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Analysis of the Electricity Distribution Supply in Eastern Nigeria: Current Challenges and Possible Solutions

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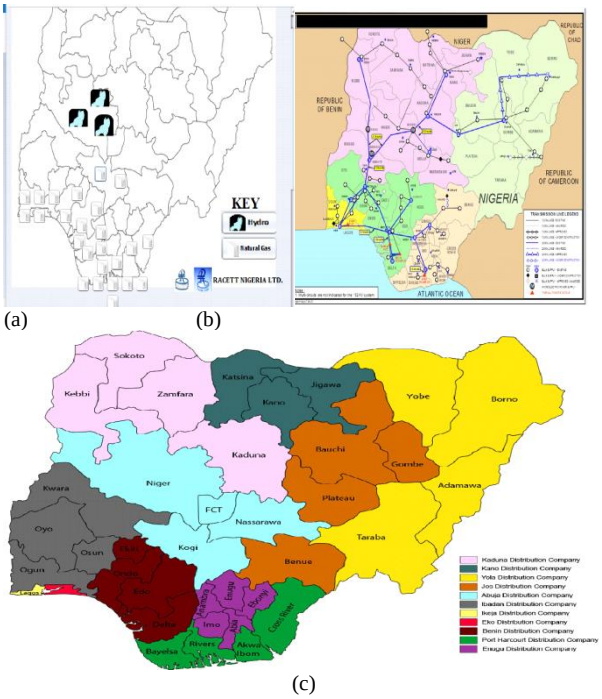
***Abstract* – Electricity Distribution Company (EEDC) is the Distribution Company responsible for electricity disbursement for the South-East geopolitical zone in Nigeria, comprising of Abia, Anambra, Ebonyi, Enugu, and Imo states. EEDC is allocated 9% of the total electricity generated by the 28 generating stations in the Nigeria's National Electricity Grid. This paper assesses the operational efficiency of EEDC in electricity distribution to its constituent states. Electricity Distribution Analysis on EEDC was conducted for the month of July 2020, using a Power Optimization Software. The results obtained showed that EEDC could only distribute 41.7% of the electricity required by its constituent states, resulting in only 10 hours of electricity in the region on any given day. EEDC's technical distribution losses decreased the number of hours of electricity available in the region from 23.4 ± 1.3 hours to 10.1 ± 0.5 hours. No algorithm is currently employed by EEDC in distributing available power, resulting in unpredictable and erratic power supply across the region. The recommended solutions for EEDC are investments in EEDC-owned Embedded Generation (EG) units to boost regional power generation, reduction and elimination of EEDC technical distribution losses, and implementation of an automated power disbursement algorithm using regional classification. Automated rationing and distribution of available grid electricity using region classification ensured commercial regions received the available electricity from EEDC during the day (7 a.m. - 5 p.m.) to promote industrial economic activities, while residential regions received the available electricity from EEDC at night (12 a.m. - 4 a.m. and 6 p.m. - 12 a.m.). It also made Grid Electricity from EEDC predictable and available when needed the most by consumers. These solutions would ensure, predictable and constant electricity supply in South-East Nigeria.**

Keywords-Electricity Generation; Electricity Distribution; Electricity Transmission; Transmission Losses; Distribution Losses; Embedded Generation;

I. INTRODUCTION

Privatization of Nigeria's power industry has resulted in the power sector being made up of 3 major subsectors namely: Generation, Transmission and Distribution systems. The generation subsector is run by six (6) Generating Companies (GenCos), the transmission subsector by a single Transmission Company (TCN), and the distribution subsector by eleven (11) Distribution Companies (DisCos) [1]. The generation subsector currently has twenty-eight (28) power generating plants connected to the national grid in Lagos, Rivers, Abia, Edo, Bayelsa, Kogi, Akwa Ibom, Cross River, Delta, Ogun, Ondo and Niger States (see Fig. 1a), and is capable of producing over 80,000 MWH (or 3300 MWH/H) of electricity daily [2].



(a) (b) (c)

Figure 1. (a) Power Generating Stations in Nigeria (b). Electricity Transmission Network in Nigeria. (c) Electricity Distribution Region in Nigeria.

