

Government on the development of on-grid solutions over other solutions to provide electricity throughout the nation. This is in

ARE INDEPENDENT DISTRIBUTION

ACHIEVING SDG7 IN NIGERIA?

NETWORKS A VIABLE SOLUTION FOR

Nigeria's power development journey since

2005 reflects an emphasis by the Federal

spite of the fact that on-grid solutions have

inadequate consistently proven an and insufficient solution to the problem of blackouts and unreliable electricity. alternative to on-grid solutions is introduction of off-grid solutions across the entire electricity supply chain. distribution sector, this means developing a well-structured independent electricity distribution network (IEDN). Considering Nigeria's Sustainable Development Goals (SDG) 7 commitment, are IEDNs the way to go? **NIGERIA'S CURRENT ELECTRICITY DISTRIBUTION STRUCTURE** The electricity framework which presently subsists was developed by the FG in 2005 to unbundle the electricity sector and it favors

the entrenched distributed networks that

supply electricity to massive franchise areas

value chain are placed on these power

distribution companies who are responsible

licenses issued by the Nigerian Electricity Regulatory Commission (NERC). Revenue burdens on the whole electricity

by the government when tariffs are not cost-reflective. This has beleaguered the electricity value chain and the Federal Government's purse. Since the summer of 2021, Nigeria has steadily moved toward a cost reflective tariff model, which in turn has meant tariff increases across the different tariff bands. This measure has been unpopular due to the general economic conditions in the country. With an upcoming election, power will be a significant point for election campaigns this season, especially in light of general popular and political unwillingness to

in lower income communities. has remained erratic and unreliable. In April 2022, the grid collapsed twice, subjecting major portions of the Nigerian economy to power

A key part of SDG 7 is access to reliable

electricity. In the Nigerian context, affordable

and reliable have proven difficult to achieve.

The apparent outworking of the current

regulatory framework has worked against the

these

unbundling and privatization of the power

sector assets undertaken under the EPSRA of

it

with

objectives.

technical

of

achievement

brought

2005

current

regular fluctuation. These indices include gas price, local inflation, USD exchange rate, US inflation rate and available generation capacity. Under the multi-year tariff order structure, tariff should be reviewed and updated annually in line with those indicators. **NIGERIA'S ELECTRICITY DISTRIBUTION STRUCTURE AND ITS PROBLEMS** current electricity distribution Nigeria's structure has characteristics which happen to also be the bane of the structure:

for funding their operations and liabilities as

well as remit payments for services provided

throughout the value chain. Tariff is centrally

determined by the NERC based on several

macroeconomic indices which are subject to

Licences are too vast to cover all at once and immediately, without steady growth and

profitability. Many of the successor-Discos were artificially granted coverage without previous experience and with insufficient workplans with no viable paths to profitability. This has proven an unwise approach to electricity distribution.

b. The tariff structure previously emphasized a

subsidized electricity tariff model where

high-end customers subsidize the cost of

power to lower income customers and the

a. Franchise areas covered under Distribution

overall cost of electricity is partly subsidized

blackouts. These blackouts were further

exasperated by severe fuel scarcity which was

caused by a variety of factors including the

importation of a bad batch of petrol, the

Russia-Ukraine crisis and its effect on global

oil markets, rising FX cost and US inflation. In

addition to grid collapse, distribution licensees

have also employed load shedding due to

abysmally low power generation.

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The effect of these on general productivity across the country cannot be over-emphasized. Between 2010 and Nigeria was subject to about 206 grid collapses electricity blackouts. According research on electricity blackouts productivity in Nigeria, a 1% increase in electricity blackout will lead to a 104% decrease in productivity. There is therefore a nexus between resolving the electricity issue and increasing productivity and GDP in Nigeria.

Achieving SDG 7 is clearly a central imperative

for Nigeria.

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SDG7 AND NIGERIA'S ELECTRICITY DISTRIBUTION MODEL What is SDG 7? SDG 7 calls for affordable, reliable, sustainable, and modern energy for all. Making significant strides in achieving SDG 7 in Nigeria bodes well for the general African context of sustainability due to the country's significance with respect to population and GDP across the continent.

move the market toward cost-reflective tariffs. This concern is particularly due to the centralized nature of electricity supply and distribution and tariff setting in the country. c. The Multi-Year Tariff Order (MYTO) annual review has not been strictly adhered to and the macroeconomic indices priced into the tariff have fluctuated faster than NERC has updated the tariff. As NERC has sought to update tariffs more regularly, this has led to regular and significant increases in tariff over the past several months and in light of the macroeconomic conditions, has placed a heavy burden on average Nigerians especially those d. Despite the increasing tariff, power supply

commercial issues that have proven difficult to surmount. Across the electricity value chain, debt, inefficient assets and operational constraints have bogged down electricity security. This has effectively stunted the achievement of SDG 7 through grid power and opened the option of considering the viability of off-grid solutions for the purpose.

