well as the local communities, by encouraging smart cultural attires to be worn once a week.
- » The organization also supports and encourages inclusion of adheres to the traditional values as it relates to the organization's activities and business operations.
- » The organization pays regular visits to the traditional rulers of the communities to solicit for their support and peaceful co-existence thus promoting social and cultural inclusiveness.





## Employee Management Development and Motivation

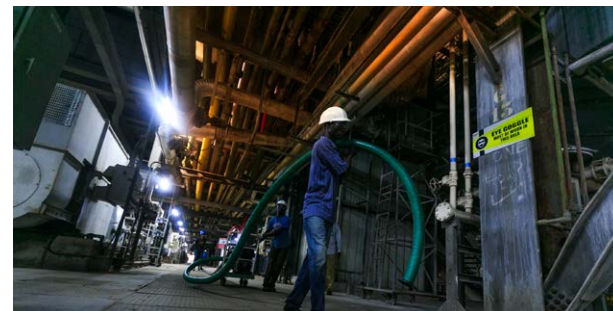
### Standardization and simplification of performance management process

A new performance management framework was introduced in 2014 in order to promote a performance-driven culture within the organization. The performance cycle consists of the goal setting exercise, a mid-year review and the end of year performance review.

In 2015, targeted efforts were made to eliminate complexities and ensure better compliance through HR Representatives, departmental meetings, email communication and circulation of quick references and relevant FAQs. Plans are being made to explore full automation of the performance management process for seamless documentation and reviews.

### Dedicated initiatives for high potential staff

The organization understands the need to identify, recognize, reward and keep motivating outstanding performance of staff members, and as such is initiating programs that will identify and develop high potential staff. In addition, some quick wins have been implemented e.g. **Employee of the Month** initiative to keep every staff member motivated and outstanding.



### Training Programs

The organization is focused on capacity and capability development and has developed several training programs to upskill staff. In 2015, training programs were largely focused on the acquisition of basic skills required to perform work. This covered soft skills training (work productivity and management training) and Computer proficiency (focus on use of MS Office suite) in addition to the Technical training conducted in collaboration with Technical partners – KEPCO which covered classroom workshops and site visitation to KEPCO Training Institute in South Korea. The organization will also be introducing core functional trainings based on identified skills gap of staff in addition to aggressive “hands-on” knowledge transfer programs - coaching, mentoring, etc. in 2016.

## Responsible Supply Chain Management

### Strengthening of policies of correctness and transparency along the supply chain

- » A procurement policy which has been drafted and reviewed by the management of the organization will be submitted for the approval of the Board of Directors in 2016, in alignment with the international procurement best practices. In Addition to the policy and in line with internationally acceptable practices, a more comprehensive and robust Vendor Registration and Vendor Rating exercise will be conducted in 2016.
- » The Organizations guidelines will be strictly adhered to in the vendor registration process, ensuring compliance with the Organizations Corporate Governance Guidelines.

Integration, strengthening and standardization of the contractual clauses on issues such as the environment, health, safety



### and human rights

- » The Organizational Procurement Policy which will be effected in 2016, will standardize vendor's contractual clauses. These clauses include: Warranty, Indemnity, Confidentiality, House Keeping, Force Majeure, Termination and other clauses which are dependent on the nature of the job to be done.

### Enhancement and increasing integration of sustainability factors in the qualification and in the performance assessment system (vendor rating) for suppliers

- » The Organization in line with its sustainability initiative, has incorporated a vendor rating process with a disciplinary policy, to ensure excellent service delivery at all times.

### Promotion of information-sharing and discussion with suppliers

- » The Supply Chain Management arm of the Procurement department of the Organization will adopt an annual Vendor feedback forum at the end of 2016. This forum will encourage improvement in the process of dealing between the vendors and the Organization.

Safety is top priority for the top management and championed by the MD.

## Employee Health and Safety

### Global approach to safety which is integrated into the business

- » Safety is top priority, for the top management and championed by the MD.
- » Production & implementation of occupational health and safety management manual
- » Environmental audit report (Bi annual)
- » Post impact assessment (Required after oil spill incidence)
- » Monthly submission of effluent discharge, air quality and noise level monitoring report to the regulating agencies (LASEPA, NOSDRA & FED.MIN. ENV.).
- » Monthly submission of Accident, incident & near miss report to NERC
- » Member British safety council
- » The Organizations safety department has grouped accidents into two major categories
  - » Minor accidents
  - » Major accident (fatality)

### Focus on responsible conduct and a preventative approach

- » Installation of Unsafe acts and Unsafe condition drop



- box, to report near misses, unsafe acts and unsafe conditions, for prompt attention.
- » Daily routine checks / maintenance
  - » Safety inductions / briefing to staffs and contractors
  - » Job hazard analysis / risk assessment
  - » Recent and major over haul of the firefighting system (Control Measure)

### Dissemination and consolidation of the culture of health and safety

- » We encourage quarterly check-ups and health talks with employees to improve their health status.
- » Safety week conducted, intimated the employees on basic safety terms at work and at home. This initiative had been suspended since 2012 due to transition logistics.
- » In 2015, we introduced the monthly health walk to improve the health fitness of the employees, towards combating high incidences of High Blood Pressure (HBP) cases.

## Efficient Use of Water Resources

### Initiatives to ensure efficient use of water resources

- » In 2015, totalizers were installed on each unit to measure the water consumption of the units. Based on the age of the power plant, the units operated (< 10tons/hr) on normal operation. Checks are made



daily to ensure the organizations commitment to protecting the environments resources.

- » Diversification into commercial sales of portable water by (2020)
- » Diversification into sale of demineralized water (electrolyte)

by 2020

- » Installation of small turbine along the discharge canal to provide hydroelectric power in the near future.

## Climate Strategy and Landscaping

### Global warming considerations

- » According to the 2012 edition of National environmental protection (pollution abatement in industries and facilities generating waste) Regulation. The Organizations emission for NOx in 2015 was <132ppm, against the environmental standard for Power Generating stations (NOx = 500ppm). The organization had a ZERO (g) record on Co and So2, which are majorly harmful to the environment.
- » According to international world best practices, it is stipulated that 30% of the plant area must be of Green Vegetation. Areas have been carved out as green area in the reporting year, in view of more developments in the coming years.
- » In the quest to ensure a safe and clean environment, the organization vents out oxygen during the production of hydrogen.

## Environmental Compliance

### Zero Spills of any Class

- » Oil Spills classification is a set standard by NOSDRA.
- » Minor (tier 1) 0 – 4000ltrs to inland waters & 0 – 40000ltrs to land or coastal or off shore waters.
- » Medium (tier 11) 4000 – 40000ltrs inland waters & 40000 – 398000ltrs to land or coastal or off shore,
- » Major spill (tier 111) above 40000ltrs to inland waters & above 398000ltrs to land or coastal or offshore

## Zero Spill of any Class





» The spill that occurred in our facility was on 29th April 2015 and was recovered to the volume of 800ltrs which falls under minor (tier 1) spill

Awareness Program for all staff of the company

- » Oil spill management training/ awareness
- » Daily routine checks
- » Standard operating procedure (SOP) training for staffs
- » Standard work permit system
- » Safety induction for contractors handling oil related equipment

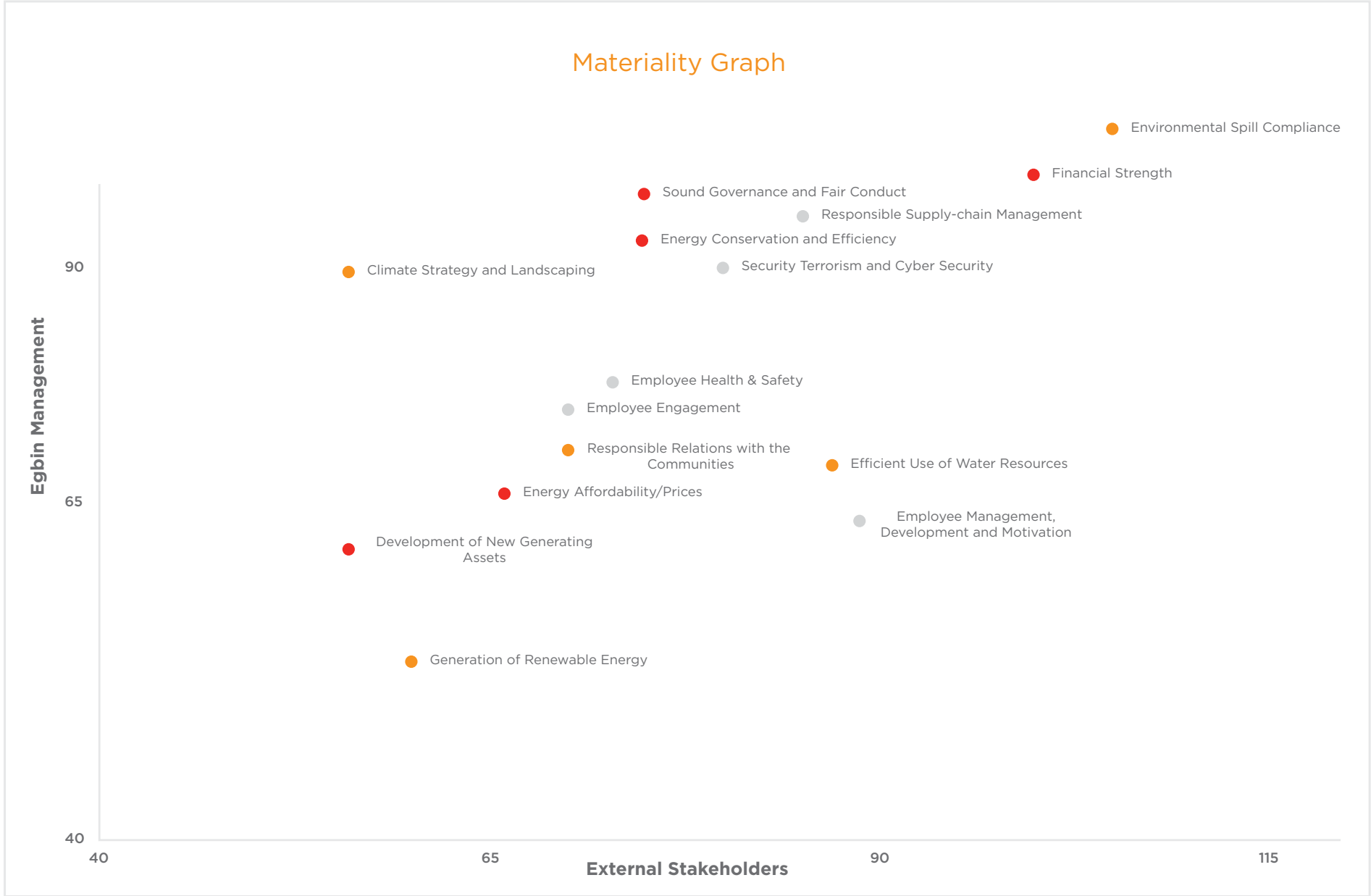
Investment in Oil Spills Management

- » Floating booms
- » Training course on oil spill management for selected staff of the company.



- Economic Material Aspects ●
- Social Material Aspects ●
- Environmental Material Aspects ●

Materiality Graph





Business Priority Level

Business Priority	Material Issues	Objectives	Risks
Business Performance and Sound Governance	Energy conservation and Efficiency	Increase in Generation capacity, through extension of facility and im-proved maintenance culture, extending the operating life of generating assets.	Epileptic Gas supply and Grid Challenges
	Sound Governance and Fair corporate conduct		
	Financial Strength		Unfavourable Economic challenges posed by the country
	Development of new generating assets	Operation of generating assets at max-imum efficiency and reduced operating cost	
	Energy affordability/Prices		Illiquidity of the power market
		Attain strong financial performance and sound governance to ensure sustain-ability	
Standardized Working Condition and Social Re-lations	Responsible Relations with the Communi-ties	Operation of generating assets in a safe and secure manner, ensuring zero tolerance for accidents and minimized injuries of employees, contractors and Visitors.	
	Security, Terrorism and Cyber Security	Adhering to International Procurement Best Practices	Non-compliance to organizations corpo-rate governance framework
	Responsible supply Chain Management		External Pressure from stakeholders

Business Priority Level

Business Priority	Material Issues	Objectives	Risks
	Employee Management Development and Motivation	Empower the workforce through well-defined organisational structure, effective performance management system, succession planning, reward and recognition system, job enrich-ment/career development opportuni-ties, training and other forms of staff development.	Organisational inefficiency, due to loss of talent and lack of motivation.
	Employee Engagement	Ensure a highly engaged workforce by providing the right atmosphere and good working environment with team-ing activities to promote respect for the individual and allow for innovation.	Employee lethargy; lack of productivity and innovation.
	Employee Health and Safety		
Substantial Environmental and Climate Change Man-agement	Climate Strategy and Landscaping	Ensure compliance of all legal and en-vironmental commitments expected of the organization	Non-compliance fees from environmental infractions
	Environmental Spills Compliance	Responsible and efficient exploitation of environmental resources	Unfavourable Government policies
	Generation of Renewable Energy	Green landscaping of our environment in order to promote a sustainable cli-mate.	
	Efficient use of Water Resources		



# Economic Sustainability

## Business Sustainability

Power is the key driver of any economy, more importantly, it is necessary to improve the economic outlook of the Nigerian economy. This is because it boosts gross domestic product (GDP), provides key inputs for most industries and supplies the basic needs for the residential sector. The power sector in which Egbin Power PLC operates must be financially sustainable, as its long term financial sustainability relies on the assessment of factors that directly impact on the overall cost of production of electricity, which will invariably determine the ability for power companies like Egbin to make investments in response to the geometric increase in the demand for electricity.

In 2007, The Sahara Group, through a special purpose vehicle – KEPCO Energy Resource Limited (“KERL”) acquired an initial 51% of Egbin Power PLC. Subsequently during the completion of the privatization process of the power sector, following agreed terms with the Federal Government, it acquired an additional 19% in 2013 to bring to 70% its total shareholding in Egbin Power Plc in 2013. The asset was officially handed over to KERL in November 2013 by the Bureau of Public





Enterprises (BPE) as part of the Federal Government power sector privatization.

In line with the vision for sustainable operations of the plant upon takeover, KERL entered into a technical services agreement with the Korea Electric Power Corporation (KEPCO). The contract in November 2013 and will run till October 2018.

The agreement provided for KEPCO to manage fourteen sections/units which make up – Operations, Maintenance and Maintenance Support departments. For effective coordination, a plant director reporting to the CEO is responsible for the supervision of plant operations activities.

Being the largest single generator of power to the Nigerian national electricity grid, Egbin's financial sustainability is not only important to the sustainable development of the company, but also critical to the economic growth and development of Nigeria and its neighboring states. This is because Egbin generates power of 1320MW that serves the Nigerian electricity market whose grid capacity is less than 6000MW, and is consumed by residential, commercial and industrial customers. Invariably,

Egbin generates nearly one quarter of the power in the national grid which is tightly controlled by the National Control Centre. The National Control Centre

is responsible for the allocation of electricity to the different states of the federation with respect in line with set parameters determined by the Center which , includes available grid power, population, state load capacity etc.

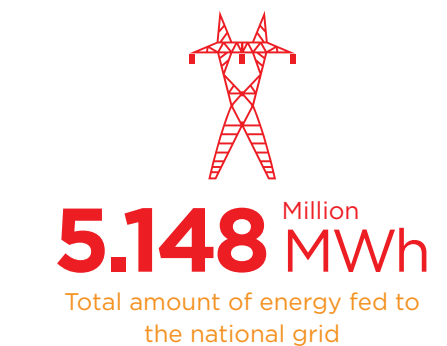
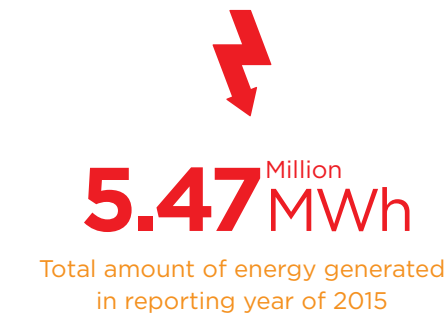
In order to ensure that Egbin manages and operates a financially viable business, management intends to increase its generation capacity, continuously meet electricity demands, recover costs, make investments and comply with environmental and social norms.

## Economic Value and Performance

Having generated 5.47 million MWh as total energy and wheeled out 5.148 million MWh of energy to the national grid in 2015, the net revenue accrued to Egbin Power PLC in the reporting year of 2015 was N51.7 billion (\$259.5 million).

Egbin strategically coordinated huge investments in total capitalization rate of N211.35 billion (\$1.061 billion) in equity and debt as at the end of 2015 financial year. The share capital was increased from N5 million (\$25,100) to N10 million (\$50,200) in March 2015, by increasing the nominal values of the shares from 50 kobo (\$0.005) to N1 (\$0.01) per share. The investments were directed at optimizing the performance of all six steam turbine units

## Key Economic Performance Figures



and its auxiliaries; guaranteeing life extension of the thirty-year-old plant; ensuring long term profitability and sustainability; and the funding of a new power plant.

Accordingly, the plan to construct a second power plant known as Egbin 2, on the same site with the existing plant was set in motion in the reporting year 2015. The feasibility studies and environmental impact assessment of the 1350 Megawatt combined cycle power plant have been carried out. At completion, the plant which will cost about \$1.8 billion will make Egbin

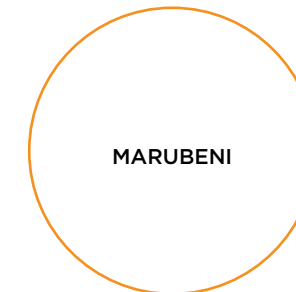
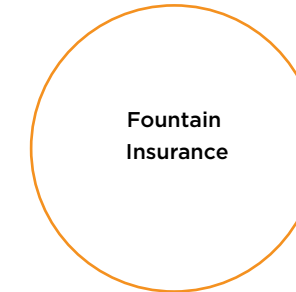
Our desire to remain competitive in the Nigerian energy market continues to drive us as an organization to be financially sustainable.

Power PLC retain the largest market share with the supply of 2670 Megawatt of power to the Nigerian electricity market.

Our desire to remain competitive in the Nigerian energy market continues to drive us as an organization to be financially sustainable. Therefore, we ensure that our systems are constantly updated to enable stakeholder's value creation and continual repositioning of the business strategy to provide value for the Nigerian electricity consumers and the populous at large.

## Our Stakeholders

### Suppliers





## Suppliers

### Civil society (Regulators)

- » Nigerian Electricity Regulatory Commission (NERC)
- » GENCO Association of Nigeria.
- » Federal Ministry of Power

## Customers

- » Nigeria Bulk Electricity Trader & Market Operator
- » Ikeja Electric
- » EKO DISCO

## Employees, other workers, trade unions

- » Employees
- » Workers Union

## Local communities

- » Egbin
- » Ijede
- » Ipakan.

## Shareholders and provider of capital

- » KEPCO Energy Resource Limited
- » Bureau of Public Enterprises (BPE)
- » Ministry of Finance

Though we have identified our stakeholders above, it is important to note that as a power generation company, the Nigerian public are also a major stakeholder in our business as they depend on the company to be run

efficiently, effectively and sustainably in order to ensure that we generate enough power to the National Grid. This is considering the fact that Egbin Power PLC is the largest power generating plant in the country.

## Improved Plant Efficiency

The turbine system is as complex as the boiler system and there are several points where efficiency could be lost. Studies have shown that some of the areas where losses are bound to occur are the turbine bucket tip and packing leakage which can constitute 40% of total efficiency loss within the turbine. Turbine nozzle roughness and erosion can account for 35% of efficiency loss, whilst turbine deposits 15%, and bucket erosion and roughness 10%. In addition, the steam turbine is part of a larger steam and water system that involves condenser, feedwater heaters, deaerator, pumps and piping – all of which have their individual efficiency loss.

The efficiency of the Egbin power plant was not empirically determined with a view to improve the power generation process in order to positively impact the revenue income of the company, prior to the privatization of the Power Holding Company of Nigeria. The advent of KEPCO Energy Resource Limited (KERL) management of the Egbin power plant, brought about deliberate design of systems to monitor the plant



efficiency on a daily basis whilst compiling a monthly performance report.

In achieving and sustaining the efficiency of the Egbin power plant – whose design value is 36.83%, we operate in conformance with the standard operating procedures so that the design values stipulated by the original equipment manufacturer (OEM) in the performance guarantee of the plant's closed cycle may be achieved. Also, we reduced sensible heat losses by fine-tuning combustion controls so as to allow accurate quantity of excess air required in the furnace for combustion, thereby reducing the

excess oxygen level in the furnace.

Similarly, the gas air heaters that pre-heat the combustion air required to mix with fuel and heat source in the boiler (furnace) to produce flame, were revamped for improved functionality. Preheating combustion air with flue gases heading to the stacks from the boiler, increases overall plant efficiency.

The sustainability of our power generation business is dependent on fuel availability which currently cost \$3.30 per million cubic feet. The quality of the natural gas fuel, as provided by the design values of the generation

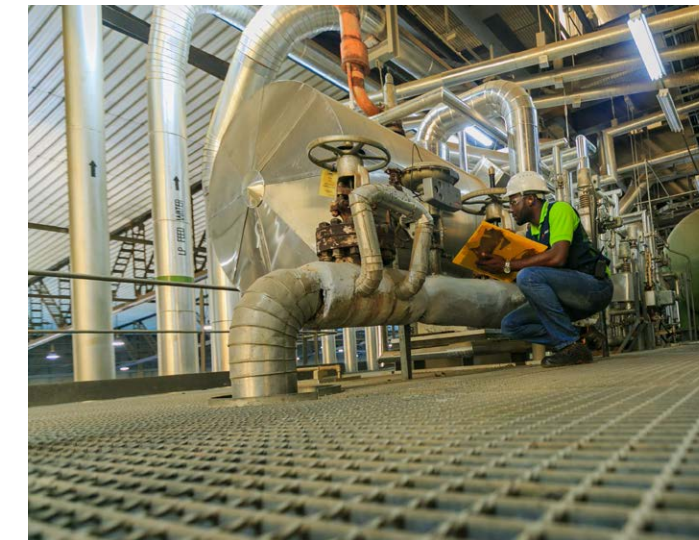
In achieving and sustaining the efficiency of the Egbin power plant, we operate in conformance with the standard operating procedures so that the design values stipulated by the OEM in the performance guarantee of the plant's closed cycle may be achieved.

and other combustible components' proportions or the higher concentration of non-combustible components like nitrogen, CO<sub>2</sub>, moisture etc., which may perhaps sum up to reduce the net efficiency of the plant. Therefore, efforts were made in the reporting year 2015, to consistently perform analysis on the natural gas fuel pumped by the Nigerian Gas Company to our facility, in order to ascertain the calorific value of the natural gas fuel burnt in our boilers for maximum efficiency.

plant, should be 88.18% methane, 5.25% ethane, 1.91% propane, 0.15% nitrogen, 3.80% carbon (iv) oxide.

Fuel quality and availability has a major effect on our business, as natural gas fuel with high heating value, high carbon to hydrogen ratios, and low moisture content can yield efficiency which are much higher than natural gas fuel that have low heating values, low carbon to hydrogen ratios, and high moisture content.

The loss of heat energy during combustion as result of low fuel quality - may be due to a lower methane, ethane



# Plant Availability and Reliability

## Power Generation

Egbin operates a six steam turbine unit facility. In February 2015, steam turbine (ST) 5 was shut down due to challenges with its power transformer. As a result, the ST 5 generated 10,820MWh compared with ST 1 to 6 that generated 191,076MWh, 318,227MWh, 190,756MWh, 124,960MWh and 43,973MWh respectively in the first quarter of 2015.

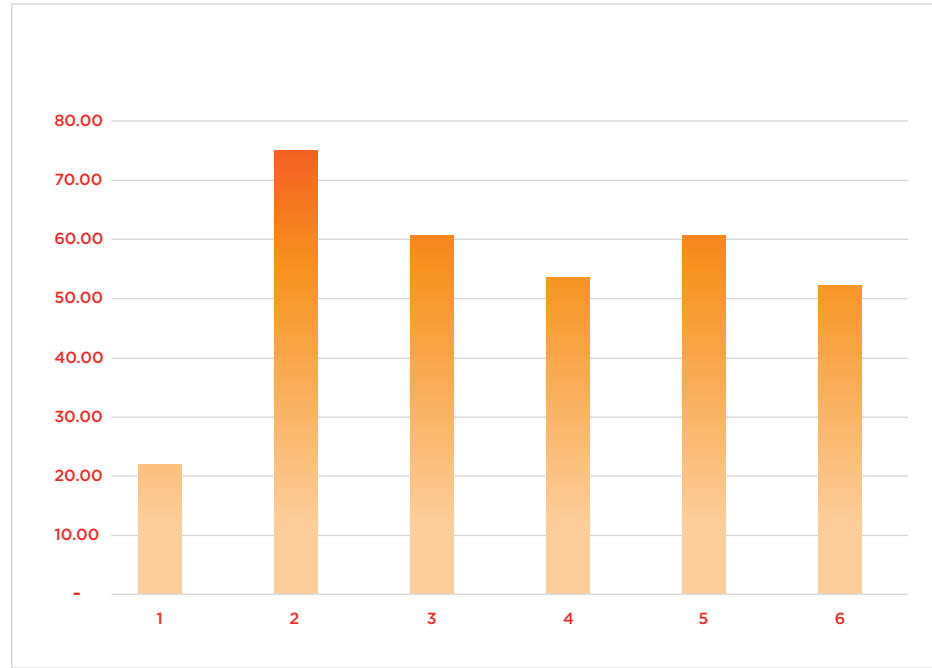
At the commencement of quarter 2 of 2015 financial year, ST 6 was also shut down for planned maintenance of the boiler tubes. Consequently, this amounted to the generation of 1.74 million MWh of energy from all six steam turbine units by the end of the quarter..

Despite the limitation of gas by the Nigerian Gas Company, the end of quarter 3 of the 2015 financial year saw an increase in energy generated of 3.5 million MWh. By the end of the year, Egbin had wheeled 5.18 million MWh to the grid for millions of residential, commercial and industrial consumers.

The power generated by Egbin is traded in the energy market which is tightly controlled and regulated by the Nigerian Electricity Regulatory Commission. The process starts upstream with generating companies like Egbin, who then trade power with the Transmission Company of Nigeria (TCN) for further distribution to the power distribution companies, who then trade the power to end users/consumers.

TCN consists of the Transmission Service Providers (TSP), the System Operator (SO) and the Market Operator (MO). These





Operation Availability(%) OF STEAM TURBINES 1 TO 6 in 2015

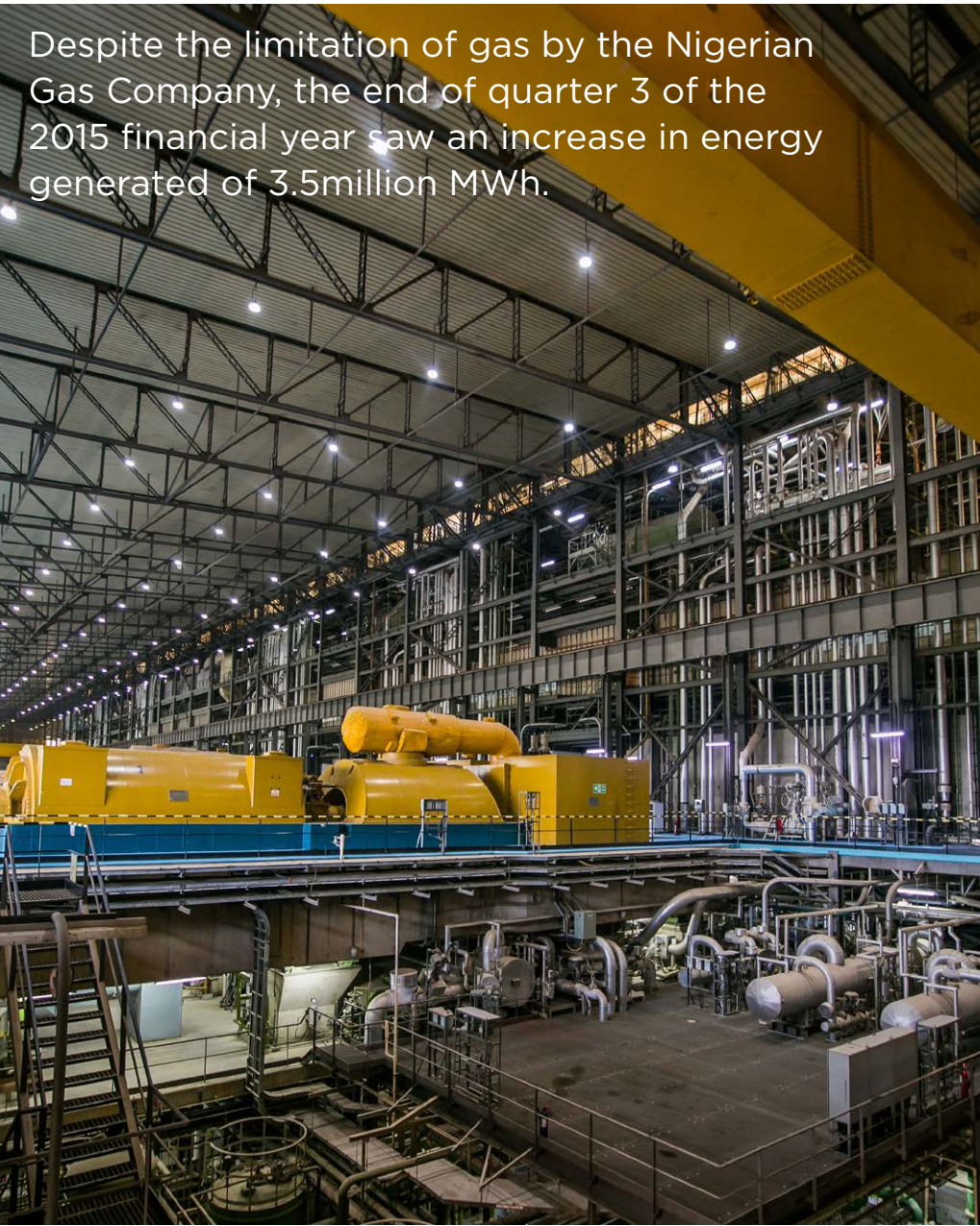
three semi-autonomous bodies are responsible for the maintenance of the transmission equipment; the operations of the national power system; and the trading of power from generation companies like Egbina to distribution companies, in collaboration with the Nigerian Bulk Electricity Trading Plc.

In order to trade the power generated, a preliminary settlement statement is prepared by the Market Operator upon receipt of Egbina's energy meter reading.

After checks and verification by the

company and the Market Operator, a final settlement statement is forwarded to Egbina by the Market Operator. The final settlement statement received from the market operator is thence acknowledged by our finance and account department in towards the preparation of an invoice that is sent to the Nigerian Bulk Electricity Trading PLC for the payment of power generated.

The need to maintain discipline in the national grid to ensure sufficiency in the distribution of power is imperative to the sustainability of the power



Despite the limitation of gas by the Nigerian Gas Company, the end of quarter 3 of the 2015 financial year saw an increase in energy generated of 3.5million MWh.

business in Nigeria. Thus, calls by the National Control Centre (System Operator) instructing Egbina operations engineers to drop huge amount of load within a short period is detrimental to the design life of our steam turbines. There are tendencies of negative impacts on our generating equipment as a result of thermal stress that may accumulate over an extended period of time because of improper load decrease. Grid indiscipline, inactive power purchasing agreement (PPAs) and others are some of the challenges that pose as threats to the effective delivery of power to consumers. These issues are however being resolved by the relevant government agencies, the industry regulator and the Federal Ministry of Power, Works and Housing.

## Plant Performance

The improved reliability of the Egbina six steam turbine units may be attributed to the drive by its new management to increase availability and performance of the plant. The availability of the power plant is a function of its operating hours irrespective of the causes for shut down, whether planned shutdown, forced shutdown or gas limitation.

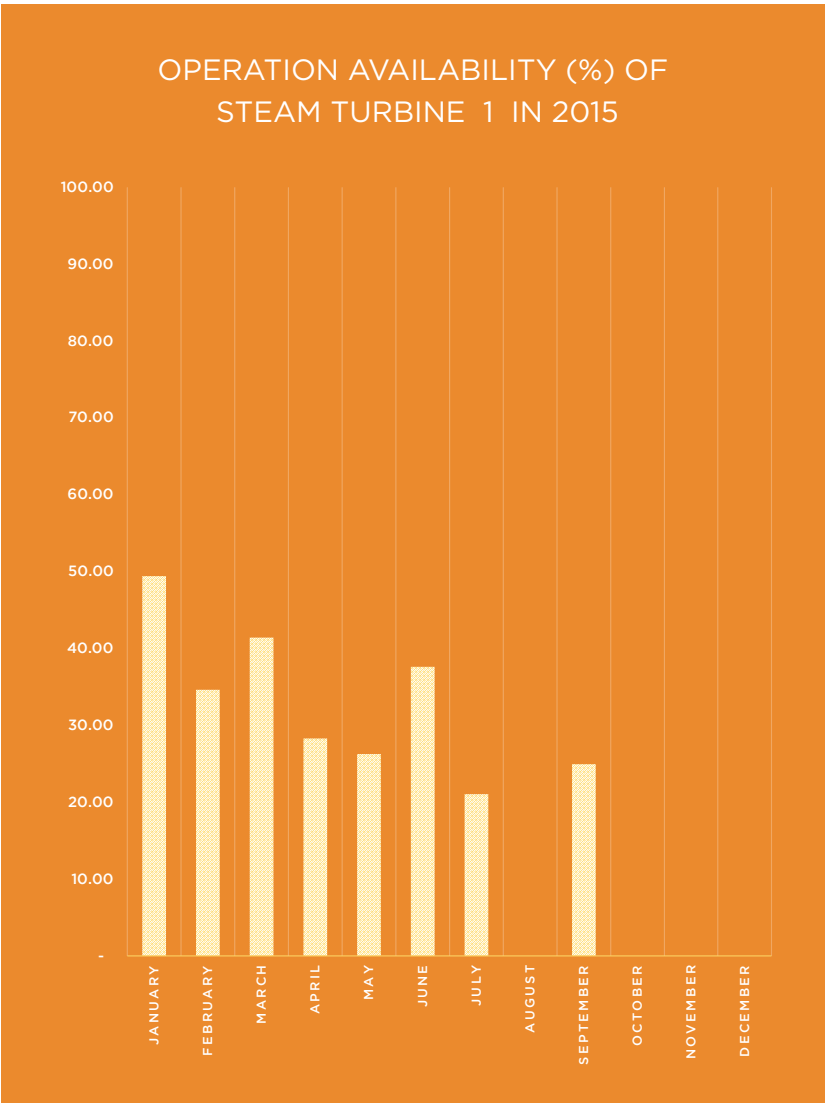
## Reliability

**Our reliability is in the ability of the steam turbines to generate power whilst facing various challenges during a specified period of time.**

During the reporting year of 2015, operating values show that the minimum average operation availability as illustrated by the graph above was 21.96% and the maximum 75.10% registered for units 1 and 2 respectively.

Steam turbine unit 1 had the lowest operation availability in the reporting year. The minimal value recorded was as a result of scheduled downtime in August 2015 for major overhaul and forced shutdown in October through December due to technical issues with the generator transformer. The graph below depicts the operation availability of steam turbine unit 1 as the lowest contributor of energy generated during the reporting year.

However, with reference to the operation availability graph of steam turbines units 1 to 6, steam turbine unit 2 (ST2) had the highest average operation availability at 75.10% in 2015, thereby supplying most of the total energy generated.





Availability

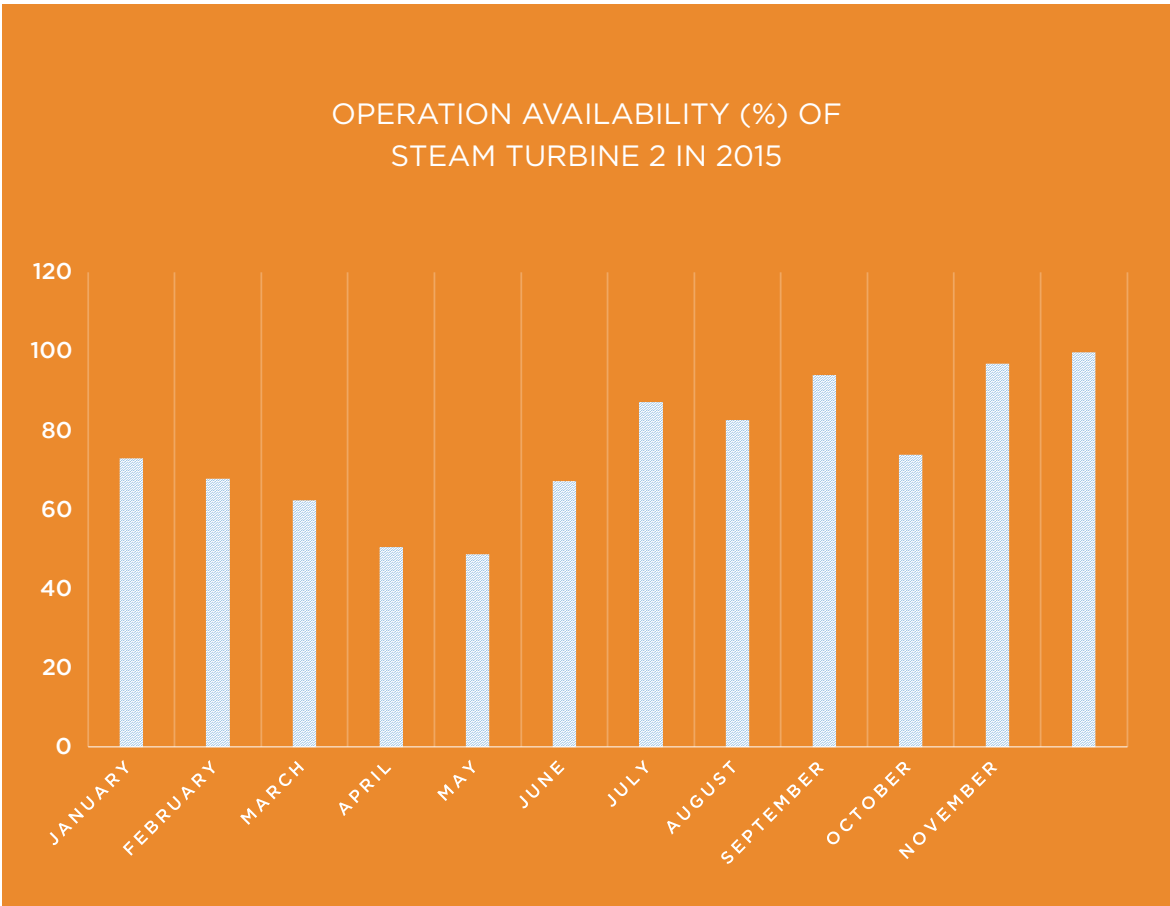


This represents the time in which steam turbines are capable of generating electricity as a percentage of the aggregate time for a particular period.

The ST2 in 2015 generated 1,430,709 MWh energy, wheeled out 1,360,360.90MWh, consumed 70,348MWh (5.16% of energy generated), operated for 8,327 hours, and had operation and maintenance availability of 99.73%.