All the power stations, distribution stations and substations are specially interlinked by a transmission network, the national grid (see Fig. 1b). The whole output of electricity generated nationwide is collected in a pool at the national control center, Osogbo. From there, the electricity generated is redistributed to all parts of the federation by the Transmission Company of Nigeria (TCN) [3]. TCN evacuates electric power generated by the GenCos and wheels it to the DisCos. It currently incurs transmission of 7.4%, which is high compared to emerging countries' benchmarks of 2-6% [1,4].

TABLE I. ELECTRICITY DISTRIBUTION COMPANIES IN NIGERIA

No	Distribution Company	States Covered	Allocation (% of Grid Energy) [5]	Daily Power Demand (MWh)
1	Abuja Distribution Company	FCT, Kogi, Nassarawa, Niger	11.5	5562
2	Benin Distribution Company	Delta, Edo, Ekiti, Ondo	9	6157
3	Eko Distribution Company	Lagos	11	7660
4	Enugu Distribution Company	Abia, Anambra, Ebonyi, Enugu, Imo	9	7577
5	Ibadan Distribution Company	Kwara, Ogun, Osun, Oyo	13	7233
6	Ikeja Distribution Company	Lagos	15	7660
7	Jos Distribution Company	Bauchi, Benue, Gombe, Plateau	5.5	6811
8	Kaduna Distribution Company	Kaduna, Kebbi, Sokoto, Zamfara	8	7664
9	Kano Distribution Company	Jigawa, Kano, Katsina	8	9227
10	Port Harcourt Distribution Company	Akwa Ibom, Bayelsa, Cross River, Rivers	6.5	6533
11	Yola Distribution Company	Adamawa, Borno, Taraba, Yobe	11.5	5684

The distribution subsector comprises of 11 Distribution Companies (DisCos), with each disco responsible for the distribution of power received from the Transmission Company of Nigeria to its constituent states (consisting of 3-5 states), as shown in Figure 1c. Each distribution company is allocated a certain percentage of the total electricity generated by the 28 generating stations in the nation's electricity grid. Table 1 shows the 11 DisCos, the geographic region they service, the percentage of the national grid electricity they are allocated, as well as the electricity demand for the regions covered by each DisCo.

Despite the privatization of Nigeria's power industry, the power sector is still dogged by frequent and prolonged power outages with neither apology nor explanation to the customers. This unreliability in availability of electricity supply has greatly hindered the development of economic activities in the country, from rural livelihoods to manufacturing and exports [6-8]. The cost of self-generating power has made Nigerian products about a third more expensive than imported products [6] and stunted the country's economic growth [7, 9]. Enugu Electricity Distribution Company (EEDC) is the DisCo that covers the South-East geopolitical zone of Nigeria, comprising of Abia, Anambra, Ebonyi, Enugu, and Imo States. This region has a reported daily power demand of 7,577 MWH [10]. Since the privatization of the power industry, it has been reported that there is only minor improvement in terms of power supply by EEDC [11]. However, there is currently no quantitative data available to assess the current efficiency of EEDC in terms of its ability to effectively distribute electricity from the National Grid to its constituent states.

While it has been reported that Nigeria is currently not generating sufficient electricity to meet the demands of her citizens [2,12], it has still not been ascertained that this is the major factor affecting the efficiency of EEDC in power distribution. This paper provides a comprehensive and quantitative analysis of the power supply currently provided by EEDC to the South-East geopolitical zone in Nigeria to assess the company's operational efficiency in electricity distribution to its assigned region. The current and most important challenges facing EEDC are identified. Possible solutions to improve the operating efficiency of EEDC are also discussed in detail.

II. MATERIALS AND METHODS

First, A Power Optimization Software for Nigeria, owned by RACETT NIGERIA LTD., was used to study the operation of EEDC in the South-East geopolitical zone of Nigeria for July 2020 [13]. The software is shown in Figure 2a. It allows users to input the daily power generated by each of the 28 functioning generating stations in the generation subsector. From this, the software calculates the power received by each distribution region company (see Figure 2b).