One viable off-grid solution that has been used

as a successful supplement to achieve SDG 7

under the current framework are independent

distribution networks. In rural areas, the

is

supplemented by developmental investment

presently

structure

in mini grids in order to achieve reliable, modern and affordable electricity. Mini grids are independent distribution networks which under Nigerian law are required to supply power below 100Kw. This capacity is sufficient for rural electricity needs where power requirements mostly cover lighting and the charging of small electrical devices. However, mini grids are insufficient for urban and profitability. This makes them a attractive and manageable investment and the existing grid system. b. An IEDN with its own generation capacity controls and administers the entire electricity

value chain and is unbothered by the different

and sometimes contrasting interests that

c. IEDNs are not plagued by the legacy debts of

grid operators and can price tariff in a manner

that adequately combines cost-reflective and

service-reflective parameters. In urban and

suburban centers, reliable power supplied at

cost reflective rates, especially using cheaper

fuels such as gas, is affordable and a boost to

productivity and economic capacity in the

plague the existing on-grid value chain.

suburban requirements, and in light of

migration patterns and population density,

solving the SDG 7 question for rural areas

alone is counterproductive and unsustainable

in the long run. Therefore, considerations

must be made toward achieving electricity

security in urban contexts.

franchise

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Nigerian off-grid electricity Under law, generation Independent Electricity and Distribution Networks (IEDNs) provide a solution for urban and suburban settlements. **ACHIEVING SDG7 IN URBAN AREAS USING OFF-GRID GENERATION AND IEDN** IEDNs are the licence structures created by

NERC to support power distribution in the

Licensees. They may either be isolated from

the grid or embedded on to the grid. Either way, the purpose of an IEDN is to distribute

electricity, either generated by itself or

purchased from a Distribution Licensee, to a small, localized area. The IEDN model is more

attractive for urban and suburban regions

because of its capacity. IEDNs must have a

The IEDN Model provides a sturdier bridge to

a. IEDNs can test run smaller service areas in

minimum distribution capacity of 5MW.

achieving SDG 7 for a number of reasons:

Power

Distribution

of

areas

order to achieve commercial viability and

The apparent monopoly of successor DisCos over franchise areas has created problems for the distribution network and served as a stumbling block for new entrants. This is more so as the law permits NERC to grant licence to a prospective IEDN in only two

there

distribution system in the area to be served by

the IEDN or where the NERC is satisfied that

the infrastructure of a DisCo is unable to meet

the electricity demands of the customers in

the area. In many cases, these conditions are

hard to fulfil in the urban areas that are

adequately covered by existing distribution

networks. In suburban and rural areas which

are not connected to the grid, many areas

have some form of distribution infrastructure

or the other. The DisCos argue that they are

expanding their infrastructure and therefore

is

no existing

where

subsidized energy prices in urban low-income

communities. The IEDN model achieves this.

ROADBLOCKS: IEDNs VERSUS SUCCESSOR

DISCOS IN NIGERIA

instances:

CONCLUSION Achieving SDG 7 is an important policy objective for Nigeria. For urban and suburban communities, this means resolving the lack of adequate power delivery from the grid, for **AUTHORS**

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the case for an IEDN would not hold.

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long run. d. IEDNs with their generation capacity are better able to implement sustainable practices and incorporate renewable and/ or climate mitigation technologies to their operations,

given their size, scale and control. The

incorporation of these technologies further

achieves the 'modern' energy component of

SDG 7.

e. Achieving the electricity and energy goals of SDG 7 in urban areas must primarily be a commercial enterprise, with a profit driven mindset, in order to achieve scalability and in turn manage the future requirements of

investors to consider alternate models to achieve this goal. IEDNs are an attractive and workable option for this purpose, however, they may be hindered by DisCos seeking to

enforce their apparent franchise monopolies.

policy thinkers, business operatives

commercial, industrial and residential areas.

The present electricity distribution model that

grants an apparent monopoly to successor

Discos has not delivered on its objective of

powering Nigeria. It is therefore important for

Regulatory frameworks must be updated to accommodate this option without the burden of litigious pushback from the successor DisCos. This option is beneficial to the Nigerian economy and will speed up the process of achieving SDG 7 in the country.

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