

Preliminary Challenges and What the Future Holds for Power Generation

by

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SAHARA POWER GROUP

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COMPANIES

NG Power

- Joint Partnership with Hankuk on FIPL Comprising of Omoku (150 MW), Trans-Amadi (136 MW), Eleme (75 MW) & Afam (360* MW) power plants in Rivers State.
NG Power(70%), Rivers state Government (30%)

KERL (KEPCO (30%) + ERL(70%))

- Joint Partnership with Korea Electric Power Company owning 70 % of Egbin Power Plant; a 1320 (6X220) MW thermal generating company

NEDC(90%)/KERL(10%)

- Owning 60% stake of the Ikeja Electricity Distribution Company

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Current National Generation Profile

2/03/14 Report

- Installed (and under construction) capacity of power plants: 13,804MW
- Installed available capacity: 6,642MW
- Actual generation capability: 4,743MW
- Peak Generation: 4,180MW

Peak generation to date: 4,518MW on 23/12/2012

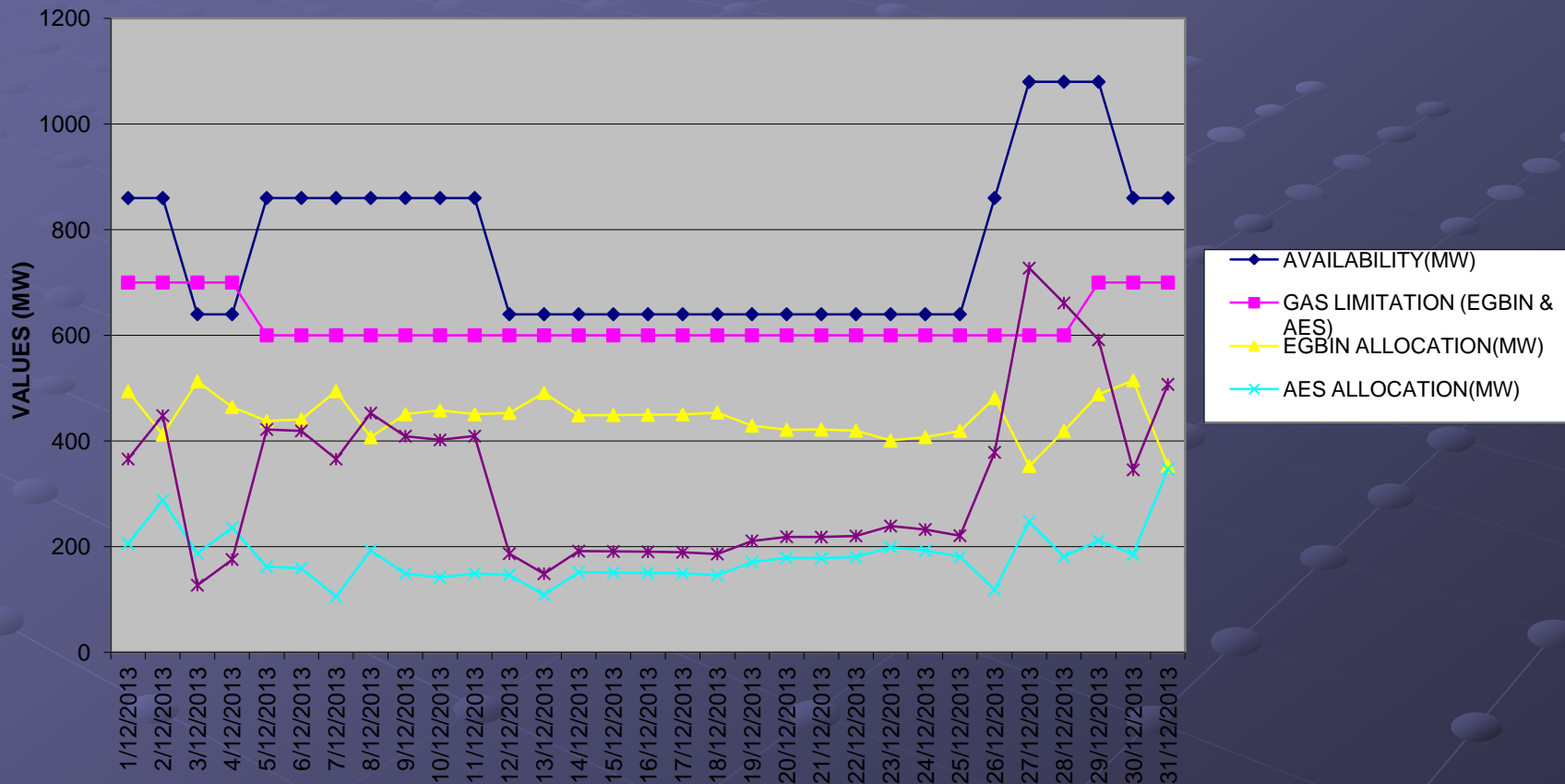
Maximum installed available capability to date: 7,203MW on 24/02/2014

Egbin Power Plant

- 1320MW power plant with 6 x 220MW gas-firing into steam-driven turbo-generators
- Commissioned between 1984 – 1987
- Located near Ikorodu, Lagos State
- Largest power plant in Nigeria
- At full capacity requires approximately 330mmscf/d
- Since 2007 has had Unit 6 out with a damaged rotor
- Currently has 5 Units available
- Staff strength currently of about 600 personnel
- AES has a 300MW barge-based generating plant on the jetty of Egbin.

EGBIN POWER PLC.

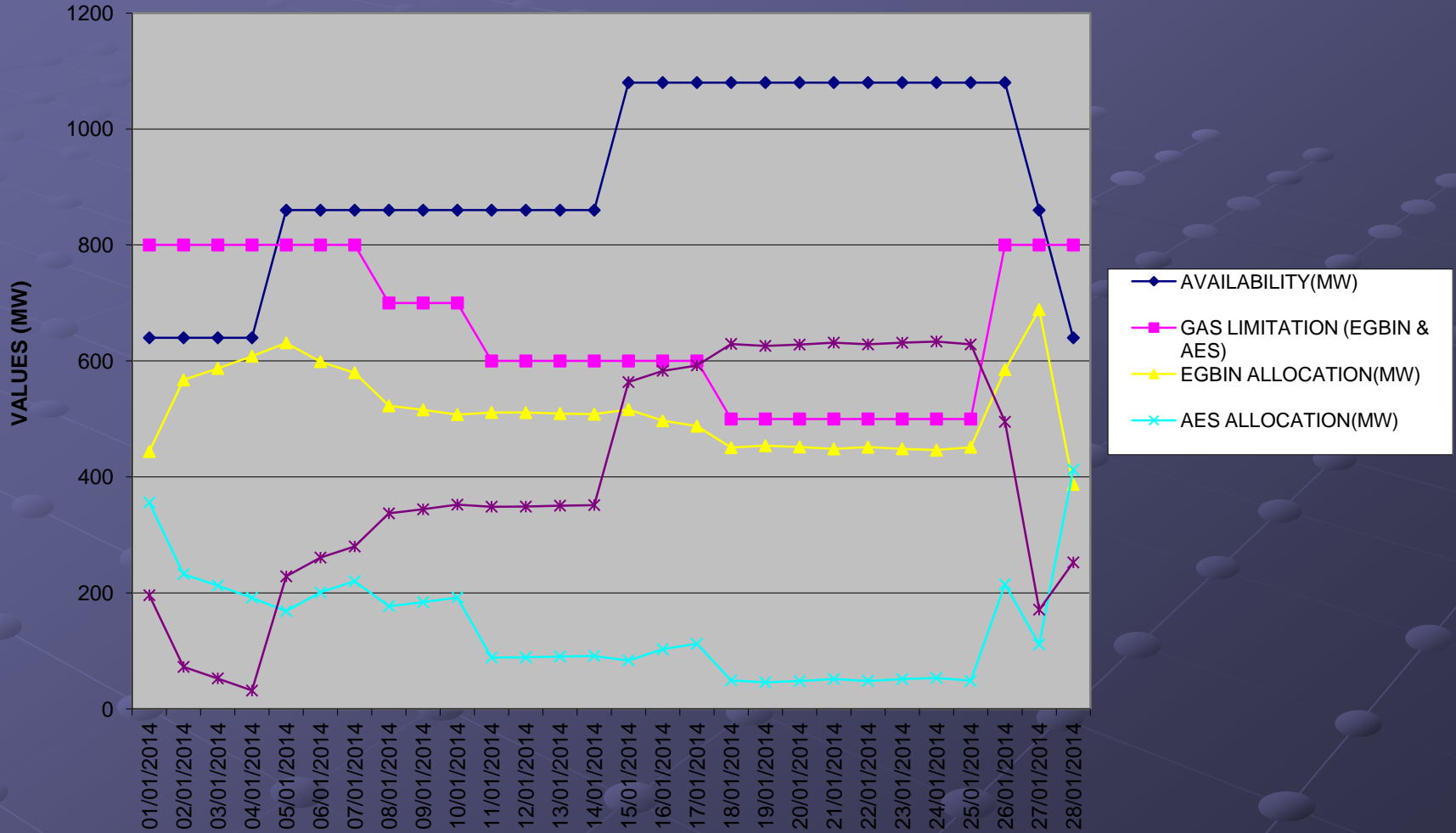
A GRAPH SHOWING THE EFFECT OF GAS LIMITATION ON THE STATION FOR DECEMBER 2013



DAYS OF IN THE MONTH OF DECEMBER 2013.

EGBIN POWER PLC.

A GRAPH SHOWING THE EFFECT OF GAS LIMITATION ON THE STATION FOR JANUARY (1ST - 28TH) 2014.



DAYS IN JANUARY 2014

Egbin Challenges

- Inadequate fuel supply
- Payment delays
- Interim rules
- Newness of the deregulated market i.e. still early days
- Lack of trust between Gencos and Discos
- Poor maintenance culture
- Inefficiencies and over-manning
- Ageing experienced workforce
- Transmission bottleneck
- Community issues

Generation Challenges

- High transmission and distribution losses at over 40%
- Need to ensure non-politicising of decisions
- Local financial sector requires a steep learning curve wrt infrastructure finance
- Long-lead times for equipment/spares
- Finite OEM resources being globally competed for
- Lack of statistics and data
- Inadequate training
- Distribution is the Achilles heel of the industry
- Embedded generation, need to ensure transparency of contracts based on commercial terms

The Nigerian Gas Sector Issues

From a Power perspective, there is a need for:

- Committed implementation of the Nigerian Gas Master Plan (NGMP)
- Adequate processing and supply of dry gas
- Regulating the DSO of upstream suppliers
- The industry to be better enabled
- Adequate policy to govern the industry (PIB)
- Development of gas infrastructure
 - Western network
 - Eastern network
 - Interconnect
- Key steps to be taken for the development of a national gas grid

Table of Power Plant Technologies¹¹

	Ability to follow demand	Reliability	\$Capital Cost / delivered MW	Construction duration in years	Typical Load Factor
OC - Gas	Very Good	Good	0.6-0.8M	1 – 1.5	85%
CC - Gas	Very Good	Good	0.8-1.2M	2 – 2.5	85%
Coal	Good	Good	1.5-2M	3 - 4	90%
Nuclear	Very Poor	Good	3-6M	5 - 7	85%
Hydro	Fair	Good	2-3M	3 - 5	80%*
Wind onshore	Very Poor	None	0.8-1M	<1	25%
Wind offshore	Very Poor	None	1.5-2.5M	2.5-3.5	40%
Solar	Very Poor	Poor	3-5M	1 - 2	20%

The Future 1

- ✓ Egbin Unit 6 to be returned to service before end of Q3, 2014
- ✓ KERL to double the capacity of Egbin by the development of additional 1350MW of generation in fulfilment of the obligation to FGN.
- ✓ Deregulation of gas prices
- ✓ Combine cycle to become the standard technology to be deployed
- ✓ Consolidation of the industry, with vertical integration of generation and distribution
- ✓ Consideration to be given to the development of mini-hydro power plants
- ✓ Development and investment in accurate and definitive system studies lead by TCN will improve planning

The Future 2

- ✓ Establishment of an Energy ministry to foster better collaboration between the gas and power sectors given the strong relationship between them
- ✓ Land access and way-leave compensation needs streamlining.
- ✓ “Smarter” grid
- ✓ Demand-side management
- ✓ A more assertive NERC (regulator) wrt supervision responsibilities and role
- ✓ Implementation of feed-in-tariffs to attract and encourage private sector investment in coal-fired and solar-powered plants
- ✓ Tariff pricing needs to stay competitive especially the commercial rates, else power stabilises but it is no longer competitive i.e. average national electricity prices:

Nigeria 18c/kwh, SA 10c/kwh, UK 20c/kwh, US 12c/kwh, Germany 35c/kwh

The Future 3

- ✓ Automation and technology to come to the rescue
- ✓ Closer integration into the West Africa Power Pool (WAPP) required wrt import/export of power —will help to minimise threat of the River Niger being dammed
- ✓ Need to put in place the appropriate framework for the sector
- ✓ Entrant of major Power utilities to takeover companies and invest
- ✓ Attraction of capital to fund the sector i.e. Pension funds
- ✓ Full competition across the power sector value chain

Conclusions

- Future should be interesting and enabling, privatisation should result in decisions being taken based on technical and commercial merit divorced from political considerations.
- There are major challenges ahead but this can be overcome, critical to this is having a consistency of approach in governmental decision-making and policy implementation.
- Privatisation will trigger the requisite investment required in a “win-win” outcome as income (read profits) will only be generated if electricity is generated and sold.
- Given the competitive nature of the global demand for funding worldwide for infrastructure there is a need for strong domestic banking support for the domestic power sector and the gas sector which have a strong inter-dependency between them.

Q & A





Thank you.