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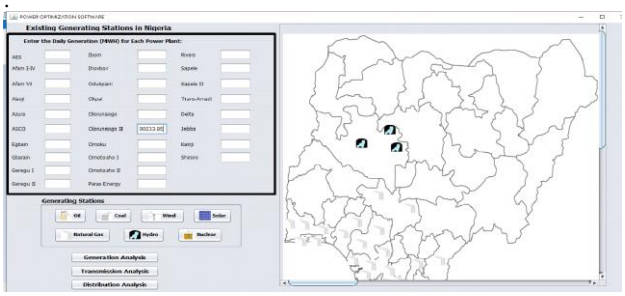
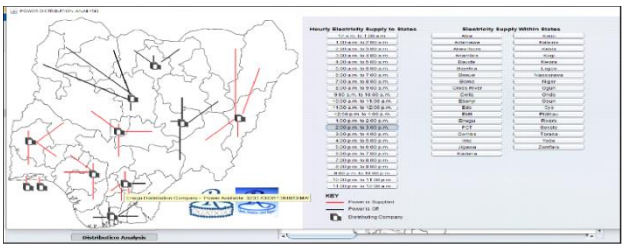


(a)



(b)

Figure 2. (a). Power Optimization Software used in Analysis of EEDC's Performance. (b) Software displaying average daily power received by EEDC from the National Electricity Grid in July 2020.

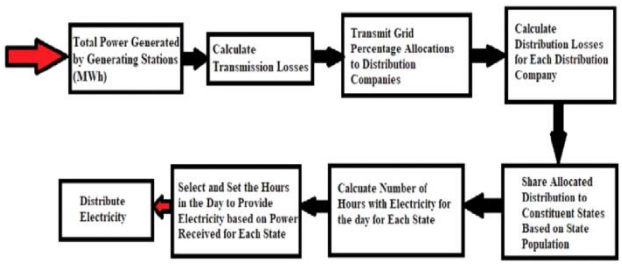


Figure 3. Distribution Analysis Algorithm for Power Optimization Software [13].

The software also computes the power distributed to constituent states of the 11 distribution companies. The number of hours of electricity that will be supplied to each Local Government Area (LGA) in a state is also made available. The algorithm employed by the Power Optimization Software is shown in Figure 3.

For each day in July 2020, the power generation data for each of the 28 generating stations in Nigeria was entered into the software tool. From this, the power received by EEDC was obtained. The number of hours of electricity EEDC supplied to Abia, Anambra, Ebonyi, Enugu, and Imo states for each day in July 2020 was obtained. This took into account the current transmission losses incurred by TCN, as well as the current distribution losses incurred by EEDC. It was noted that EEDC currently experiences technical distribution losses up to 57% [2]. The effect of EEDC's technical losses on the effective distribution of electricity in the South-East geopolitical zone was analyzed. The number of hours of electricity EEDC could supply to its constituent states, assuming EEDC incurred no distribution losses in July 2020, was obtained, and compared with the company's current performance. The algorithm currently employed by EEDC in disbursement of the daily available electricity within each constituent state was also investigated.

III. RESULTS

TABLE II. CURRENT PERFORMANCE OF ENUGU ELECTRICITY DISTRIBUTION COMPANY(EEDC) FOR JULY 2020

No	Constituent State	Daily Power Demand (MWH)	Average Daily Power Received from EEDC (MWH)	Average Daily No. of hours of Electricity provided by EEDC
1	Abia State	1,306.96	549.7 ± 30	10.1 ± 0.5
2	Anambra State	1,938.27	808.41 ± 43	10 ± 0.5
3	Ebonyi State	1,009.98	420.37 ± 23	10 ± 0.5
4	Enugu State	1,546.71	646.73 ± 35	10 ± 0.5
5	Imo State	1,896.53	808.41 ± 43	10.2 ± 0.5

In July 2020, the 28 power generating stations in Nigeria sent out an average of 90,233.85 ± 4846.4 MWH to the National Electricity Grid [14]. Taking into account the transmission losses of TCN [4], EEDC received an average daily power of 7520.09 ± 403.9 MWH. Taking into account the distribution losses incurred by EEDC [2], only 3233.64 ± 173.7 MWH was available to distribute to the constituent states (Abia, Anambra, Ebonyi, Enugu, and Imo states). Based on state population, Abia State received 17% of EEDC's available electricity, Anambra State received 25%, Ebonyi 13%, