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Private Power Generator Usage in Nigeria

LRI Africa

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LRI Africa Database

One of the biggest challenges international companies face in Africa is a shortage of qualified local manpower. In response to this issue, we have developed a large database of professionals who are available to work for you in Africa. These professionals have necessary knowledge and skills to undertake business in Africa. They will work for you as an in-house consultant. They are covered by our professional indemnity insurance and, as required, are supported by our London office. Please contact us for your free access to the database.

One of the oft-cited problems of doing business in Nigeria is the reliability of its electricity supply. Power cuts have been common in the country for many years, and supply is struggling to keep apace with the already high demand from increased industrialisation and the burgeoning urban population. As a consequence, the use of private petrol and diesel generators for residential, commercial and industrial purposes is widespread. International companies have been reluctant to commit to Nigeria as they do not wish to add the cost of generating their own power to their budget.

President Goodluck Jonathan and his predecessors have sought to address this significant challenge to the growth of the Nigerian economy by committing to improve infrastructure and the stability of the power supply. Power sector reforms have been in place since 2010.

LRI Africa interviewed Nigerians living and working in the capital, Abuja, to find out their perspective, and the extent to which private generator usage remains. The following is a summary of the interviews conducted on 20 May 2014.

How widespread is the use of private generators in Nigeria? Do you think their use has decreased since the power sector reforms started?

Power generation is still a huge problem in Nigeria. In 1999, the previous president Obasanjo ran his election campaign based on the promise of delivering an additional 10 GW of generation capacity. In the end, he managed only about 2-4 GW before leaving office. Studies found after his presidency that the infrastructure was incapable of delivering 10 GW of generation, and that the power lines needed to be replaced. This work will cost millions of USD and a very committed government. Many locals think that they will be using private generators in Nigeria for at least another 10-15 years.

Power supplied by the national grid is extremely variable and inconsistent. Outages can occur for 2-3 hours before the power comes back on for 2-3 hours, and they do not follow any schedule. In some places, outages can occur for over a week. The continual inconsistency in the power supply has led to the widespread adoption of private generators as a back-up power source throughout Nigeria.

There are 3 types of private generator user in Nigeria: ordinary residential users, commercial users and industrial users. The common perception is that 9 out of 10 people living in cities own a generator or live in premises which have a generator, though no data exists or is available as to the actual number of generators being used. In cities, generators are used mainly for air conditioning, refrigeration and electrical goods. In small towns, generators are more of a status symbol and are not as widespread. In rural areas, small generators are used, as many rural areas currently have no connection to the national grid. These small generators are powered up at night to watch TV or to charge mobile phones, which most people in these regions now have.

LRI Publications

LRI publishes detailed reports in a variety of areas related to the energy sector. The reports combine first-hand knowledge from interviews with expert analysis.

Details of two of our forthcoming reports on Africa are given below.

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Sub-Saharan African Oil and Gas: Opportunities for Manufacturing Suppliers

A comprehensive examination of the oil and gas industry in Sub-Saharan Africa, this report provide specific country analyses of Nigeria, Angola, Mozambique, Tanzania, Ghana and Equatorial Guinea.

The Sub-Saharan Africa Electricity Sector: Opportunities for Manufacturing Suppliers

A detailed look at the power sector in Nigeria, Kenya, Mozambique, Tanzania and South Africa, and the opportunities for industry suppliers in those countries.

Which companies are currently selling private generators in Nigeria? Do some companies have a better perception than other?

There are many different types of Chinese and other foreign-manufactured generators available in Nigeria, but the interviewees were not aware of any domestic generator manufacturers. All the big international manufacturers import their generators into the country. The generators are sold in markets all over Nigeria and are very easily attainable.

Perkins is one of the major manufacturers who supplies generator engines sold in Nigeria and it has a good reputation. John Holt is a Nigerian company who acts as distributor and also offers maintenance.

Most low to middle income earners (e.g. most of the Nigerian population) would have a 2.8 – 5 kVA generator in their home. This size of generator is used to power fans, fridges and household electronics. The vast majority of these low-mid range users buy Chinese generators due to the low initial cost.

How much do private generators cost to purchase?

A 1 kVA generator for small electronics may have cost about USD 93 (NGN 15,000) 10-15 years ago. Today, the same generator would cost about half that (USD 49).

The following table lists average price ranges for typical generators sold in Nigeria. All prices have been converted from the local currency, Naira (NGN) to US dollars (USD) at a rate of 162 NGN to 1 USD.

Generator size (kVA)	Typical use	Average cost estimate (USD)
3.2	Small residential.	USD 61 for entry level. USD 185-277 for better known make (Honda, Yamaha, etc.)
5	Small residential.	USD 401-926, depending on make
6.5-7.5	Medium residential.	Minimum USD 494-617
10-15	Some middle-class, but mostly above middles-class residential use, some office. Generators < 10 kVA are mostly petrol, and > 10kVA are mostly all diesel.	USD 1,543-3,086
20	Very rarely in homes, more for office or commercial, hotels. These are needed to power air conditioning units and heaters in bigger premises.	USD 7,407
30	Small manufacturing. Less Chinese products at this level. Lots of Perkins generators are used when kVA requirement high as these are familiar, trusted, and thought to be reliable, and there are also lots of spare parts are available and lots of mechanics available to fix them.	USD 9,259-12,345
100-150	Small-medium industry	USD 18,519-24,691
350	For example, use for 15 flats each with 4 air conditioning units, electric cookers and water heaters.	USD 30,864-43,210
500	Medium-large manufacturing.	USD 61,728-74,074
750+	Factories.	Prices are not published for this size of generator.

Objectives and Services of LRI Africa

In Africa, political situation has been steadily improved years after civil wars were ended, and wealth has been brought to Africa by discoveries of natural resources. Remarkable economic achievements have been observed in recent years. According to the African Development Bank, the economy in Africa has grown faster than in any other regions in the world. The current GDP of 26 billion dollars is projected to double by 2020. The region's work force will reach 1.1 billion by 2040, exceeding that of China and India combined.

Despite this promising prospect, not many international companies have entered African market yet. This is not only because of lack of information available about the continent but also because of lack of support services available in the continent. In view of this situation, LRI Africa has launched a comprehensive range of services at affordable rates, including:

- **Business research service for all the countries and sectors**
- **Project services from plan development and feasibility studies to execution and monitoring and management**
- **Mobilising in-house consultants to work as team members of our clients**

Please feel free to contact us for detailed information.

Payment terms – are generators typically purchased outright, or in instalments?

There is very little trust between buyers and vendors in Nigeria, and almost all payments are made outright with purchases made over the counter. Payment by instalments is very rare. It is technically possible to get credit and pay by instalment, but there are many procedures to go through with banks and guarantors, and almost no one follows this payment process.

How long does it typically take to receive a generator after placing an order?

In situations where there is no stock, it may be possible to pay a deposit after which an order will be placed by the distributor to import the required generator. Imports may take up to a month for shipping. When the generator arrives, the balance is paid, after which it is possible to collect the product. However, there is widespread mistrust of this process in Nigeria as not all distributors are legitimate and it has been known for deposits to be paid without the goods ever being received.

Approximately how much does it cost to run a generator?

The majority of homes and small offices use 3.5-5 kVA petrol generators and will run them for around 40 hours per week. This equates to an average cost of about USD 124 per month (USD 31 per week) based on 200 litres usage per month at USD 0.62 per litre. To put this cost in context, the cost of electricity from the grid for a 2-bedroom apartment would be about USD 37-43 per month. An average 3 to 4-bedroom home might pay about USD 62-93 per month for grid-supplied electricity.

Is the noise and smell of generators an issue?

In heavily urban and congested areas, it may be difficult to have conversations outside, as in some offices, for example, they often place the generator near the entrance at street level. The smell from the generators can also be a problem in cities where the tall buildings tend to restrict the movement of air. There is sometimes a choking smell in heavy urban centres, but this smell may also be a result of pollution from traffic. The smell from generators is not an issue in more open spaces.

What is more important in choosing a generator, initial cost, running cost or quality?

For most people, the initial cost is definitely the deciding factor, and buyers will usually haggle on the cost to try and get a good deal. The operation cost is not really a consideration. There are Chinese cheap products throughout Nigeria, and often there will be three types of generator under the same name and model at different prices. An original 5kVA Honda generator may cost USD 926, but a Chinese clone can be less than half that at around USD 400-430.

Do they work well? Do they require much maintenance? What is the normal lifespan of a generator?

An average generator with very good maintenance may last about 10 years. Where generators are not so well cared for (often at commercial premises, where people do not look after them as they are not their own), generators may last only 1-2 years. This unreliability is a particular problem with the cheaper Chinese products.

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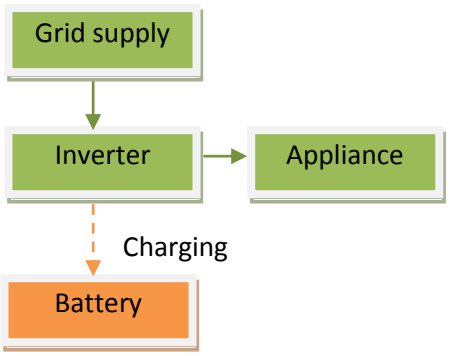
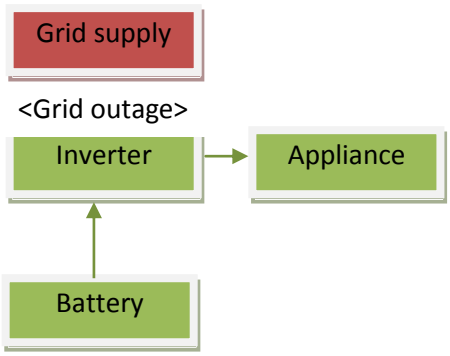
During power outages, are there any alternatives to private generators being used in Nigeria?

In the last couple of years, power inverter/chargers have started to appear. These connect appliances to the mains and also charge batteries from the grid supply. When there is an outage in the grid supply, they switch the power source for the appliance to the battery.



Inverter/charger operation during grid supplied electricity



Inverter/charger operation during grid outage

The initial cost of these systems is very high, so they are not widely used. Indian manufacturers have the best reputation for inverters in Nigeria, and some banks use them for ATMs.

A basic entry level residential inverter/charger (e.g. to power a TV set for 2 nights, some lights, fans etc) will cost about USD 926. This price does not include the additional purchase of a separate battery for storage that is required. A 30 kVA inverter will cost about USD 7,400, and 20 x 200A batteries will be needed, each battery costing about USD 308.

Solar panels, inverters and batteries can be bought together as the best option for alternative back-up power generation and storage, but such systems are prohibitively expensive for widespread adoption, and there are concerns over the fragility of solar panels.

PMCAFRICA

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