The major justification for the high performance of ST2 was because natural gas fuel was available at the required pressure needed to power the boiler to generate steam for the turbines, over an extended period from July to December 2015.

Although, in October 2015 as presented in the graph for operation availability of steam turbine unit 2 in 2015, ST2 had a dip, this was due to low natural gas pressure received from the Nigerian Gas Company (NGC).



In November and December, the gas pressure received from NGC increased which in turn increased our energy output. Needless to say, the pressure of the natural gas flow from NGC is critical to our operations and energy output.

Financial Status






During the period of reporting of the sustainability report, the company realized revenue of about N52.337 billion and this was utilized in settling

- its obligations towards its improved operations as follows:
- » Purchase of Raw materials towards ensuring smooth operations – 80%
  - » The Payment of employee obligations – 4%
  - » The payment to the providers of finance – 0.4%
  - » The maintenance of assets during the period – 17%
  - » Community investment during the year – 0.2%
  - » Loss for the period in review – 1.5%

Despite the company’s improved financial performance during the reporting year, we are still faced with challenges in the collections of its receivables for power sold to the grid.

For the period of reporting, the company has outstanding receivables yet to be collected of about \$230 million. However, we believe that it would not impact greatly on our sustainability in the long run, as we are continually consulting with the government who are the major debtors on ways to ensure payment.

Table 1: Summary of Financial

	 Revenue (‘N m)	 Operational Expenses (‘N m)	 Margin/(Loss) (‘N m)	 Admin Expenses (‘N m)	 Profit/(Loss) before Tax (‘N m)
2013	8,120	(6,436)	1,684	(314)	1,370
2014	43,451	(36,811)	6,640	(1,542)	5,098
2015	51,700	(52,500)	(800)	(2,400)	(3,200)



## Abridged Statement of Financial Position as at 31st Oct. 2015

● All Figures in (₦Million)

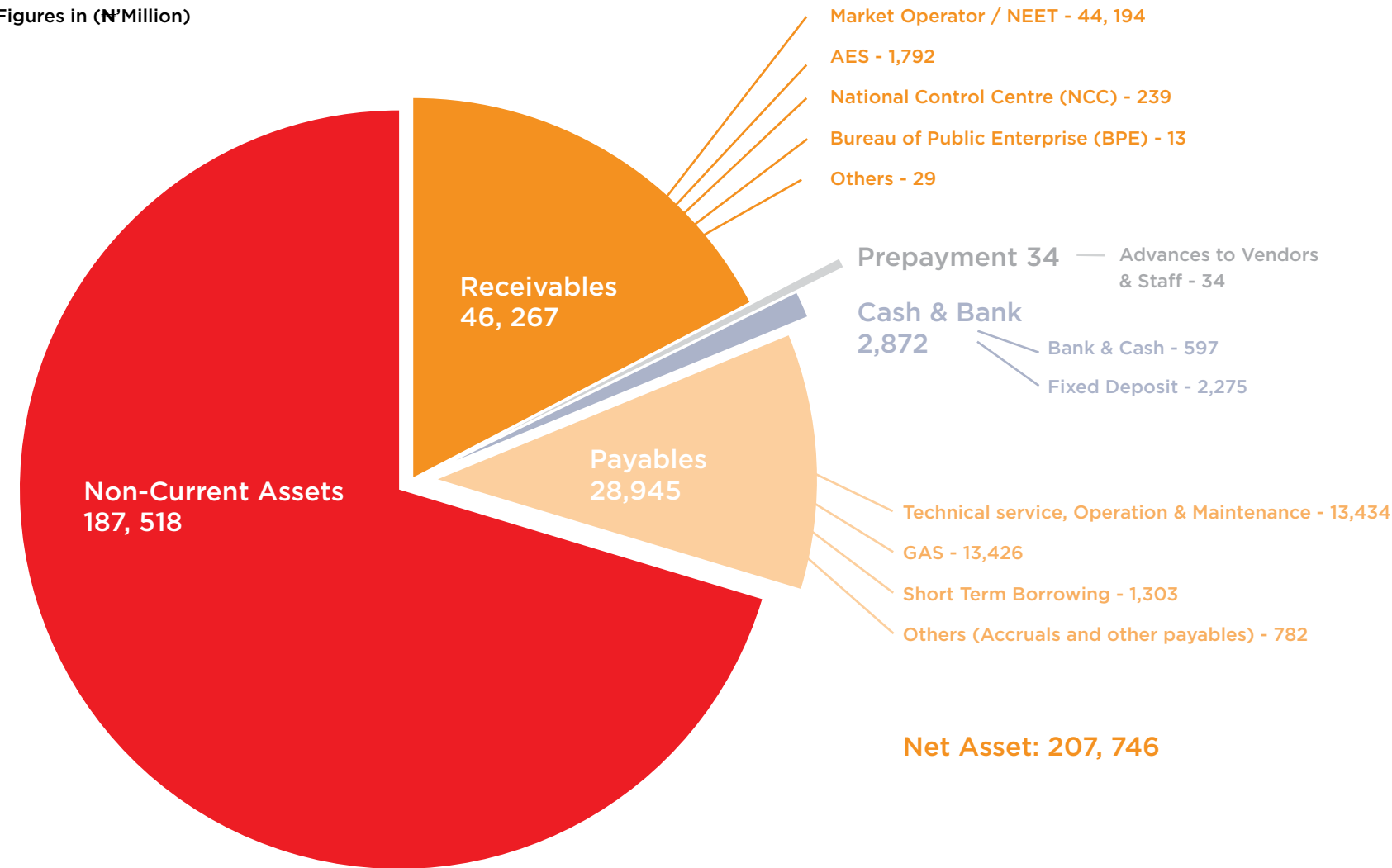


Table 2: Statement of Value Added

	31-Dec-15
	₦ Billion
Revenue	51.7
Brought in materials and services	
- Imported	(26.8)
- Local	(14.5)
Value Added	10.4
Distributed as follows:	
To pay employees	
Staff cost	2.1
To pay providers of finance	
Finance cost	0.2
Maintenance of assets and future expansion	
Depreciation	8.8
Loss for the period	(0.8)
Deferred tax	-
Community Investment	0.1
Value Added	10.4

## Project Investments

At the time of takeover, the power plant was operating at less than 50% capacity and the steam turbine unit 6 (ST-6) had not been operational for over 8 years. Despite the extensive regulatory challenges that the company faced, KERL have been able to improve the operation of the plant and assets satisfactorily, investing substantially in the plant since take over. The power plant operated at over 85% of its installed capacity in 2015 with the revamp of ST-6.

equipment in the state of disrepair that needed to be replaced. Other challenges faced as a result of takeover, were the alarming number of the aging workforce-approaching retirement- and a poorly secured environment for a momentous power generation business. The Power plant was saddled with an excess of over 800 employees that performed their duties in an administrative building that was in a deplorable state, very dingy environment which made it difficult to work in. Additionally, the estate/staff housing complex and club house where members of staff were supposed to unwind after a working day was completely inoperable.

### Status Upon Takeover - November 2013

Prior to the privatization of the plant in November 2013, Egbin power plant average generation was below 500-MW, this was due to the dismal state of its six steam turbine units. At its lowest point, only two of the six units were operational; most of the auxiliaries were not functional; major spares necessary for plant operation and for preventive maintenance were unavailable and materials in the Central Store were poorly kept, managed and catalogued.

Also, there were old and obsolete

### Investments in First Year of Takeover -2014

The renovation of the administrative complex to a world class work environment was among our top priorities, as we had to improve the working conditions to that which is internationally acceptable and appealing.

Whilst renovating our administrative building, in our first year managing Egbin Power Plc, we successfully restored steam turbine unit 6 which had been down and un-operational nearly a



To guarantee the sustainability of our business operation, major spare parts have been identified and ordered to avoid long term shut down of the steam turbine units due to unscheduled downtime



Unit 4 Genertor Rotor During Major Overhaul

**107**  
Graduate Engineers  
Trained

To boost the technical human capacity, Egbin embarked on training and recruitment of 107 Nigerian Graduate engineers, 33 of whom were fully absorbed

decade. This was a strategic action that was critical to the overall increase in the company revenues.

Considering the aging workforce that we met at takeover, the management of the company in collaboration with Ikeja Electric embarked on the recruitment and training of 107 Nigerian graduate engineers. These young engineers, who were fresh graduates from the universities, were first trained in the National Graduate Skills Development Pro-

gramme at the National Power Training Institute of Nigeria for about a year, where they acquired the foundational skills required to function effectively in the power sector generally and power generation particularly.

Of the 107 trainee engineers recruited, a total of 33 were fully absorbed by the company and are still undergoing more practical and comprehensive training program for an additional year to acquire more advance skills in the

operation and maintenance of a thermal power plant. We hope that the in the near future, the newly recruited young and vibrant engineers of the company would replace the aging population of the employees.

In a bid to guarantee the sustainability of our business operation, major spare parts have been identified and ordered to avoid long term shut down of the steam turbine units due to unscheduled downtime. Also, materials and equip-



New Office Setting



ment have been properly catalogued in the central store, to ease procurement, storage and usage.

Furthermore, there was a major overhaul of the demineralization plant which resulted in the recovering of Train B. Bearing in mind that the demineralization plant is a critical component of our power generation system because it eliminates impurities and minerals from the boiler water, Egbin embarked on a refurbishment program to service and replace metering pumps, transfer pumps, recycle pumps, inner components of vessels and valves. Other activities that were carried out in the demineralization plant were the removal of the old and low capacity Amberlite™ ion exchange resins to brand new Lewatit® resins. We also serviced the distribution pipes, replaced salen clothes and wire meshes, all in the effort to bring the demineralization plant to full capacity to produce boiler water at varying plant loads.

## Investments in Second Year of Takeover – 2015

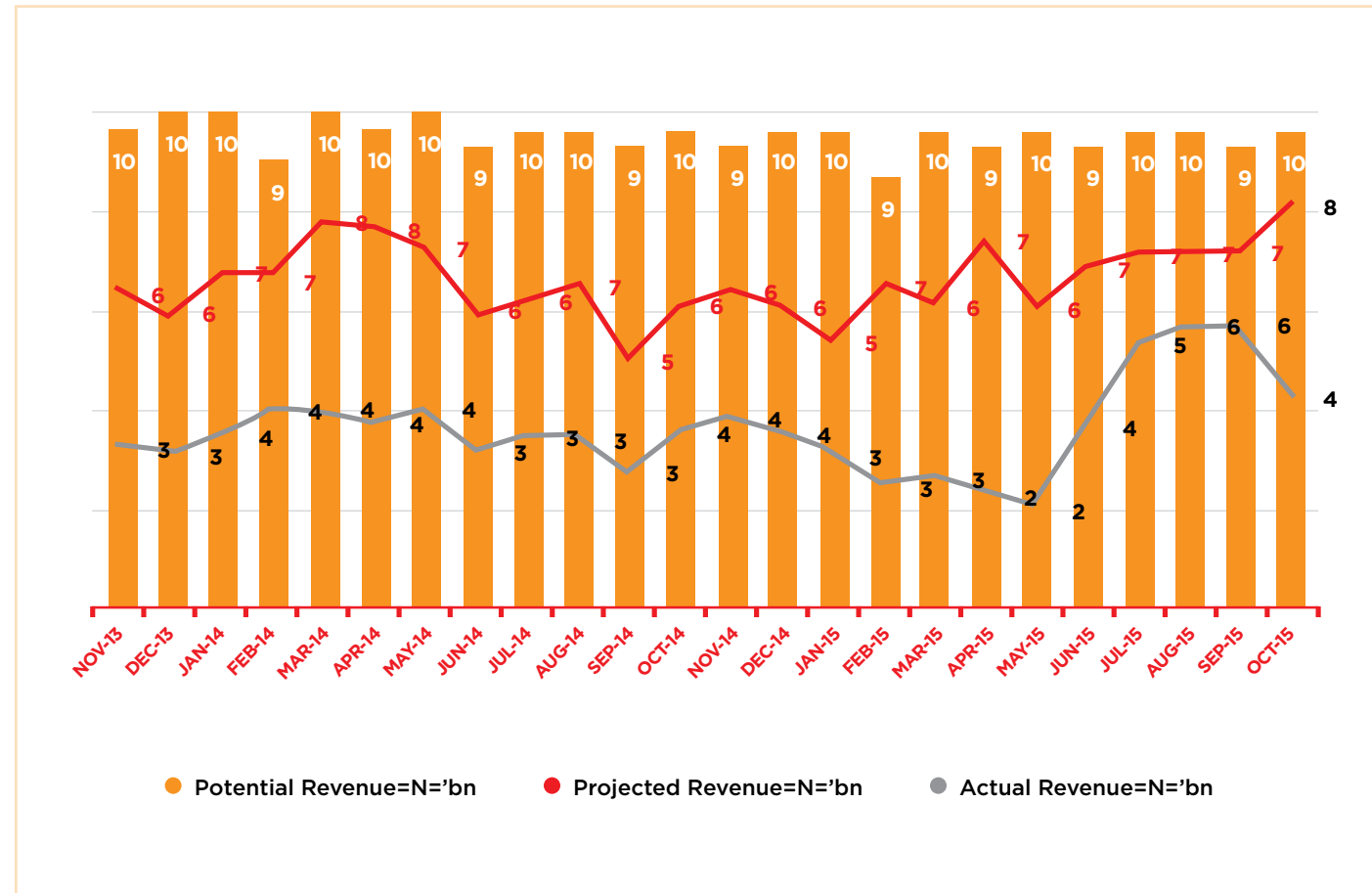
In our second year of takeover which is the reporting year of this sustainability report, the total overhaul of steam turbine units 4, 5 and 1 in that order was carried out. The overhaul commenced with steam turbine unit 4 in the fourth quarter of 2014. This

continued from April to June 2015 and July to August 2015 for steam turbine units 5 and 1 respectively. Consequently, the overhauled steam turbine units were capable to peak at 220 Megawatt each at its installed capacity. This was unprecedented as the plant had never undergone any major overhaul of this kind in its thirty years of operation.

The total overhaul of three out of the six steam turbine units in Egbin Power Plant involved the replacement of the Turbine Vibration Monitoring Systems - which assists in regulating the speed of the turbine in the event of vibration to avoid a catastrophic failure, and the upgrade of the plant process control system to the Emerson Ovation Dis-

tributed Control System (DCS) which utilizes the most advanced control technology to provide a powerful and secure architecture while allowing our system to easily progress with rapidly advancing computer technologies.

The company also replaced and repaired essential parts of the plant



such as re-tubing of the boilers, high pressure heaters, Uninterrupted Power Supply System (UPS), Excitation/ AVR system, Protection PNL and Switch gears.

The implementation of risk management measures propelled the company to retrofit the plant with an advanced Fire Alarm Detection System. This is to ensure the safety of personnel and equipment in the event of a fire outbreak.

Also, the installation of gas meters to accurately measure the quantity of gas received from the Nigerian Gas Company (NGC) commenced. The installation of energy meters to correctly read the energy exported to the national grid was also initiated.

In view of our sustainability attitude to continuously drive efficiency, Egbin introduced Enterprise Resource Planning software packages in maintenance management and financial management - Computerized Maintenance Management System (CMMS) and SAGE, to improve operational performance and efficiency.

## Current Operating Status

Prior to takeover, Egbin had not achieved 50% of its generating capacity. Over the life span of the plant, the average generation had been





maintained at about 550MW and had never managed to generate at any time during its existence 1000MW. However, with the successful restoration of ST-6 and the overhaul of the power plant-halfway complete-there was an increase of 100% in generation in comparison to the periods before takeover. This resulted in the current average generation rising to about 1,000 Megawatt and a drastic decrease in unscheduled downtime. The completion of the overhauls in the succeeding year 2016 will enable the power plant operate at a minimum of 92% of its capacity..

## Investments Plans for Third Year of Takeover - 2016

As part our continued desire to ensure sustainability, the company will embark on further investments towards overhauling and upgrading of steam turbine units 2, 3 and 6 in year 2016. The completion of the overhaul plan in 2016 will precede the next scheduled overhaul in 2019.

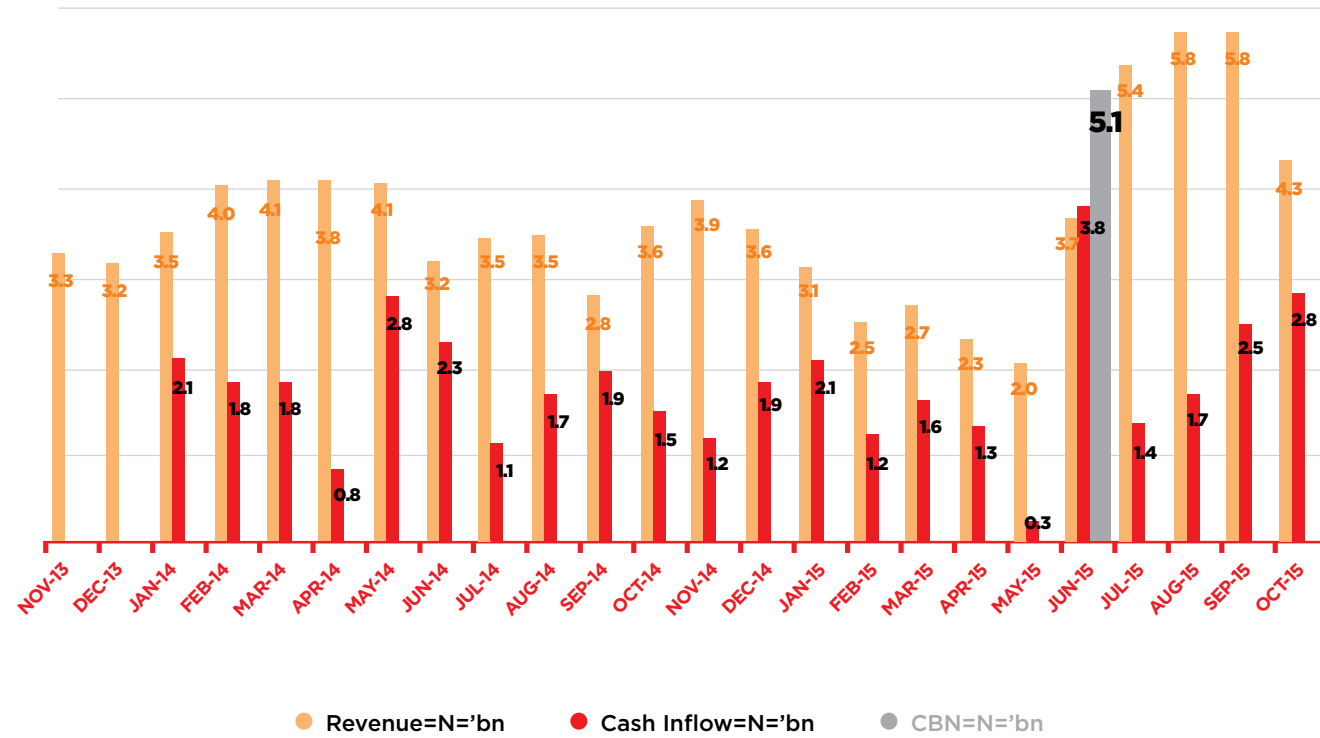
In addition, the ensuing are plans that will materialize in the year 2016.

- » Extension of the current employee residences to accommodate more employees and the relocation of other employees to more decent accommodation.
- » Construction of perimeter fencing to safe guard the facilities.

- » Preliminary feasibility and design to kick off the process for the building of a new 1,350-MW Combined Cycle Power Plant towards increasing the plant's capacity.
- » The purchase of additional Gas turbine and three Emergency Diesel Generators (EDG) for black start and internal

- » consumptions
- » Installation of Solar panels to power the employee residences.
- » Expand the scope of electronic security in the facility.
- » Increase in Corporate Social Responsibility to improve host community and mitigate restiveness. Eviction of

all illegitimate occupants (retired and non-members of staff) in the housing colony premises as part of our security measure



## Supply Chain Management

### Growth of Local Economy

The power generation business is one that continuously requires financial investments to improve social, economic and environmental performance. The sustenance of electricity production operations is hinged on an effective and efficient supply chain management system.

The procurement of human and material resources to support the activities carried out at Egbin in the reporting year 2015 resulted in the development of the local economy. In 2015, Egbin Power Plc declared ₦ 10.5 billion as value added. The components of the value added were the total revenues for the financial year; materials were sourced locally and internationally, staff cost, finance cost, and maintenance of assets, although the financial resources allocated for materials that were imported into Nigeria was higher than the value sourced from the local economy. This is because some of the critical and high precision equipment are not manufactured in Nigeria, thus the high importation rate.





Nevertheless, the local economy benefitted tremendously as ₦14.5 billion was spent by Egbin to source for materials and services from Nigerian companies and the Nigerian market. Additionally, during the overhaul of the steam turbine units 1, 4 and 5, the over 375 temporary work-force was sourced from the local communities (Egbin, Ijede and Ipakan) around the location of Egbin Power Plant. These local communities were also developed economically due to the fact that over 95% of our employees reside in these communities and purchase their goods and services from the local vendors. This has helped stimulate the local economy and therefore led to the creation of more jobs to satisfy the high purchasing power of our employees.

## Procurement Practices

The Egbin supply chain management system (SCM) which starts with the supplier and ends with us as the consumer, is designed to guarantee the source for human and material resources required to operate a sustainable power generation business. Though we always endeavour to patronize local contractors and vendors, our SCM ensures that only capable and competent contractors with track records of impeccable quality are registered with us during our Vendor Registration Process. Therefore, Egbin have vetted a total number of 260 suppliers. This number is

Since it has become increasingly recognized that Egbin should be managed more sustainably to reflect the interests of all stakeholders which includes suppliers, through the creation of wealth and safety, our company's business principles, corporate governance policies and code of ethics are binding on all suppliers and contractors.

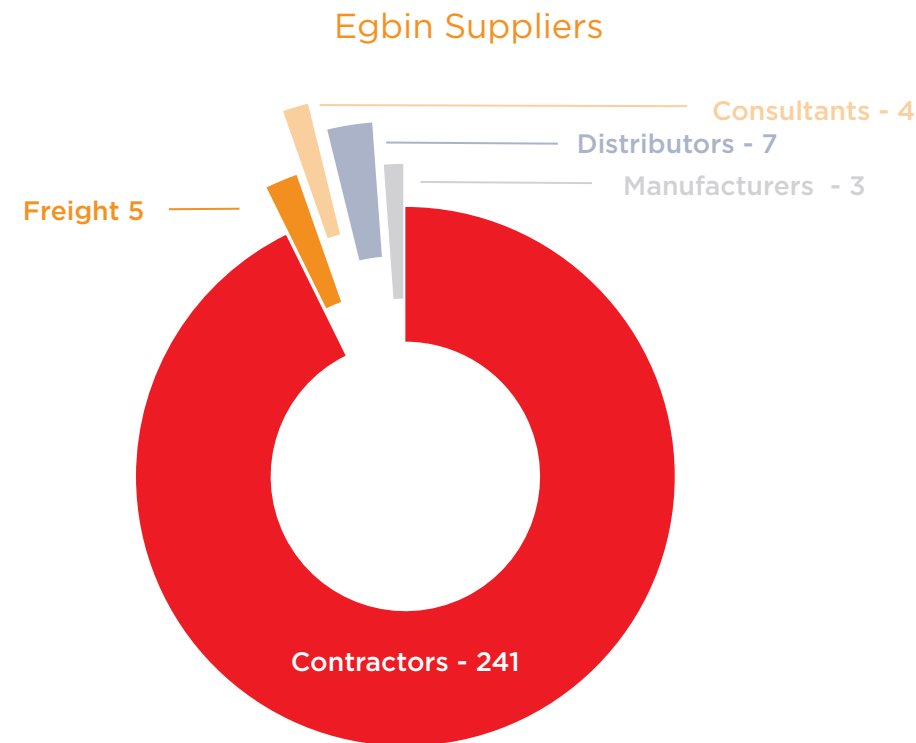
constituted of;  
**Contractors - 241**  
**Freight - 5**  
**Consultants - 4**  
**Distributors -7**  
**Manufacturers -3**

Since it has become increasingly recognized that Egbin should be managed more sustainably to reflect the interests

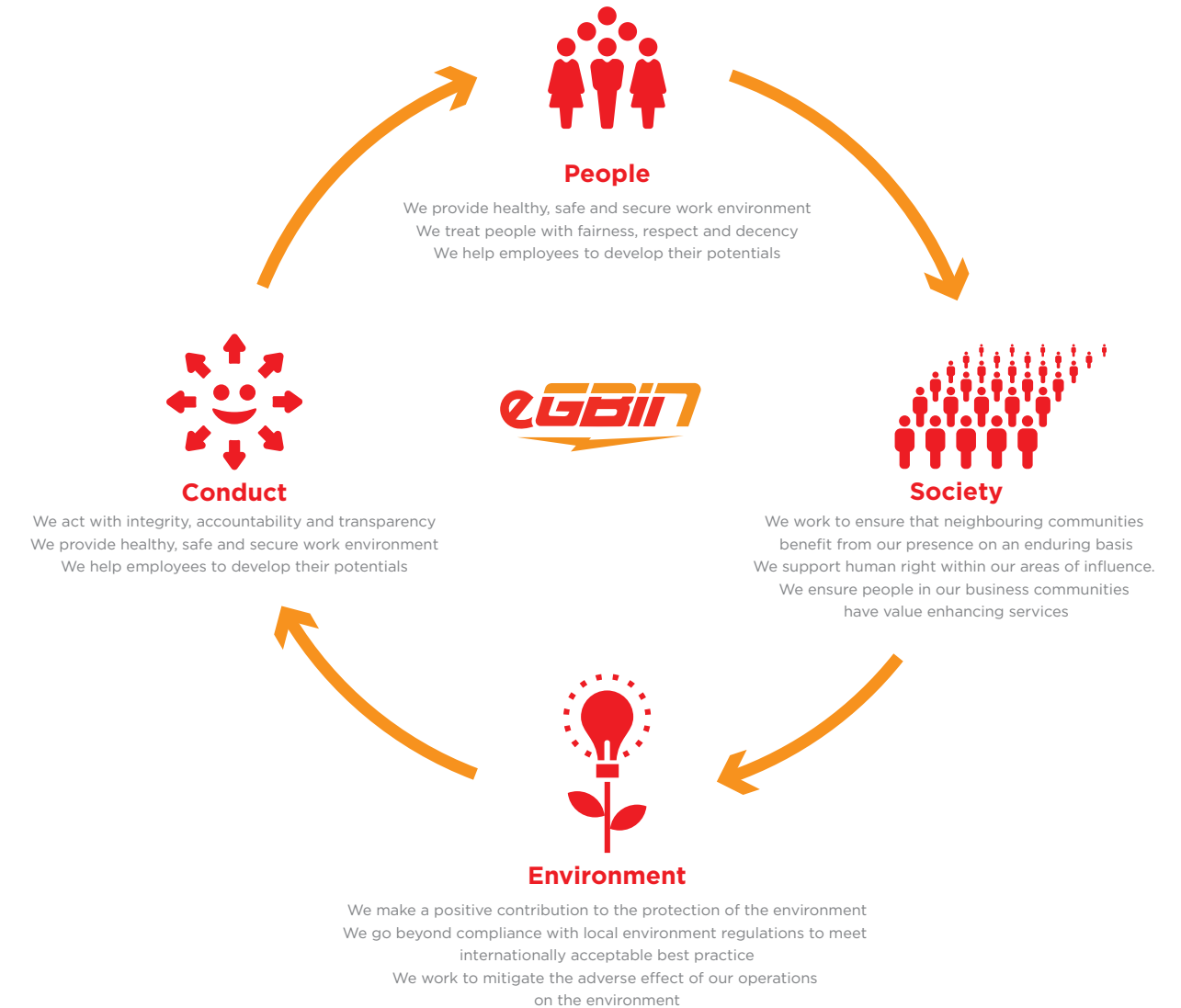
of all stakeholders which includes suppliers, through the creation of wealth and safety, our company's business principles, corporate governance policies and code of ethics are binding on all suppliers and contractors.

In order to ensure a corrupt and fraud free supply chain management system, the Egbin anti-corruption and anti-bribery, third party solicitation and whistle blowing policies were established to forestall the risks of financial inducement that may occur when dealing with external stakeholders.

Egbin's business principles set out and establish our core beliefs and behaviour's that guide the way that the company and its employees conduct business. We do not compromise on the company's performance and principles. Thus, as a fundamental standard of Egbin's procurement practice, we employ the principles of cost-effectiveness, correctness, and competition. These are elements of Egbin's Business Principles – **People, Conduct, Society and Environment**.



## Egbin Business Principles





# Environmental Sustainability



Environmental Management Systems	Compliance with Environmental Laws	Power Generation & Climate Change	Conservation of Biodiversity	Management of Waste	Resource Utilization
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## Environmental Management Systems

As the world population rises above seven billion, the demand for energy and the natural resources from our environment has risen proportionately. The corresponding demand for the resources that mother nature has to offer, has put tremendous pressure on the environment, thereby threatening the possibility of future generations to sustain their existence from the same source of natural supply.

For that reason, the need to pay conscious attention to the call by nature to preserve and conserve the environment cannot be overemphasized. Therefore, we at Egbin Power PLC (Egbin) have imbibed the corporate culture of environmental preservation and conservation embedded in our modes of operation and standard operating procedures.



The environmental management principles employed by Egbin to ensure the sustainability of the environment, is consistent with the provisions of the Occupational Health and Safety Management Systems (OHSAS) 18001.

In the era when the Federal Government of Nigeria solely owned Egbin - known then as Power Holding Company of Nigeria (PHCN), the systems to ensure that the environment was preserved and conserved were established and implemented, but the quest to obtain international certifications for environmental management system - ISO 14001 were not initiated. In the reporting year, Egbin specifically operated an Occupational Health and Safety Management System manual that is a requisite for the OHSAS 18001 certification - also known as ISO 18001. Presently, Egbin have not been certified the ISO 18001 (OHSAS 18001) and ISO 14001 which are the International Standard Organization's (ISO) Occupational Health and Safety Management System (OHSMS) and Environmental Management System (EMS) certifications respectively. However, in line with our commitment

to attain certification, Egbin produced its new operational OHSAS manual in June 2015 in accordance with ISO 18001 and ISO 14001 and continued with its implementation program to obtain the internationally acceptable safety standard accreditation ISO 18000 by September 2016.

Furthermore, considering the fact that we have newly established systems that will guarantee the sustainable generation of power from the available resources within the environment, there is a designed roadmap to achieve the ISO 14001 certification for environmental management system (EMS) in 2017.

Fundamentally, our roadmap to achieving the ISO 14001 shows that we will commence the production of the EMS operation manual by August 2016, maintain its implementation and thereafter apply for ISO 14001 certification, which should involve a comprehensive audit of our environmental management system.

Our environmental performance is assessed from the management level down to operational or task level. Thus, we have evolved into a

Our environmental performance is assessed from the management level down to operational or task level. Thus, we have evolved into a compliant system

compliant system, thus, ensuring that activities are performed in accordance with regulations by the Lagos State Environmental Protection Agency (LASEPA), National Oil Spill Detection and Response Agency (NOSDRA), Federal Ministry of Environment and the British Safety Council. The institution of our yet to be certified environmental management system continues to guarantee that the environmental risks inherent in our activities are addressed and controlled in a manner that is consistent with Egbin's environmental policies and commitment statements.



## Main Environmental Issues

The positive and negative impacts we have on the environment as a result of our power generating operations are largely addressed by our environmental management system.

Though we are a power company that operates a steam power plant that depend on water resources in order to generate steam and cool our equipment in the power production process, we always ensure that our ejection into the discharge canal and onward to the nearest waterbody is free from oil, harmful chemicals and substances that could endanger the aquatic life and ecosystem in the lagoon.

The major environmental issues that we consider as significant are:

- » Generation from fossil fuels
- » Fish Entrainment and Impingement
- » Water flow and level changes
- » Thermal emissions to water
- » Chemical emissions to water
- » Spills

## Performance Objectives

In keeping to the spirit and the letters of our environmental management principles, we endeavor to curtail the discharge of hazardous water from our facility into the sea whilst constantly monitoring our standard



operating procedures so as to assure conformance with safety, regulatory and legal requirements.

Our environmental management system functions as a tool in the preservation and conservation of our immediate environment.

The objectives of our environmental management system are:

- » Zero incidence and environmental pollution.
- » Minimize consumption of natural resources and energy, whilst consuming material goods in moderation.
- » Reduce the creation of waste by the adoption of improved operating prac-

tices and by the recycling of material whenever practical.

- » Ensure all waste and effluent is disposed in a safe and responsible manner.
- » As far as possible, purchase products and services that do the least damage to the environment and encourage others to do same.

In achieving our environmental performance objectives, we ensure that environmental risks are properly identified, prioritized and managed in an appropriate and timely manner.

Advertently, we monitor measure and review our environmental performance on a regular basis, just as we educate and train our employees in environmen-

### Egbin Performance Objectives



Zero Incidence



Minimize Consumption



Reduce Waste



Environment safe services & products

tal issues and the environmental effects of our activities.

In all, we endeavor to show duty of care towards sustainable development, the preservation and conservation of the environment, and the future generations, who need this same environment to thrive.

## Compliance with Environmental Laws

### Environmental Infringement

In the reporting year 2015, Egbin has no record of infringement-breached, violated or contravened – on any environmental law, regulation or act. Our commitment to ensure that we protect our environment remains our drive towards a sustainable environment for power generation and preservation of the ecosystem.

Activities in our plant facility are monitored regularly to ensure regulatory conformance and environmental compliance. As a matter of obligation, Egbin is involved in the Nigerian Electricity Regulatory Commission's quarterly health, safety and environmental performance meetings, where our environmental performance is assessed and recommendations for improvement are made.

In order to guarantee the environmental awareness of our workforce so that we can sustain and improve our environmental performance, we will be training our employees that directly manage equipment on circumstances that may adversely affect the environment on environmental impact assessment and environmental and waste management operations.

### Oil Spill Management

Owing to the fact that we operate a steam power plant which was designed with the alternative of being fired with natural gas or heavy fuel oil, there are the possibilities of negative environmental impacts, considering that the fuels which are petroleum products are fossils fuels. Being that as it may, the tendency for the heavy fuel oil to spill or leak in the facility cannot be neglected, hence the need to establish a management system to prevent and control such oil spills.

The oil spill management system is focused on the prevention of oil spills. In April 2015, Egbin recorded a minor oil spill of about eight hundred (800) litres of heavy fuel oil to the intake area, during the major overhaul of the unit five day-tank.. This incident which was reported to the Lagos State Environmental Protection Agency, gave rise to a post impact assessment, whose recommendations informed the management of Egbin's decision to further strengthen our oil spill management system.

Going forward, an oil spill contingency plan which is in line with the provisions of the Federal Ministry of Environment, NOSDRA and LASEPA has been devel-



Floating Boom to mop up any oil on the discharge water

oped and instituted. The company has also recruited a safety personnel with the responsibility of monitoring any on-going job in the facility. Below are a few other recommendations and initiatives that were institutionalized and are currently being implemented:

- » Comprehensive environmental monitoring
- » The upgrade of oil-water separators
- » The installation of high integrity automatic safety system to shut off the flow of oil into a water drain line.

As we advance into a more sustainable business, Egbin is now strictly guided by the standards and regulations specified by the National Oil Spill Detection Regulatory Agency and contained in the following regulatory frameworks;

- » Oil Spill and Oil Waste Management Regulations, 2011.
  - » Oil Spill Recovery, Clean-up Remediation and Damage Assessment Regulations, 2011.
- In line with our safety desire for a



zero oil spill environment, we foster a Learning and Development culture that ensures that our personnel's, most especially safety personnel's are trained on oil spill management; as such, we consistently perform job hazard analysis and risk assessment; commenced daily routine checks; and provide standard operating procedures for members of staff working on spill prone equipment and on spill prone areas. In addition, our standard work permit system has been reviewed and safety inductions carried out for contractors handling oil related equipment. Floating booms were also procured and mounted at strategic positions on the discharge canal to absorb oil on the discharge water.

## Aqua-life Safety

We understand that in generating electricity using a steam power plant that obtains its cooling water from the lagoon, the tendency to endanger the aquatic ecosystem is present. Therefore, the waterbody that supplies the cooling water for our heat exchangers - condensers, closed circuit coolers and common service coolers, harbors a marine ecosystem. Like other marine ecosystems in the world, the Egbin marine ecosystem provides food and shelter to a high level of marine biodiversity.

The safety of the aqua life in our immediate environment is at the center of our business operations. This is because in the operation of our boilers and tur-

bines, we are constantly mindful of the need to ensure that safe and low risk water is discharged into the lagoon.

In minimizing our effect on the marine ecosystem, at the water intake area where large volume of water is abstracted and passed through bar and travelling screens, the significant amount of fish and macroinvertebrates which could have been affected by screen impingement, are made to swim back into the lagoon. This is possible because during the design and construction of the power plant, efforts were made to explore feasible intake design options that would minimize fish entrainment and impingement.

On the whole, the heat rejected from our closed circuit water-steam system is usually conveyed by the discharge water through our discharge canal to the lagoon. This process which ordinarily should pose a threat to the marine ecosystem considering the temperature of the discharge water, does not harm the environment significantly, because the discharge canal was designed as an open channel with more than 200 meters length and 50 meters width. The length and width of the discharge canal ensures that the discharge water travels a long distance in order to dissipate substantial amount of heat energy before it eventually mixes with the larger waterbody. Before the flow of discharge water into the lagoon, civil works were constructed close to the shore to



The safety of the aqua life in our immediate environment is at the center of our business operations. This is because in the operation of our boilers and turbines, we are constantly mindful of the need to ensure that safe and low risk water is discharged into the lagoon.

further ensure that the already mixed discharge water and lagoon water with relatively higher temperature, flows another long distance of about 400 metres before it eventually mixes with the lagoon as a whole.

In consideration of the safety of the sensitive aqua life in the marine ecosystem, all these designs and constructions were done in order to ultimately ascertain that after the travel of the relatively high temperature of our cooling water

from the condensers and coolers at maximum of forty degrees Celsius (40°C), the temperature is reduced to ambient for the safety of the marine eco system.

## Environmental Remediation

The major environmental remediation carried out in the reporting year was the cleanup of oil from the surface water at the water intake area during the spill incident in April 2015. This remediation process involved a complete cleanup of the spilled heavy fuel oil that leaked into the water intake area. Efforts were made to ensure that the oil was contained and the marine ecosystem preserved.

## Discharge Water Monitoring

As a part of our commitment to ensure that we are in full compliance with environmental regulations, Egbin has systems in place to assure the quality of the discharge water and flue gas to the atmosphere. Except for the discharge water, generated industrial waste, flue gas and other inconsequential emissions, our operations do not release harmful radioactive substances, tritium vapour, carbon-14, radioiodine, and radiological chemicals because we are a power company that fires mostly on natural gas, as against the heavy fuel oil, which was provided as an alterna-

Water discharged to the lagoon through the discharge canal





As a part of our commitment to ensure that we are in full compliance with environmental regulations, Egbin has systems in place to assure the quality of the discharge water and flue gas to the atmosphere.

tive in the design and construction of the plant.

Several programs already established that were leveraged upon in the reporting year to guarantee the safety of the environment with respect to our discharge water are regularly championed by our professional chemists, who carry out series of physico-chemical and microbiological analyses. In ensuring that Egbin is always in line with international best practices with respect to environmental protection, we perform tests such as pH, Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Dissolved Ox-

ygen, Hardness, Alkalinity, Acidity, Oil, Sulphate, Total Coliforms, Total Plate Count amongst others.

Considering the importance of dissolved oxygen in the marine ecosystem, the temperature of the water is inversely proportional to the dissolved oxygen present. Therefore, the higher the temperature of the water discharged, the lower the dissolved oxygen level. That said, our cooling water, which absorbs the rejected heat in our heat exchangers and released back to the lagoon was averaged to be within the permissible limit.

Furthermore, being fully aware that the consumption of nitrate rich water by children may result to a condition known as methaemoglobinaemia – also known as blue baby syndrome which can lead to death, we ensure that the water discharged is tested for nitrate (NO<sub>3</sub>-) and other nutrients that may be in ionic and utilizable forms of nitrogen, phosphate and Sulphur.

The microbiological analysis of intake water and effluents were not left out, as we constantly determined the total coliform of final discharged cooling water, E.coli, Faecal Streptococci, Staphylococci Aurous; Salmonella; Vibrio; Clostridia; Yeast/Moulds and Total heterotrophic bacteria. The analyses results showed that we were in compliance with regulatory standards.

## Power Generation and Climate Change

### Low Emission Profile

Egbin generates electricity predominantly from natural gas. This is used as a fossil fuel to fire our boilers to power the steam turbines and electric generators. By so doing, we constitute minimal impurities to the air quality and the environment in terms of greenhouse gas emissions. In the reporting year, all the greenhouse gases including carbonates, sulphates and nitrates (CO<sub>x</sub> SO<sub>x</sub> and No<sub>x</sub>) released into the atmosphere from our power plant were very much below the limits set by the National Environmental Standard and Regulations Enforcement Agency (NESREA) and other relevant regulatory agencies.

Owing to the negative environmental impact that the presence of SO<sub>x</sub> and No<sub>x</sub> could pose as a threat to the growth of plants, the process of photosynthesis and the quality of air, Egbin has consistently operated within the allowable limits that guarantees the safety of the environment.

Acid rain is one of the horrendous environmental impact of SO<sub>x</sub> and No<sub>x</sub> because if released, they may rise into the atmosphere to react and mix with

oxygen, water and other chemicals, thereby causing detrimental ecological effects and impacts on streams, lakes and the aquatic environment. Armed with the full knowledge of the effects of acid rain and the strong desire to avoid its occurrence, we always deploy our capability to operate the power plant effectively and efficiently, to lower emissions by ensuring complete combustion of the natural gas in the boilers and the monitoring of SO<sub>x</sub> and No<sub>x</sub> levels flowing through the stacks to the atmosphere.

### Climate Change Impact of Climate Change on Our Business

The combustion of a fossil fuel is an exothermic reaction that yields carbon dioxide. This reaction which has been occurring since the industrial revolution in 19th century has consistently produced carbon dioxide from internal and external combustion engines that have been released into the atmosphere. The enormous volume of carbon emitted over time has overwhelmed the natural sequestration processes in the forests, oceans, soils and savannah, thereby leading to the increase in the overall



Maintenance Engineers during a condenser cleaning process

global temperature by a measure of nearly 20C.

Nigeria has a population of over 180 million and the total installed power capacity is about 12,000 MW, which is grossly inadequate. Despite the rapid growth rates of renewable energy, thermal sources of energy will still account for the greater proportion of the power that will be produced to the national grid. Therefore, there will be production of more carbon dioxide, which may worsen the climate change predicament.

The impact of climate change on a thermal power plant like Egbin is significant because the climate change can affect the output, efficiency and financial viability of electricity generation in the long term.

Research and studies have it that an increase in ambient temperature results in a decrease in the difference between ambient and combustion temperatures, thus reducing the efficiency of boilers and turbines. This is particularly valid for air cooled systems. Also, it is esti-

mated that 5.50C increase in ambient air temperature may reduce electricity generation output by 3 – 4%.

Another serious issue that may arise due to climate change is the access to sufficient water for cooling and returning it to the source at a temperature low enough to prevent damage to aquatic ecosystems. The increase in the ambient temperature may hinder the rate at which the discharge water loses heat energy before it eventually flows into the waterbody.

To ensure the sustainability of our business operation, adaptive measures are being reviewed to mitigate the sudden, gradual and long term effects of climate change on power generation.

The choice of appropriate techniques to adapt to higher temperatures with water shortages are usually site specific.

Egbin is sited at the bank of the Lagos lagoon, and is therefore not likely to face water shortage in the near future. The water intake system through which cooling water flows into the power plant was designed to take in water at a depth where the temperature is much lower than the surface temperature of the water body. As a result, we expect that even with the projected increase in global temperature, our cooling system will still be able to mitigate the impacts of climate change, as we will still be pumping in cooling water at a temperature close to design values, discharging and cooling to a temperature suitable for the marine ecosystem, due to the effectiveness of our supplementary cooling system. In line with the foregoing and in compliance with relevant environmental regulations, we believe that our business operation will be sustainable. As a power station that has operated for 30 years and is expected to operate even longer, we do not take for granted climate change adaptation measures. These measures are considered based on a range of projections in the rapid, gradual and extreme changes that are possible over the extended period.



Green House Gas Management

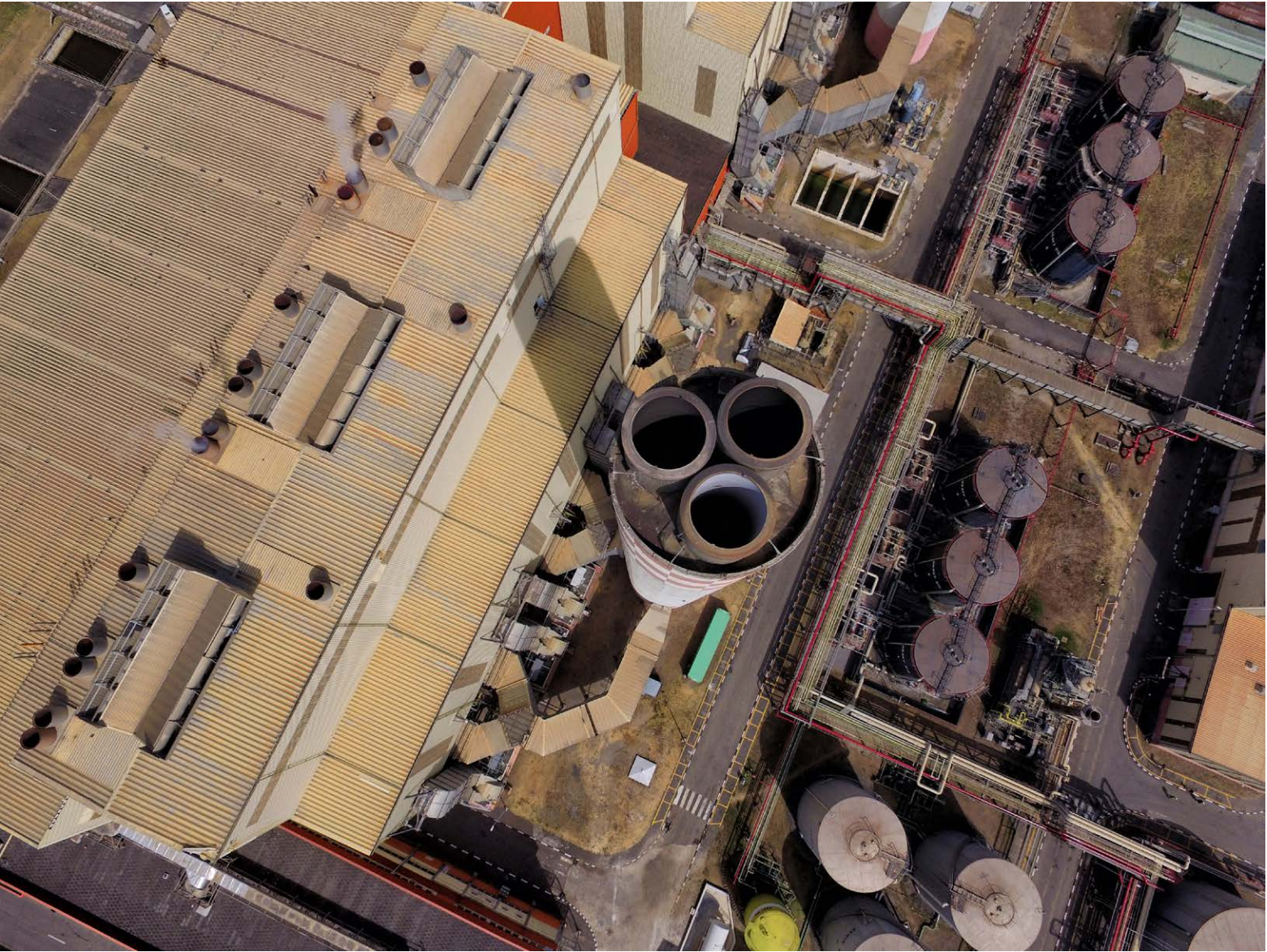
Egbin's commitment to cause carbon emissions and other greenhouse gases (GHG) to be as low as reasonably practicable is unwavering, as we pride ourselves to be an environmentally responsible corporate entity. In our daily operations, the improvement of energy efficiency is always in the front burner. This makes our Operation engineers to continuously reduce the chances of emitting carbon monoxide which is a product of incomplete combustion and is toxic to hemoglobin animals and detrimental to the ozone layer.

The major source of our GHG emissions is the combustion of natural gas in our steam boilers and gas turbines; and diesel in our emergency diesel generator - which is seldom operated. The calculated value for the direct emission of carbon dioxide equivalent in 2015 was about 2.86 million metric tons. Prior to 2013 when Egbin power plant was under the management of the Power Holding Company of Nigeria, the company did not have records of carbon emissions and GHG. Our desire to operate sustainably in line with international best practices necessitated the creation of systems that facilitated the documentation of 2015 carbon emissions. This is in a bid to be able to capture, measure and subsequently evaluate Egbin's sustainability performance over time.

The air monitoring of the power plant is done measuring the under listed parameters at different locations.

S/N	LOCATIONS	(NO) µg/m3	(CO) µg/m3	(SO) µg/m3	(CH4) µg/m3	O%	TSP µg/m3	H2S
	NESREA LIMITS	313	30000	425	NS	NS	250	
1	Car lot	ND	3520	ND	ND	20	23	0
2	Reception	ND	2137	ND	ND	20	22	0
3	Chemistry unit	ND	4100	ND	ND	20.2	35	0
4	Boiler	ND	4330	ND	ND	20.4	44	0
5	1st floor	ND	3100	ND	ND	20.1	37	0
6	2nd floor	ND	4001	ND	ND	20.3	52	0
7	Turbine	ND	5501	ND	ND	20.5	103	0
8	Demin. office	ND	4550	38	ND	20.1	35	0
9	Kitchen	ND	5220	ND	ND	20.5	45	0
10	Store	45	4441	ND	ND	20.2	40	0
11	Boiler - furnace	120	7502	67	ND	20.4	130	0
12	Boiler - burner	175	7760	71.8	ND	20.1	100	0
13	Hydrogen plant	ND	4210	59.3	30	20.2	80	0
14	Gas Turbine Generator	61	6001	34	ND	20.2	100	0

ND - Not Detected





In any case, greenhouse gas like Sulphur hexafluoride (SF6) which is used in high voltage electrical equipment for insulation and to quench electric arcs, is not applied in our facility as most of our circuit breakers are the air type. The SF6 circuit breakers are used in the switch yard where Egbin wheels its power for evacuation. The switch yard is under the management of one of our major external stakeholders - the Transmission Company of Nigeria, who is responsible for the yard maintenance and its emissions.

The significant atmospheric pollutants in our facility except for CO2 are acid gases (NOX and SOX). According to the plant design, these GHG should be measured using analyzers installed on the stacks. However, due to the nonexistence of data collation previously, the sustainability performance of our plant with respect to acid gas emissions may not be assessed.

Going forward, Egbin has procured state of the art mobile flue gas analyzers and commenced the complete overhaul of flue gas analyzers in the plant in 2015, to support accurate analysis and determine quantity of NOX and SOX flowing through the stacks to the atmosphere, in order to evaluate the quality of our fuel and abate the emission of NOX and SOX. The average values of NOX and SOX for the reporting year is disclosed in this report – and all the data were below the limits set by the

National Environmental Standards and Regulations Enforcement Agency.



## The importance of biodiversity to our environment and to us at Egbin, is its significance in our ecosystem

## Conservation and Biodiversity

### Significance of Biodiversity

The indispensable dependence of people on biodiversity cannot be overemphasized. Our foods and fiber supplies as well as the materials and products we use in our everyday lives are predominantly from plants and animals. The microbes and bacteria which form a unique and critical section of the food chain ensure the degradation of the used materials and products in order to maintain the cycle in the ecosystem.

The sustainability of the ecosystem depends greatly on our ability to conserve biodiversity. The importance of biodiversity to our environment and to us at Egbin, is its significance in ecosystem services such as the protection of water resources, soil formation and protection, pollution breakdown and absorption, and its contribution to climatic stability.

Considering that people heavily depend on biological resources like the different variety of primary producers (plants), medicinal resources, wood products, ornamental plants, and breeding stocks, the conservation of biodiversity is

key to discovering effective biological control organisms and for breeding disease resistant species. Even genetic engineering of microorganisms used in the production of new processes and products is made possible because of the wide range of microorganisms in the environment.

It is well known that the management of the aforementioned products and services provided by biodiversity is essential to its long term availability just as it has been established that the poor people in our society depend more on biodiversity, as they are more reliant on local ecosystems for food and supplies. This makes them vulnerable to short supply which may arise as a result of the irreversible change of the state of biodiversity habitat, extinction of species and the obliteration of habitation due to population expansion and modern development.

The increasing need of energy in our society is partly responsible for the loss of diversity thereby lowering the ability of the environment to absorb carbon, filter waterborne and airborne pollutants, and remain a reliable source of natural resources needed for the survival of the human race.

### Quest to Save Biodiversity

In ensuring the conservation of biodiversity and consequently reducing the rate of its loss to modern development and increasing energy needs, we at Egbin always ensure that in conducting our business, we do it bearing in mind that sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The drive to operate sustainably propels us to be environmentally responsible in our quest to produce power, taking into account the absolute necessity of conserving biodiversity.

Characteristically, discarded water in our sump pit and neutralization sump pit from resin regeneration and water treatment processes, are tested for acidity and thence neutralized to the pH of between 6 and 9 before discharged into the water body. The pH level of the water is ascertained to guarantee the safety of the diverse microorganisms that inhabit in the marine ecosystem.

### Our Love for Nature

In order to assure the conservation of life in the marine ecosystem, as indicated earlier, we have a system that reduces the temperature of our discharge water to nearly ambient before it mixes with the larger water body. This is achievable by the means



of our extended discharge canal and a supplementary cooling system that decreases the temperature of the final discharge water and makes it reasonably close to atmospheric temperature before it flows into the lagoon. The flow of oil into the waterbody does not in any way conserve biodiversity; what's more, it destroys it because it exterminates the living organisms in the water as a result of the change in the required living conditions. Therefore, in the rare event that there is an oil leak from our facility, we use floating boom to curtail the discharge of oil from the plant to the lagoon.

Additionally, we have a system in place at the water intake area; designed to reduce young and adult fish entrainment and impingement. This goes a long way to sustain the life cycle of the fish ecosystem in the lagoon as well as the overall food chain in the marine ecosystem. Also, the cooling water which flows out of our heat exchangers into the discharge canal is not chlorinated for antifouling. The non-chlorination of the cooling water greatly reduces the mortality rate of fish eggs, larvae and other microorganisms in the water - which are essential components of biodiversity.

## Management of Waste

### Waste Import and Export

Nigeria is a signatory to the Basel Convention, a treaty aimed at regulating the import and export of waste. Egbin Power PLC whose operations resides in Nigeria and serves the Nigerian national electricity grid, does not in any way or form, move waste across national boundaries, neither do we trade waste with members and non-members of the Organization for Economic and Cooperation Development (OECD). Accordingly, zero tons of waste is shipped internationally.

### Solid Waste

The wastes generated from Egbin Power Plant are disposed by accredited contractors with the Lagos State Waste Management Agency (LAWMA) depending on the type of material. In the reporting year, an estimated value of 936 tons was disposed by LAWMA; and method of disposal by LAWMA is majorly landfilling.

### Liquid Waste

The management of waste oil is carried out in conjunction with the Lagos State Environmental Protection Agency (LASEPA). When we need to dispose



our waste oil, we invite LASEPA agents and their accredited contractors who buy the waste oil for recycling. Prior to the invitation of LASEPA, our chemists test the oil in our state-of-the-art laboratory to determine its water content proportion. The Health Safety and Environment (HSE) department at Egbin Power PLC ensures that the waste oil is delivered to the LASEPA accredited contractors under the supervision of the LASEPA agents, and a confirmation document is issued to HSE to ascertain that the waste oil was properly delivered to the approved contractors.

## Hazardous Waste

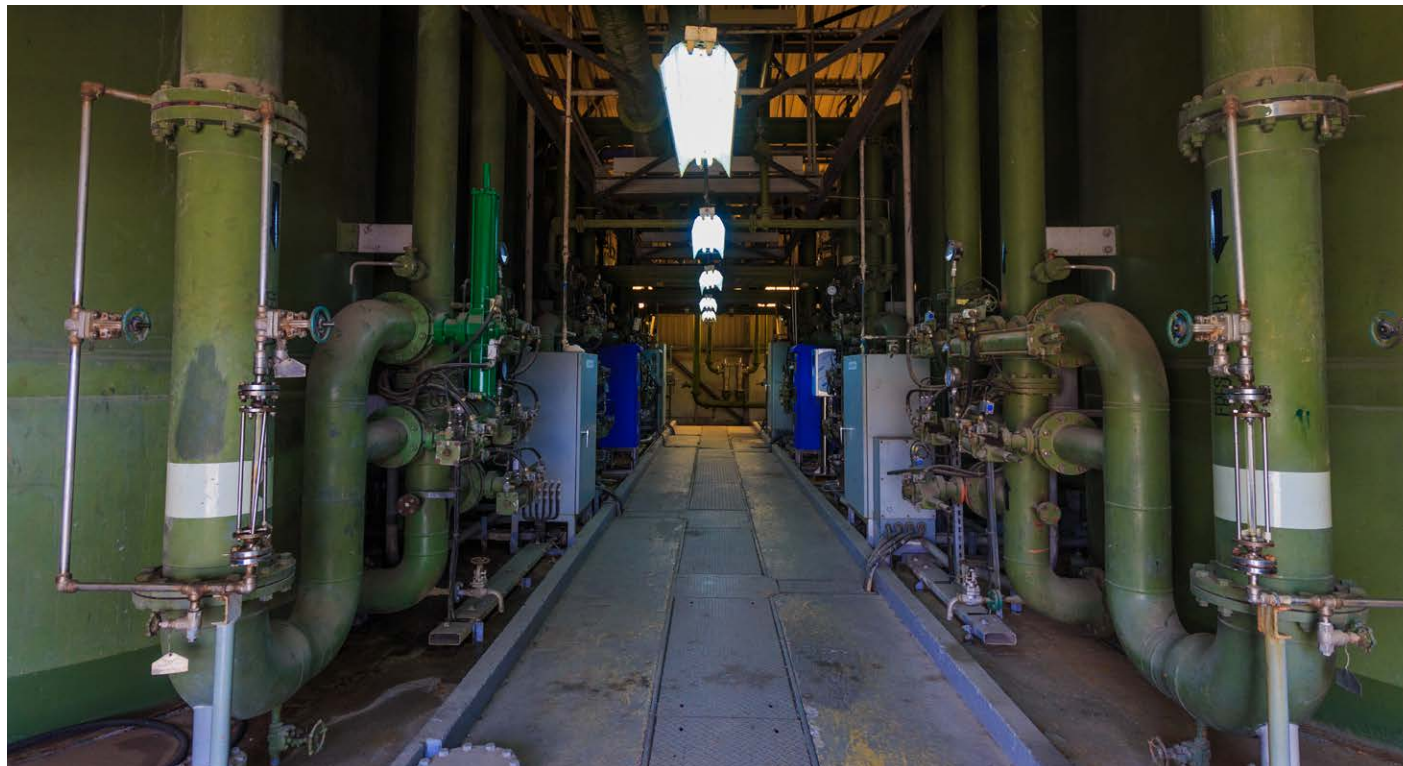
Hazardous waste generated within our facility ranges from acid stock sludge, caustic solution sludge, calcium hypochlorite solution sludge, lime sludge and lye sludge. In ensuring that these effluents do not pose a threat to the safety of the environment, we dilute and test for the pH. At every point in time when we test the acidity and alkalinity of the effluents in the pH scale, we always make sure that they are within the standards provided by the United Nations Environment Programme (UNEP), the Federal Environment Protection Agency and the Lagos State Environmental Protection Agency – pH between 6.5 and 8.5. Other tests are also conducted on the effluents discharge to the waterbody, they include total suspended solids, chemical oxygen demand, biochemical oxygen demand etc.

During the regeneration of resins in our water treatment and demineralization plants, waste water is produced. Most times, the waste water produced from the regeneration of resins in our water treatment and demineralization plants is acidic, therefore harmful to the marine ecosystem. As an obligation and environmental responsibility, we neutralize the regeneration waste waters with caustic soda (sodium hydroxide) in our neutralization sump pit and test for a pH of 6.5 to 8.5 before we discharge to the lagoon.

Resins are ion exchange polymers used in our condensate polishing, water treatment and demineralization plants, for separation, purification and decontamination of the water used in our facility for several purposes including for generation of steam to power the turbines and cooling water for critical equipment. Overtime, these resins lose the capability to remove minerals from the well water; hence they are regenerated with acid and caustic soda to revitalize them for more efficient and effective ionic

exchange operation. However, after a long period of usage, resin capacity test is performed, and if it fails the test, the resins will have to be taken out. The resins are thereafter disposed for recycling and to other industries that may require a low capacity resins.

The Demineralization Plant



# Resource Utilization

## Water Management and Conservation

Considering that many steam power plants including Egbin, draw water needed for the production of steam to drive the turbine from the groundwater aquifer, if drawn at a faster rate than being replenished either by infiltration from the surface or from streams, the water table can become lower, resulting in a cone of depression around our deep wells.

Based on geologic and hydrologic conditions of the aquifer, the impact on the level of water may be short-lived or last for a longer period, or even go completely dry due to excessive pumping.

For Egbin, the availability of water for the production of steam and the cooling of our systems is central to the sustainability of our business. Therefore we apply conservative principles in the operation of our steam power plant in order to conserve water.

It is a fact that the lower the volume of water we use in our system, the lower our operational cost. This is because we allocate considerable funds to the procurement of chemicals like caustic soda, sulphuric acid, sodium hypochlorite etc.

to treat the ground water at different stages to produce fresh water, portable water and demineralized water. Hence, the more we are able to conserve the water in our system, the higher its impact on our bottom line.

In addition, bearing in mind that our steam power plant was designed to run on zero make-up water because it is a closed system, we never fail to adhere to our mode of operation which not only saves us the money for purchasing chemicals for water treatment, but also spares us the energy that would have been used to pump the water from the groundwater aquifer through the water treatment plant, the demineralization plant and to storage.

## Reduced Energy Consumption

Egbin is a power plant that has the capacity to produce 1320 mega-watt to the national grid, however, we consume 7% of the energy generated to power pumps, compressors, control systems, plant auxiliaries and other critical equipment which must run 24 hours of the day.

One of our major achievements in the reporting year 2015 was the reduction



Water Clarifier

of our in-house energy consumption from 7% to 5.5%. In reducing our house loads, energy efficiency and management tools were applied, these enabled us to identify energy saving opportunities. The key areas where we recognized that we could reduce energy consumption were mode of operation and plant electrical systems.

As a thermal power plant whose turbines run on steam, water is central to the generation of power in our facility.

The management of demineralized water for the boiler; fresh water for the firefighting system; and portable water for our office complex and housing colony, Egbin has significantly reduced water consumption. Consequently, the energy required to pump water, whether treated or not, from the wells to the treatment plant, the treatment plant to the housing colony and within the station, was saved and sent to the grid for more revenues to impact our bottom line. The reduction in water



resource consumption has also reduced the cost of treating the water with consumables, which overtime added up to sizeable saving.

Furthermore, considering the fact that Egbin was built in 1983, the lighting system installed majorly consisted of incandescent light bulbs and some compact fluorescent (CFLs). Compared with Light Emitting Diodes (LEDs), the incandescent and CFLs bulbs consume more energy, have far higher operating cost, higher CO2 emissions, less durability and have same light output in Lumens but with LEDs consuming far lesser power. This necessitated the replacement of all the lighting bulbs in the office complex, the power house, auxiliary plants, the street lights in the facility and housing colony with Light Emitting Diodes (LED) lamps. The lighting bulbs in the tennis courts, clubhouse, swimming pool area were also replaced. As a result, we achieved an unprecedented light energy savings of 55%. The operation of the street lights was also managed in order to adequately take advantage of day lighting.



# Social Responsibility

Community Relations

Our People

 Health Safety and  
Security of Our People

Our Commitment to Safety





# Community Relations

## Stakeholders Engagement

In 2015, Egbin in recognition of internationally acclaimed best practices and in a bid to promote community development and stakeholder inclusiveness embarked on a process of identifying, mapping, assessing and weighting the expectations of its stakeholders, thus, including stakeholder identification the analysis into its business priorities with the aim of meeting and exceeding stakeholders expectations, where necessary. The union of the viewpoints of both the stakeholders and the organization enables the identification of issues which are of core importance to Egbin and its stakeholders.

Our commitment to building and growing a mutual relationship between our organization and the surrounding communities: Egbin, Ijede and Ipakan, has evolved over years. These relationships are established and maintained through constant engagement of the youths and community leader. The dialogues are premised on the foundation of respect for language, customs, human rights, religion and social beliefs.

To enhance relationships and foster

cultural integration with the people of Egbin, Ipakan and Ijede, the organization hosts the communities in quarterly meetings sharing information's about its activities, social responsibilities and receives feedback.

In 2015, our focus was to improve the security and standard of living of our local communities through different initiatives.

## Reinforcement of Health Care Facilities

Since takeover by KERL in 2013, Egbin has continuously strived to contribute immensely to the sustainable development of the society through different vehicles. In 2014, as one of our corporate social responsibilities, was the provision of constant electricity supply to the general hospital of Ijede, directly from the generating station.

This corporate responsibility was borne out of the quarterly meetings hosted by the organization for its local communities, having taken into consideration feedback from the communities. In 2015 with continuous investment in the initiative, we achieved a reduction in the operating cost of the health facility and improved the health



Donation to Universities: UNN Nsukka, UNILAG, UI and UNIABUJA.



Construction of boreholes with over-head water tanks in Egbin and Ijede communities

care services rendered to the local community of Ijede. In 2015, Egbin continued to develop relationships with the Local communities (Egbin, Ijede and Ipakan), through Corporate Social Relations, which includes and is not limited to:

- » Sinking of Portable water bore-holes in Egbin, Ijede and Ipakan communities, improving the quality of water consumed by the indigenes and preventing waterborne diseases in the community
- » Monthly donation of malaria drugs and preventive aids to Ijede General Hospital. This was kick-started by Egbin's commitment to checkmate malaria outbreak in the community.

## Community Empowerment

Egbin continues to support the local communities, through economic empowerment programs. In 2015, the organization sponsored a vocational training which featured boat driving, boat repairs, soap making and bead making trainings. Facilitators equipped the indigenes of the community with the necessary skills and management attitude in building a sustainable business through the various vocations. As an organization, Egbin has constantly invested in the security of the communities, through the donation of communication equipment's and financial contributions towards expansion of the Police area command headquarters in Ijede.

## The importance of biodiversity to our environment and to us at Egbin, is its significance in our ecosystem

Some of Egbin's corporate social responsibilities include but not limited to:

- » Our investment in the future energy sector leaders through the rehabilitation of the school facility in Egbin (Power Field Group of Schools) to improve the quality of education of the local community indigenes. With continuous efforts in raising rounded future generation leaders from our local communities, in 2016 Egbin will be offering scholarships to outstanding students who are indigenes of the communities. This is to encourage hard work among the growing generation.
- » Recognizing the value of development in our local communities, Egbin renovated the communities Town Halls and some blocks of school classrooms of the local communities.
- » In the quest to strengthen the coun-

tries research institution's, in 2015, Egbin donated High Pressure Heaters to 5 Federal Universities. This is to provide hands on training for students in the bio-energy field

- » In 2015, Egbin employed both skilled and unskilled labour from the local communities. Some of the local community indigenes were employed as full time staff of the company, while several



were employed as part-time/ contractors for the Overhaul project, which has been on-going since 2014.

## Addressing Egbin, Ipakan and Ijede Grievances

Egbin's grievance channel welcomes stakeholders in the local communities to file their grievances with the organization. In 2015, three grievances from the local communities were filed. Two pertained to social relation issues which include:

- » Employment of indigenes as permanent staff members of the organization.
- » Partnership with the local communities in sourcing for skilled and unskilled labour for the overhaul projects.
- » One was directed towards the operation of the power plant, while none pertained to human rights or environmental violations.





The development of new leaders and staff retention is critical to the sustainability of the organization. In 2015, Egbin employed young engineers to strengthen its labor force. About 15% of the young engineers who were employed based on merit and competence are indigenes of the local communities.

The plant overhaul project, which had the peak of its activities in 2015, was an avenue to empower the local communities. Korea Electric Power Corporation (KEPCO), the executors of the overhaul project partnered with the Local Communities to recruit both skilled and unskilled labour for it activities. By the end of 2015, the overhaul project engaged a total of 150 persons' in temporal employment.

April 29 2015, Egbin recorded a (Tier 1) spill, under the National Oil Spill Detection and Response Agency classification. This spill was adequately contained, within the plant facility and reported to the relevant authorities for inspections and further actions. Grievances were filed by the local communities with respect to the spill. No infraction or ligation was filled against the organization, as the responsible bodies declared that the spill was adequately contained. Subsequently, Egbin has also put in place several measures to checkmate future occurrence (See the Chapter on Environment).

**As an organization that understands the benefits of competitive advantage, Egbin attract and retain competent and capable people, with the aim of creating a workplace where employees' growth and job satisfaction are ultimate.**

## Our People

**T**he value we place on our employees can be gauged from our workplace protection scheme which apart from life insurance, medical care, disability and inability coverage, parental leave and retirement provision, we also ensure that our Health Safety and Environment policy and qualitative development programs and trainings, facilitated through local and international training organizations help safeguard the lives and careers of our esteemed human capital.

As an organization that understands the benefits of competitive advantage, Egbin attract and retain competent and capable people, with the aim of creating a workplace where employees' growth and job satisfaction are ultimate in order to sustain and grow our workforce. We employ an open and transparent but comprehensive performance assessment system. This performance and career development review was conducted for 100% of Egbin employees, both men and women, and all job grades (JG) from JG10 to JG 1.

This review has enabled the company realign its compensation benefit structure which was based on the civil service compensation benefit structure considering that the company was for-

mally managed by the government. In view of this; the organization developed a new and more competitive compensation structure, whereby compensation levels for each grade is within the same range (salary bands) irrespective of gender as was the case even before takeover from government.

The new compensation structure has significantly increased the standard of entry level wages/salaries when compared to the local minimum wage. The current ratio as at the period of reporting is about 8:1.

Also, in keeping our workforce up to date with the latest trends, technologies and techniques required to sustain a power generation company such as Egbin, in the reporting year, a training program was developed for our technical and non-technical staff in collaboration with our technical partner - Korea Electric Power Corporation (KEPCO), to attend several training and discussion sessions in South Korea.

Other local trainings aimed at achieving the same purpose was conducted by the National Power Training Institute of Nigeria for our new graduate engineers and by the Applied Engineering Technology Initiative Limited for expe-







will have 12 percent of our employees tending towards retirement, while 25 percent will retire in the next 10 years. This was as the rate of employee turn-over in 2015 was 0.77%.

rienced and non-experienced operation engineers.

Egbin is an organization that believes in gender equality and equal opportunity for all with staff strength of 393 employees and an annual staff turnover of 18 percent as at December 31, 2015. Out of the 393 members of staff, 37 were female and 356 were male. Although, the number of males in Egbin continues to dwarf their female counterpart, there was a little increase from 2014 when they were 32.

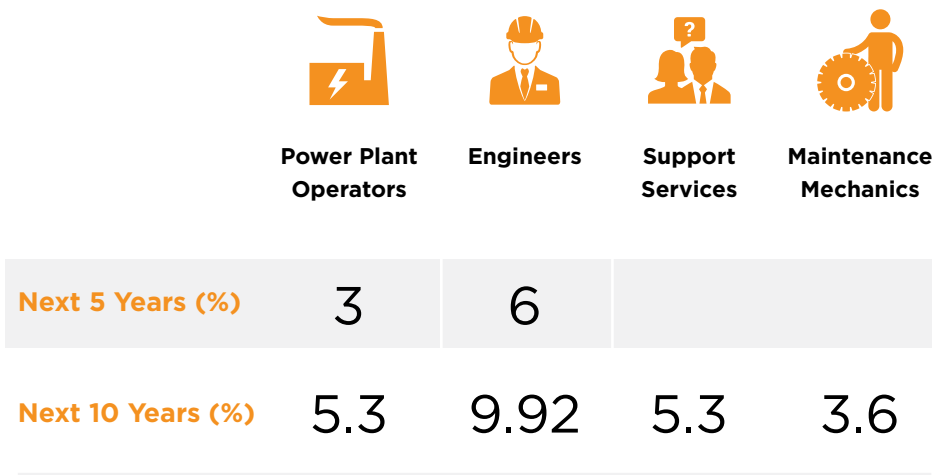
In the reporting year 2015, 38 (31male 7 female) new employees were permanently hired to increase effectiveness

and efficiency of our business operations whilst bridging the potential skills gap that will be created when the senior staff with nearly 35 years of experience or 60 years of age retires.

Therefore, the new recruits are of the following age group:  
20 – 30 years = 35 people  
31 – 40 = 1 person  
51 – 50 = 2 people

During the year 2015, in order to encourage sustainability through transgenerational transfer of skills and knowledge, the staff strength of the organization was increased by 11% compared to 2014. In the next 5 years, we

Retirement for the next 10 years



Developing Leaders

Trainee Engineering Program

The Trainee Engineering program was conceptualized to provide young engineers with the opportunity to learn, grow and build their career, while in the process help ensure Egbin has the right skills, leaders and culture needed to archive its business priorities now and in the nearest future. Forward looking, almost 20 percent of Egbin's technical staff are eligible to retire in 10 years, Egbin's Trainee Engineering program will produce high-potential employees, through targeted trainings and development to prepare them for leadership in the future.

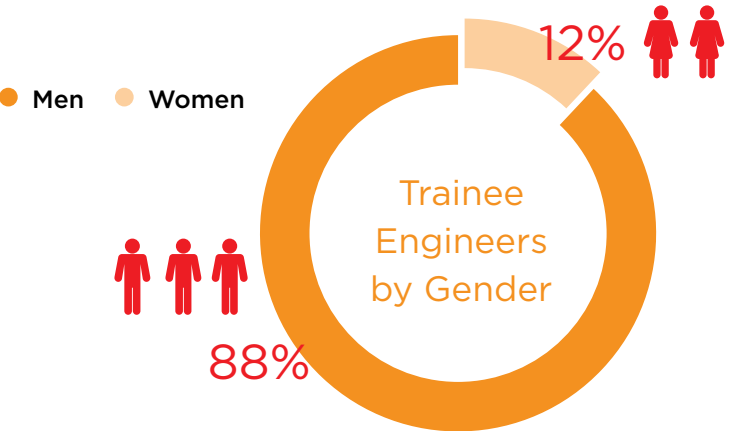
In 2015, the Trainee Engineering Program enrolled 33 young engineers, across several fields of engineering for the duration of one year. With our 'Equal Opportunity and Open Employment' policy, we conduct our recruitment process to select the best and talented people based on their ability and capability, without discrimination on age, gender, academic background, religious beliefs and culture.

Egbin Internship Program

Egbin internship program was designed for the empowerment of students and recent graduates of tertiary institutions in Nigeria. This program is structured to

expose students and recent graduates to Egbin's business culture, structure and operations, thereby acquiring technical and management skills for a period of 6months -1year.

In 2015, the internship program admitted 85 tertiary institution students and 6 recent graduates for both technical and management internship positions. Our interns are exposed to different departments of our operations, giving them hands on the job experience. Bridging the gap between the educational institutions and the industry, our seasoned engineers act as mentors to the interns, showing industry and workplace application of the knowledge acquired from the tertiary institutions.





## The Power behind Diversity

Diversification of perspectives has always been a major source of Egbin's strength. These diverse perspectives of our people bring about innovative ideas and effective solutions to challenges in the organization. Our belief in a culture that values diversity and inclusion has made our work environment very serene and accommodating.

At Egbin, we do not condone any form of discrimination or violence. We are committed to ensuring that employees, contractors and every user of the facilities are treated with respect for diversity, to promote equal opportunities for all. The organization is making considerable efforts to adopt a Corporate Governance framework of operation from the year 2016. This will include policies such as fairness and equal opportunity treatment in the work place, to further our commitment to diversity.

Our value for Gender equality motivates a happy workplace with a good work-life balance improving the organizations productivity. Egbin encourages employee promotion and job motivation without any discrimination between men and women. Egbin promotes a balance between work and life, encouraging employees to start families, through leave packages, such as parental leave for spouses. In 2015, we established the company's nursery facility, which



provides childcare services for both employees of the organization and also the local communities. The facility is of advantage, as it is of close proximity to the power station.

## Training and Development

The foundation of human resource development at Egbin is on-the-job training. In 2015, partnership with Korean Electric Power Cooperation (KEPCO), facilitated both on-the-job training and off-the-job training. Egbin recorded an

average of 48.7 hours of training per head. The trainings focused on capacity and capability development, equipping the staff with tools for workplace productivity. This includes soft skill and computer proficiency trainings.

The off-the-job trainings which were facilitated by KEPCO were conducted in international training facilities, equipping the technical staff with skills for efficient use and management of the equipment's. The international trainings featured both classroom and practical knowledge sharing experiences by ex-

We are committed to ensuring that employees, contractors and every user of the facilities are treated with respect for diversity, to promote equal opportunities for all.

perienced subject matter facilitators. Egbin's familiarization roadshow programs for staff members to ensure full compliance with the policies of the organization started in 2014. In 2015, road show programs for leave management and Human Resource interaction was organized. This elucidated the policies on leave and human resource issues, the staff members were encountering.

## Performance Management

Egbin's performance assessment system is structured around achievement assessment of the set goals based on a capability assessment conducted by the employee, his line manager and the head of department. All employees of the organization are subject to the performance assessment system. The assessment results are expressed in scores that are used in promotion considerations and personnel management, such as selecting mentors for trainee engineers and interns.

In 2015, the performance assessment was conducted twice. This featured the mid-year review and the end-of-the-years review, assessing all 393 employees of the organization. In ensuring the assessment of an employee is 3600, the system has employed two instruments:

- » Performance Evaluation
- » Behavioural Assessment

The assessors (Line-Manager and Departmental Head) discuss with the employee's the criteria for assessment, based on the objectives set at the beginning of the year, through the goal setting system. The performance assessment system is conducted through 3 steps

**Self-Assessment** - the employee rates himself with reference to his/her set

goals and key performance index at the beginning of the assessment year.

**Line Manager Assessment** - a meeting between the Line manager and the employee, discussing issues that emerged during the assessment and targeted development actions in the following assessment calendar.

**Departmental Head Assessment** - a meeting consisting of the departmental head, line manager and the employee, analyzing the assessment and the issues raised by the assessment of the employee, by the line manager and departmental head. The departmental head passes the final remarks and recommendations to the human resource department.

The performance assessment system is an open system, which welcomes criticism by the assessed employee, ensuring a fair and equal treatment in the organization.





# Health Safety and Security of Our People

Egbin has always given major priority to safety of its internal and external stakeholders – including suppliers, contractors and their employees – ensuring immediate attention to all perceived risks, reducing it to its lowest impact potential. We execute our operations according to our licensor's - Nigerian Electricity Regulatory Commission (NERC) safety regulation.

Egbin is very proud of its strong safety culture and ethics. Employees of egbin continuously worked to improve the organizations position as a safe power generator and to achieve a goal of zero accidents, through several initiatives which were featured through the 2015 calendar.

## Annual Safety Week

In Egbin, the core value of safety at all levels of the company's operation goes beyond a mantra. This necessitated the organization of the safety week, where employees were treated to workshops on hazard identification within the Plant's environment and Regulatory requirements for the company's operations. In 2015, the safety week featured sever-

al activities, which includes:

- » A Workshops facilitated by the Lagos State Fire service: The workshop equipped employees with the knowledge, on how to respond proactively and effectively in the event of fire incidents. The facilitator concentrated efforts, training the fire marshal team of Egbin. The team constitutes first aiders and oil spill responders in case of emergency situations. A seminar on personal health with peculiar emphasis on protection of the ears: The seminar was very enlightening as it covered the various ways the ears can be cared for and damaged by the employee's daily activities. The seminar provided free auditory tests to help employees better gauge the current health status of their ears.

The safety department unveiled the organizations safety slogan "Working with safety, Life for Tomorrow"

## Quarterly Health Seminar

Egbin aims to attain sustainability through Maintenance of a Healthy workforce. This is one of the core objectives of the company's health and wellness policy. In line with this,



the company facilitated quarterly health talks with its HMO (Hygeia Nigeria) where employees were enlightened on a diverse range of topics ranging from making ideal diet choices to lifestyle adjustments to eliminate high risk behavior and

basic disease prevention techniques all geared towards one purpose: To Help employees stay healthy at all times. The seminars also featured free medical check-ups for employees of the organization.

## Reactivation of Fire Alarm System

The Station Fire Alarm System was installed and activated in the last quarter of 2015 with the dual aim of providing ample time for the safe evacuation of employees and to serve as a trigger for the prompt deployment of response teams to minimize damage to company assets. This system was tested and officially put to use with a Fire drill that held in December 2015. The fire alarm system provides a comprehensive early warning and notification system for fire incidents within the plant.

## Unsafe-Act/Unsafe-Condition Drop Boxes

Striving to settle an autonomous culture through enhancing safety awareness and ensuring the goal of zero accidents, the Health Safety and Environment department, introduced the unsafe act/unsafe condition drop boxes positioned at strategic places in the organizations facilities, for easy and prompt reporting of any identified hazard by the employees. This was enforced to improve the reporting of incidences by employees ensuring quick intervention.

## Disaster and Emergency Planning and Response



Our approach to security management of the biggest thermal power plant in Nigeria is PROACTIVENESS. We do this through intelligence gathering, setting out standard practices and ensuring strict adherence to security policies and procedures by all stakeholders which include, security personnel, members of staff, suppliers and visitors. This is the routine practice which in most cases deals with short and long term incident management.

Our meticulously thought-out and articulated incident management and response system that has been adopted by the company, has inputs and contributions from senior employees in the management team. These members of staff have been particularly trained on the part to play in the event of an emergency in the facility.

Furthermore, on-site and off-site emergency planning has also been carried out. This involved emergency plan testing, training, practical field exercises, routine incident awareness training for employees and security personnel in collaboration with security and emergency response agencies such as the Nigerian Police Force, Department of State Security, Nigerian Army, Ambulance Services etc.

In guaranteeing a robust security network and system in and around the power plant, we developed a screening and approval system for third



party suppliers - guard companies supplying guards and armed riot policemen; ensured effective communication through routine awareness reports, mobile phones and secured radio channels; and trained staff and contractors on operating procedures and standard forms. Occasionally, trainings are carried out if the need arises. This is to ensure that suppliers and other stakeholders who use or visit the facility, comply with the safety and security requirements and standards expected in the discharge of their duties.

### Our commitment to ensuring safety through trainings and awareness campaigns has driven us to facilitate 77% of the recommended trainings and workshops in the NERC Safety Manual IV

## Our Commitment to Safety

In line with the Nigerian Electricity Regulation Commission (NERC) health and safety code, Egbin has a total of 22 members of the management in the safety committee headed by the CEO, working in collaboration with the Health Safety and Environment department, to implement the company's health and safety policy. The safety committee is grouped into six sub-groups, saddled with the responsibility of assessing the risk of the various sections and areas of the facility, thus, identifying the inherent hazards and proffer mitigating actions/control measures.

In compliance with the NERC Safety Manual IV, Egbin conducts recommended trainings which are not limited to: general safety awareness, office safety, confined space work and safety, identify and execute training, hearing conservation training, and accident investigation. Our commitment to ensuring safety through trainings and awareness campaigns has driven us to facilitate 77% of the recommended trainings and workshops in the NERC Safety Manual IV.

In 2015, Egbin successfully implemented a comprehensive occupational health

and safety management system, which the employees have been trained on. The manual is a compendium of the various companies' safety policies guiding the employees and any other stakeholder who performs any activity in the organization. The Occupational Health and Safety (OHS) manual:

- » Defines the responsibilities of the management & employees as well as other stakeholders.
- » It comprises of the various systems of recording & reporting incidents and accidents in workplace e.g. near miss report forms, incident forms, accident investigation forms, checklist forms etc.
- » It highlights the working procedures for various work activities to ensure the safety of the employees, equipment & environment. This also includes the work permit.

The system of rules applied in recording and reporting accidents statistics in Egbin, is in accordance with the company's OHS manual. The accident report form is used by victims of accidents or persons working with the victim to report accidents within the workplace. The accident investigation team conducts a root cause

investigation, making recommendations to the management.

To sensitize our stakeholders and promote a safety culture, the health safety and environment department constituted a 40-member safety representative's committee (nearly 10% of the staff strength) to engage employees in safety discussions and enlightenment during standup meetings, toolbox meetings and all other fora that is aimed at promoting the safety of personnel, equipment and the environment.

The safety representatives are from all the departments of the organization, collaborating with the safety management committee to ensure safety compliance in all departments. With improved internal communication within the organization, weekly safety messages on various safety issues are sent in emails to all employees, to serve as continuous reminders to the information learnt in formal safety trainings organized quarterly.

The MERS (Middle East respiratory syndrome) and Ebola virus ravaged some countries in the Middle East

and West Africa in 2015. Egbin rose to the occasion with a comprehensive plan to prevent the spread of the infection in the plant and within the office complex. Some of the preventive initiatives included:

- » Creation of awareness through posters, emails and safety talks.
- » Education of employees on personal hygiene to avoid transmission.
- » Screening using infrared thermometer was introduced at the station gates while hand sanitizer dispensers were positioned at all entrance doors.







## GRI G4 Core “In Accordance” Option

GENERAL STANDARD DISCLOSURES				
GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
STRATEGY AND ANALYSIS				
G4 - 1	Statement from the most senior decision maker of the organization.	Board Chairman's Notes	Disclosed	-
G4 - 2	Description of key impacts, risks and opportunities.	Business Sustainability Strategy and Risks	Disclosed	-
ORGANIZATIONAL PROFILE				
G4 - 3	The name of the organization.	Company Profile	Disclosed	-
G4 - 4	The primary brands, products and services.	Company Profile	Disclosed	
G4 - 5	The location of the organization's headquarters.	-	Disclosed	7A Oluwa Road, Ikoyi, Lagos, Nigeria.
G4 - 6	The number of countries where the organization operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report.	-	Disclosed	One country (Nigeria)
G4 - 7	The nature of ownership and legal form.	Strong Financial Performance	Disclosed	-





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - 8	The markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).	Business Sustainability	Disclosed	-
G4 -9	The scale of the organization.	Company Profile	Disclosed	-
G4 -10	Total contractor workforce (contractor, subcontractor, independent contractor) by employment type, employment contract and regulatory regime.	Growth of Local Economy Our People	Disclosed	-
G4 -11	Percentage of contractor employees (contractor, sub-contractor and independent contractor) working for the reporting organization covered by collective bargaining agreements by country or regulatory regime.	-	Not Disclosed	Egbin does not yet have a system in place to assess contractors on collective bargaining agreement coverage for their employees.
G4 -12	The organization's supply chain.	Supply Chain Management	Disclosed	-
G4 -13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain.	Company Profile	Disclosed	-
G4 -14	Whether and how the precautionary approach or principle is addressed by the organization.	Business Sustainability Strategy and Risk		
G4 -15	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.	-	Disclosed	International Financial Reporting Standard.



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -16	Memberships of associations (such as industry associations) and national or international advocacy organizations.	-	Disclosed	Association of Power Generation Companies. Operators of the Electricity Industry. Council for the Regulation of Engineering in Nigeria (COREN)
EU1	Installed Capacity, broken down by primary energy source and by regulatory regime.	Company Profile	Disclosed	-
EU2	Net Energy Output broken down by primary energy source and by regulatory regime.	Egbin-Plant Description	Disclosed	-
EU3	Number of residential, industrial, institutional and commercial customer accounts.	-	Not Disclosed	Egbin is a power generation company and due to the structure of the Nigerian power industry, does not interface with residential, industrial, institutional and commercial customers, thus Egbin does not have these customer accounts. The electricity distribution companies will have such information.





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
EU4	Length of above and underground transmission and distribution lines by regulatory regime.	-	Not Disclosed	Egbin is a power generation company and does not directly manage above and underground transmission and distribution lines to residential, industrial, institutional and commercial customers. The Transmission Company of Nigeria and the electricity distribution companies will have such information.
EU5	Allocation of CO2 emissions allowances or equivalent, broken down by carbon trading framework.	-	Not Disclosed	There is currently no carbon trading framework in Nigeria at the moment, therefore Egbin does trade CO2.
IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES				
G4 -17	The organization's financial statement	Financial Status	Disclosed	-
G4 -18	Defining the report content and Aspect Boundaries.	The Egbin Sustainability Report	Disclosed	-
G4 -19	The material Aspects identified in the process for defining report content.	Business Sustainability Strategy and Risks	Disclosed	
G4 -20	The Aspect Boundary within the organization	Materiality Matrix Graph	Disclosed	-
G4 -21	The Aspect Boundary outside the organization.	Materiality Matrix Graph	Disclosed	-



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -22	The effect of any restatements of information provided in previous reports, and the reasons for such restatements.	-	Not Disclosed	The 2015 Egbin Sustainability report is the maiden edition; therefore, no statements were made in the previous reports, because this is the first.
G4 -23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries.	-	Not Disclosed	The 2015 Egbin Sustainability report is the maiden edition, therefore, no changes were made in the previous reports, because this is the first
STAKEHOLDER ENGAGEMENT				
G4 -24	List of stakeholder groups engaged by the organization.	Our Stakeholders	Disclosed	-
G4 -25	The basis for identification and selection of stakeholders with whom to engage.	-	Disclosed	Regulatory requirements and compliance. The Nigerian Electric Power Sector Reform Act 2005. Corporate Social Responsibility. The Nigerian Grid Code. The sustainability of Egbin power generation business.
G4 -26	The organization's approach to stakeholder engagement.	Community Relations	Disclosed	-
G4 -27	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns.	Stakeholders Engagement	Disclosed	-



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
REPORT PROFILE				
G4 -28	Reporting period (such as fiscal or calendar year) for information provided.	Commitment to Sustainability	Disclosed	-
G4 -29	Date of most recent previous report (if any).	-	Not Disclosed	The 2015 Egbin Sustainability report is the maiden edition; therefore, no date of most recent previous report was given.
G4 -30	Reporting cycle (such as annual, biennial).	-	Disclosed	Annual
G4 -31	The contact point for questions regarding the report or its contents.	-	Disclosed	Corporate Governance and Compliance Department, Egbin Power PLC, corp.gov@egbin-power.com or expressyourself@egbin-power.com
G4 -32	The ‘in accordance’ option the organization has chosen.	-	Disclosed	Core Option
G4 -33	Sustainability Report Assurance.	-	Not Disclosed	The 2015 Egbin Sustainability Report is the maiden edition and doesn’t have a previous report as point of reference. However, Egbin subsequently intend to externally assure our sustainability reports for data integrity.
GOVERNANCE				

GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -34	The governance structure of the organization, including committees of the highest governance body. The committees responsible for decision-making on economic, environmental and social impacts.	Board of Directors	Disclosed	-
G4 -35	The process for delegating authority for economic, environmental and social topics from the highest governance body to senior executives and other employees.			Not Applicable to Core “In Accordance” Option.
G4 -36	Whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental and social topics, and whether post holders report directly to the highest governance body.			Not Applicable to Core “In Accordance” Option.
G4 -37	Processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics. If consultation is delegated, describe to whom and any feedback processes to the highest governance body.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -38	The composition of the highest governance body and its committees.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -39	Whether the Chair of the highest governance body is also an executive officer (and, if so, his or her function within the organization’s management and the reasons for this arrangement).	-	-	Not Applicable to Core “In Accordance” Option.



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -40	The nomination and selection processes for the highest governance body and its committees, and the criteria used for nominating and selecting highest governance body members.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed. Report whether conflicts of interest are disclosed to stakeholders.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -42	The highest governance body’s and senior executives’ roles in the development, approval, and updating of the organization’s purpose, value or mission statements, strategies, policies, and goals related to economic, environmental and social impacts.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -43	The measures taken to develop and enhance the highest governance body’s collective knowledge of economic, environmental and social topics.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -44	The processes for evaluation of the highest governance body’s performance with respect to governance of economic, environmental and social topics.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -45	The highest governance body’s role in the identification and management of economic, environmental and social impacts, risks, and opportunities.	-	-	Not Applicable to Core “In Accordance” Option.

GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -46	The highest governance body’s role in reviewing the effectiveness of the organization’s risk management processes for economic, environmental and social topics.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -47	The frequency of the highest governance body’s review of economic, environmental and social impacts, risks, and opportunities.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -48	The highest committee or position that formally reviews and approves the organization’s sustainability report and ensures that all material Aspects are covered.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -49	The process for communicating critical concerns to the highest governance body.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -50	The nature and total number of critical concerns that were communicated to the highest governance body and the mechanism(s) used to address and resolve them.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -51	The remuneration policies for the highest governance body and senior executives.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -52	The process for determining remuneration. Report whether remuneration consultants are involved in determining remuneration and whether they are independent of management. Report any other relationships which the remuneration consultants have with the organization.	-	-	Not Applicable to Core “In Accordance” Option.



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -53	How stakeholders' views are sought and taken into account regarding remuneration, including the results of votes on remuneration policies and proposals, if applicable.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -54	the ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same country.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -55	The ratio of percentage increase in annual total compensation for the organization's highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same country.	-	-	Not Applicable to Core “In Accordance” Option.
ETHICS AND INTEGRITY				
G4 -56	The organization's values, principles, standards and norms of behaviour such as codes of conduct and codes of ethics.	Corporate Governance	Disclosed	-

GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -57	The internal and external mechanisms for seeking advice on ethical and lawful behaviour, and matters related to organizational integrity, such as helplines or advice lines.	-	-	Not Applicable to Core “In Accordance” Option.
G4 -58	The internal and external mechanisms for reporting concerns about unethical or unlawful behaviour, and matters related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines.	-	-	Not Applicable to Core “In Accordance” Option.
ELECTRIC UTILITIES SECTOR DISCLOSURES				
ECONOMIC				
Economic Performance				
G4 - EC1	Direct economic value generated and distributed.	Statement of Value Added	Disclosed	-
G4 - EC2	Financial implications and other risks and opportunities for the organization's activities due to Climate change.	Impact of Climate Change on our Business	Disclosed	The financial implications were not stated because the management of Egbin Power Plc is still reviewing the long term impacts of climate change on our business operations. However, the risks and opportunities were disclosed.



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - EC3	Coverage of the organization's defined benefit plan obligations.	-	Disclosed	Egbin maintains a defined contribution Pension Scheme in accordance with the Pension Reform Act, 2004. Based on the reviewed Pension Reform Act, 2014, the contribution by the employer and the employee was reviewed to a contribution of 10% and 8% respectively of the employees' monthly emolument. The scheme covers 100% of the pension benefit and liabilities. Contribution is employer 10% and employee 8% respectively of the employees' monthly emolument. The participation in retirement plans is mandatory, as it is guided by act of parliament (Pension Act 2014 reviewed).
G4 - EC4	Financial assistance received from government.	-	Disclosed	Pioneer status application is still in progress (when completed will give the company tax relief for 3 years in the first instance)
Market Presence				
G4 - EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	Our People	Disclosed	Current ratio of standard entry level to local minimum wage level is about 8:1

GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - EC6	Proportion of senior management hired from the local community at significant locations of Operation.	-	Not Disclosed	Non in employment
Indirect Economic Impacts				
G4 - EC7	Development and impact of infrastructure investments and services supported.	Project Investments Community Relations Growth of Local Economy	Disclosed	-
G4 - EC8	Significant indirect economic impacts, including the extent of impacts.	Growth of Local Economy Materiality Graph Rebranding of the Organization Business Sustainability	Disclosed	The rating of Bloomberg has made Nigeria one of the most desired countries for foreign direct investment. Because of the above and other improvement, Nigeria was rated one of the 20 fastest growing economies in 2015 by Bloomberg at the rate of 4.9%.
Procurement Practices				
G4 - EC9	Proportion of spending on local suppliers at significant locations of operation.	Value Added Statement Procurement Practices Growth of the Local Economy	Disclosed	-
Availability and Reliability				





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
Former EU - 6	Management approach to ensure short and long-term electricity availability and reliability.	Project Investments Availability and Reliability	Disclosed	-
EU - 10	Planned Capacity Against Projected Electricity Demand Over the Long Term, broken down by energy source and regulatory regime.	Investment Plans for Third Year of Takeover - 2016	Disclosed	-
Demand – Side Management				
Former EU - 7	Demand-side management programs including residential, commercial, institutional and industrial programs.	-	Not Disclosed	Egbin is a power generation company and due to the structure of the Nigerian power industry, does not interface with residential, industrial, institutional and commercial customers, thus Egbin does not have demand-side management programs. The Transmission Company of Nigeria and the electricity distribution companies possess the information.
Research and Development				
Former EU - 8	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development.	-	Not Disclosed	Egbin does not yet have a full fledge Research and Development department/unit. However, the task of research and development is presently assigned to the Technical Operation department, pending the establishment of the R&D unit.



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
Plant Decommissioning				
Former EU - 9	Provisions for decommissioning of nuclear power sites.	-	Not Disclosed	Egbin is a dual (natural gas and heavy fuel oil) fired steam power plant whose sixth unit was commissioned in 1989, therefore Egbin is still very much within its design-life and has not been recommended for decommissioning at this point in time. Moreover, a life-extension program was performed on three out of six units in 2015.
System Efficiency				
EU - 11	Average Generation Efficiency of Thermal Plants by Energy Source and by Regulatory Regime.	Improved Plant Efficiency	Disclosed	-
EU - 12	Transmission and distribution losses as a percentage of total energy.	-	Disclosed	According to the Nigerian Electricity Market Rule, Transmission losses of 8.05% (439,968.364 MWh) were recorded in 2015. Egbin is a power generation company, which interfaces with the Transmission Company of Nigeria for wheeling of power to the grid at high voltage (330KV), therefore doesn't have distribution losses.





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
ENVIRONMENT				
Materials				
G4 – EN1	Materials used by weight or volume	-	Not Disclosed	The information is not currently being recorded. Systems will be put in place to collate this data in the nearest future.
G4 – EN2	Percentage of materials used that are recycled input materials.	-	Not Disclosed	The information is not currently being recorded. Systems will be put in place to collate this data in the nearest future.
Energy				
G4 – EN3	Energy consumption within the organization.	-	Disclosed	Total fuel (natural gas) consumed: 1,041,235,306.55kg (57,899mmscf) Total electricity consumption: 316,524,990KWh Total electricity sold: 5,148,924.03MWh Total energy consumption: 1,164,594.600MJ
G4 – EN4	Energy consumption outside of the organization.	-	Disclosed	Energy consumed by Transmission Company of Nigeria, Cyrex Ltd, Nigerian Gas Company, Housing colony and community health centre. (746,773,200KJ)



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 – EN5	Energy intensity	-	Disclosed	Energy intensity ratio: 6.67mwh/employee The organization-specific metric (the ratio denominator) chosen to calculate the ratio: Number of full time employee of Egbin Power as at December 2015. Type of energy included in the intensity ratio: Electricity. Ratio used energy consumed within the organization.
G4 – EN6	Reduction of energy consumption.	International Operating Standards	Disclosed	-
G4 – EN7	Reductions in energy requirements of products and services.	International Operating Standards	Disclosed	-
Water				
G4 – EN8	Total water withdrawal by source.	-	-	Surface Water: 32,660m3 per hour per unit. Groundwater: 300m3 per hour (i.e.75m3 per well from 4 wells)
G4 – EN9	Water sources significantly affected by withdrawal of water.	-	Not Disclosed	The information is not currently being recorded. Systems will be put in place to collate this data in the nearest future.
G4 – EN10	Percentage and total volume of water recycled and reused.	-	Disclosed	47% (450x5 units x100/4800 (i.e. 300x16hrs of running wells) Assumptions: 5units on load and wells running for 16hrs





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
Biodiversity				
G4 – EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	-	Not Disclosed	The information is not currently available. This data will be collated and disclosed in subsequent reports.
G4 – EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.	Conservation of Biodiversity	Disclosed	-
G4 – EN13	Habitats protected or restored.	-	Partially Disclosed	No habitat was restored in the reporting year 2015.
G4 – EN14	Total number of IUCN red list species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.	-	Not Disclosed	Egbin does not have the total number of IUCN red list species and national conservation list species affected by our operations at the moment.
EU13	Biodiversity of offset habitats compared to the biodiversity of the affected areas.	-	Not Disclosed	The information is not currently available. This data will be collated and disclosed in subsequent reports.
Emissions				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 – EN15	Direct greenhouse gas (GHG) emissions (scope 1).	Green House Gas Management	Disclosed	2.86 million metric tons of CO2 was released in the year 2015. (The gases included in the calculation are CH4, O2 and CO2. Egbin does not yet have in place a system to measure biogenic CO2. No base year was chosen to measure the sustainability performance of Egbin with respect to emissions, because the 2015 Egbin sustainability report is our maiden edition.
G4 – EN16	Energy indirect greenhouse gas (GHG) emissions (scope 2).	-	Not Disclosed	Egbin does not yet have the system in place to adequately measure indirect greenhouse gas emissions, as emissions from the consumption of electricity, heat and steam are not presently available.
G4 – EN17	Other indirect greenhouse gas (GHG) emissions (scope 3).	-	Not Disclosed	Presently, Egbin does not have the data to measure indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by Egbin, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 – EN18	Greenhouse gas (GHG) emissions intensity.	-	Disclosed	GHG Emission Intensity Ratio: 0.145kg of CO2 per mega Joules of energy generated. Specific metric for calculation: GHG emission intensity = metric tons of CO2 / energy generated in mega joules. GHG emissions type: Only Scope 1 The calculation of the GHG emission intensity was based on only the mass of CO2 gas.
G4 – EN19	Reduction of greenhouse gas (GHG) emissions.	Greenhouse Gas Management	Partially Disclosed	Egbin does not yet have in place systems to accurately determine the amount of reduction in GHG emissions. However, initiatives were taken to lower GHG.
G4 – EN20	Emissions of ozone-depleting substances (ODS).	Greenhouse Gas Management	Disclosed	-
G4 – EN21	NOx, SOx, and other significant air emissions.	-	Not Disclosed	All through the year, Egbin NOx, SOx and other emissions were measured by our flue gas analyzers to be negligible far below the LASEPA standard of 132ppm and FEPA 500ppm.
Effluents and Waste				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 – EN22	Total water discharge by quality and destination.	-	Disclosed	Planned and unplanned water discharges: 1000m3 discharged per day to Lagoon. 732m3 regeneration waste water discharged to lagoon after every regeneration Quality of Water and Treatment method pH of waste water always between 6.0 - 9.0 before discharged to lagoon. Neutralization process was used to ensure the pH is within acceptable limits.
G4 – EN23	Total weight of waste by type and disposal method.	-	Disclosed	An estimated value of 936 tons of waste was disposed in 2015. All the different types of waste generated within the Egbin facility is professionally handled by the Lagos State Waste Management Agency.
G4 – EN24	Total number and volume of significant spills.	Oil Spill Management	Disclosed	-
G4 – EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms Of the Basel convention annex i, ii, iii, and viii, and percentage of transported waste shipped Internationally.	-	Not Disclosed	No waste was imported, exported or transported internationally under the terms of Basel convention in the year 2015.





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - EN26	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharges of water and runoff.	Conservation of Biodiversity	Partially Disclosed	Egbin does not yet have the biodiversity value of protected species. Also, the Lagos lagoon has not been designated a nationally or internationally protected area.
Products and Services				
G4 - EN27	Extent of impact mitigation of environmental impacts of products and services.	-	Not Disclosed	Egbin have no data to quantitatively describe the extent to which environmental impacts of electricity have been mitigated in the year 2015.
G4 - EN28	Percentage of products sold and their packaging materials that are reclaimed by category.	-	Not Disclosed	Egbin is a power generation company, therefore does not package its products with materials that are detrimental to the environment.
Compliance				
G4 - EN29	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance With environmental laws and regulations.	Environmental Infringement	Disclosed	None
Transport				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce.	-	Not Disclosed	Egbin have no system in place to collate the data that describes the environmental impacts of transporting products and other goods and materials.
Overall				
G4 - EN31	Total environmental protection expenditures and investments by type.	-	Disclosed	Waste disposal, emissions treatment, and remediation costs: N18.2 million Prevention and environmental management costs: N15 million
Supplier Environmental Assessment				
G4 - EN32	Percentage of new suppliers that were screened using environmental criteria.	-	Not Disclosed	Egbin does not yet have a system in place to screen suppliers using environmental criteria.
G4 - EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken.	-	Not Disclosed	Egbin does not yet have a system in place to screen suppliers using environmental criteria.
Environmental Grievance Mechanisms				
G4 - EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms.	Environmental Infringement	Disclosed	None





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
SOCIAL				
Labour Practices and Decent Work				
Employment				
G4 – LA1	Total number and rates of new employee hires and employee turnover by age group, gender and Region.	Our People	Disclosed	Employee Turnover by Age Group: 0.77% (All male, Nigerians, 60 years and above)
G4 – LA2	Benefits provided to full-time employees that are not provided to temporary or part-time Employees, by significant locations of operation.	Our People	Disclosed	Significant Location of Operation: Egbin (A town in Ikorodu Local Government of Lagos State, South West Nigeria)

GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 – LA3	Return to work and retention rates after parental leave, by gender.	-	Disclosed	Employees that were entitled to parental leave: Male: 356 Female 37 Employees that took parental leave: Male: 1 Female: 1 Employees who returned to work after parental leave ended: Male: 1 Female: 1 Employees who returned to work after parental leave ended, who were still employed twelve months after their return to work: Male: 1 Female 2 Return to work and retention rates of employees who took parental leave, by gender: Male: 1 Female: 4
Former EU14	Programs and processes to ensure the availability of a skilled workforce.	Our People Training and Development	Disclosed	-
EU15	Percentage of employees eligible to retire in the next 5 and 10 years broken down by job category and by region.	Our People	Disclosed	-
Former EU16	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors.	Our Commitment to Safety	Disclosed	-





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
EU17	Days worked by contractor and subcontractor employees involved in construction, operation & Maintenance activities.	Business Sustainability	Disclosed	-
EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training.	Health, Safety and Security of our people	Disclosed	-
Labour/management relations				
G4 - LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements.	-	Not Disclosed-	There are no provisions in the contract with our contractorsXXX
Occupational Health and Safety				
G4 - LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs.	Our Commitment to Safety	Disclosed	-



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	-	Not Disclosed	Type of injury recorded last year were minor injury of first aid cases (FAC). Details of the injury rate, occupational disease rate, lost days' rates etc. are not available at the moment due to unavailability of the monthly health record statistics of employees that should be sent to HSE office by our hospital management organization (HMO). However, we had no record of fatality.
G4 - LA7	Workers with high incidence or high risk of diseases related to their occupation	-	Not Disclosed	Details are not available at the moment as Egbin did not have medical records of such.
G4 - LA8	Health and safety topics covered in formal agreements with trade unions	Our Commitment to Safety	Disclosed	-
Training and Education				





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - LA9	Average hours of training per year per employee by gender, and by employee category.	Training and Development	Disclosed	Average hours of training that the organization's employees have undertaken: Gender: Male: 17,278.5 hours. Female:1849.5 hours Employee Category: JG 1 = 48.67 hours JG 3 = 146 hours JG 4 = 778.7 hours JG 5 = 973.4 hours JG 6 = 2,530.9 hours JG 7 = 3,115 hours JG 8 = 4,040 hours JG 9 = 2,287.6 hours JG 10 = 4,040 hours JG 11 = 97.3 hours JG 12 = 1,071 hours (JG - Job Grade: This is the system applied by Egbin for the categorization of its workforce)



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	-	Disclosed	Workshop on Time and Stress Management. Workshops on MS Suites (Basic and Intermediate classes) Workshop on Nigerian Taxes. Refresher course for Basic Thermal Operations. Workshop on Personal Development at work. Workshop on Coaching and Mentoring Staff. Workshop On Strategic Thinking, Planning and Execution. Workshop Ethics, Attitude and Productivity Improvement. Workshop Ethics, Attitude and Productivity Improvement.
G4 - LA11	Percentage of employees receiving regular performance and career development reviews, by Gender and by employee category.	Our People	Disclosed	-
Diversity and Equal Opportunity				
G4 - LA12	Composition of governance bodies and breakdown of employees per employee category according To gender, age group, minority group membership, and other indicators of diversity.	Executive Management	Disclosed	Table showing details of Egbin Management team responsible for the management of the daily operations of the plant
Equal Remuneration for Women and Men				





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	Our People	Disclosed	The ratio is 1:1 and it is the same for all levels irrespective of the gender. XXX
Supplier Assessment for Labour Practices				
G4 - LA14	Percentage of new suppliers that were screened using labour practices criteria.	-	Not Disclosed	An accurate value is not available at the moment; however, the suppliers were screened using the following requirements; Ensure that suppliers have a Group life assurance for the workers. Provision of HMO for the workers or Medical Re-imburement.
G4 - LA15	Significant actual and potential negative impacts for labour practices in the supply chain and actions taken.	-	Not Disclosed	The information is not currently available. This data will be collated and disclosed in subsequent reports.
G4 - LA16	Number of grievances about labour practices filed, addressed, and resolved through formal Grievance mechanisms.	-	Disclosed	None
Human Rights				
Investment				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - HR1	Total number and percentage of significant investment agreements and contracts that include Human rights clauses or that underwent human rights screening.	-	Not Disclosed	All investment agreements and contracts underwent the Egbin in-house human right screening process as stipulated in the Egbin Human Rights policy. However, Egbin does not have the accurate value for this disclosure at this point in time.
G4 - HR2	Total hours of employee training on human rights policies or procedures concerning aspects of Human rights that are relevant to operations, including the percentage of employees trained.	-	Not Disclosed	Employee trainings on human rights were not conducted in the reporting year 2015.
Non discrimination				
G4 - HR3	Total number of incidents of discrimination and corrective actions taken.	-	Disclosed	None
Freedom of Association and Collective Bargaining				
G4 - HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights.	-	Disclosed	None
Child Labour				





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - HR5	Operations and suppliers identified as having significant risk for incidents of child labour, and measures taken to contribute to the effective abolition of child labour.	-	Disclosed	None
Forced or Compulsory Labour				
G4 - HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of all forms of forced or compulsory labour.	-	Disclosed	None
Security Practices				
G4 - HR7	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations.	-	Disclosed	Egbin employed the services of a third party company to ensure the safety and security of the facility and the environs. The third party company reports that 100% of its security personnel have undergone human rights trainings.
Indigenous Rights				
G4 - HR8	Total number of incidents of violations involving rights of indigenous peoples and actions taken.	-	Disclosed	None
Assessment				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 - HR9	Total number and percentage of operations that have been subject to human rights reviews or Impact assessments.	-	Disclosed	None
Supplier Human Rights Assessment				
G4 - HR10	Percentage of new suppliers that were screened using human rights criteria.	-	Disclosed	None at the moment.
G4 - HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken.	-	Disclosed	None at the moment.
Human Rights Grievance Mechanisms				
G4 - HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms.	Addressing Egbin, Ipakan and Ijede Grievances	Disclosed	-
Society				
Local Communities				
G4 -SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	Addressing Egbin, Ipakan and Ijede Grievances	Partially Disclosed	Percentage of operations and impact assessment is not yet available.
G4 -SO2	Operations with significant actual and potential negative impacts on local communities.	Addressing Egbin, Ipakan and Ijede Grievances	Disclosed	-





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified.	-	Not Disclosed	Egbin's anti-corruption and anti-bribery policy framework was still being reviewed by the board of directors as at 31 December 2015.
G4 -SO4	Communication and training on anti-corruption policies and procedures.	-	Not Disclosed	Egbin's anti-corruption and anti-bribery policy framework was still being reviewed by the board of directors as at 31 December 2015.
G4 -SO5	Confirmed incidents of corruption and actions taken.	-	Disclosed	No confirmed incident of corruption and action was recorded in the reporting year 2015.
Former EU19	Stakeholder participation in decision making processes related to energy planning and infrastructure development.	-	Not Disclosed	Egbin is currently working on the Egbin strategic document which will capture the processes and procedures for stakeholder participation.
Former EU20	Approach to managing the impacts of displacement.			The construction of Egbin power plant commenced in 1983 and was completed in 1989. Back then, the plant was owned by the Federal Government of Nigeria, therefore all forms of re-settlements and compensation to the locals for the impacts of the construction of the power plant, was systematically carried out.



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
Former EU21	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans.	Disaster and Emergency Planning and Response	Disclosed	-
EU22	Number of people physically or economically displaced and compensation, broken down by type of project.	-	Not Disclosed	The records of the displaced people from their lands when Egbin power plant was constructed in 1983 is not with Egbin Power Plc at this point in time, as these records may be in the possession of the relevant government agency when the power plant was still owned by the Federal Government of Nigeria.
Public Policy				
G4 -SO6	Total value of political contributions by country and recipient/beneficiary.	-	Disclosed	None
Anti-Competitive Behaviour				
G4 -SO7	Total number of legal actions for anti-competitive behaviour, anti-trust, and monopoly practices and their outcomes.	-	Disclosed	None
Compliance				
G4 -SO8	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations.	-	Disclosed	None
Supplier Assessment for Impacts on Society				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -SO9	Percentage of new suppliers that were screened using criteria for impacts on society.	-	Disclosed	None, as this system was not in place in the reporting year 2015.
G4 -SO10	Significant actual and potential negative impacts on society in the supply chain and actions taken.	-	Not Disclosed	In the reporting year 2015, no supplier was penned down to have significant actual and potential negative impact on the society with respect to our supply chain management system.
Grievance Mechanisms for Impacts on Society				
G4 -SO11	Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms.	-	Disclosed	None was filed in the reporting year 2015.
Product Responsibility				
Customer Health and Safety				
G4 -PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.	-	Not Disclosed	None, as Egbin Power Plc is a power generation company, therefore does not manufacture a product whose cycle life may pose risk to the general public.
G4 -PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes.	-	Disclosed	None.

GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
EU25	Number of injuries and fatalities to the public involving company assets including legal judgments, settlements and pending legal cases of diseases.	-	Disclosed	None
Access				
Former EU23	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support service.	-	Disclosed	Considering the fact that Egbin power plant is situated in Lagos -the economic nerve centre of Nigeria, there are plans with the Federal Ministry of Power, to dedicate unit 6 to serve the Lagos metropolis, therefore boosting economic activities in the state.
EU26	Percentage of population unserved in licensed distribution or service areas	-	Not Disclosed	Due to structure of the Nigerian power industry, Egbin is only licensed to generate electricity. Thus, Egbin are not in custody of the data with respect to transmission and distribution infrastructure, and may not be able to estimate overall and unserved population.
EU27	Number of residential disconnections for non-payment, broken down by duration of disconnection And by regulatory regime	-	Not Disclosed	Egbin Power Plc is a power generation company, and therefore does not interface directly with residential, commercial, or industrial electricity consumers.





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
EU28	Power outage frequency	-	Not Disclosed	Due to the structure of the Nigerian power industry, Egbin who is a power generation company, does not have in its possession the accurate number of customers served. This information is domiciled at the electricity distribution companies and the transmission company. Therefore, we cannot at the moment, accurately calculate the System Average Interruption Frequency Index (SAIFI).
EU29	Average power outage duration	-	Not Disclosed	The six units were down for 16707.52 hours in the year 2015.
EU30	Average plant availability factor by energy source and by regulatory regime	-	Disclosed	The number of hours of planned outage: 744 hours The number of hours of forced outage: 265.91 hours. Average availability factor: 47%.
Provision of Information				



GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
Former EU24	Practices to address language, cultural, low literacy and disability related barriers to access and safely use electricity and customer support services			Egbin Power Plc generates and wheels out power into the national grid in a contained facility that is accessible to only authorized personnel and screened visitors. Therefore, Egbin does not relate directly or indirectly with electricity consumers. However, our signage labeling and safety warnings are written in English and Korean, which are the official languages of Nigeria and South Korea – our technical partner.
Product and Service Labeling				
G4 -PR3	Type of product and service information required by the organization’s procedures for product and service information and labelling, and percentage of significant product and service categories subject to such information requirements	-	Not Disclosed	Egbin Power Plc is a power generation company and does not produce packaged products and services that may need to be labelled.
G4 -PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcomes	-	Disclosed	None





GRI G4 Disclosure Number	Disclosure Definition	Disclosure Location	Disclosure In Report Status	Direct Response Status Clarification
G4 -PR5	Results of surveys measuring customer satisfaction	-	Not Disclosed	Egbin Power Plc is a power generation company, therefore does not interface directly with residential, commercial, or industrial electricity consumers.
Marketing Communications				
G4 -PR6	Sale of banned or disputed products	-	Disclosed	None
G4 -PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning Marketing communications, including advertising, promotion, and sponsorship, by type of outcomes	-	Disclosed	None
Customer Privacy				
G4 -PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	-	Disclosed	None
Compliance				
G4 -PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	-	Disclosed	None



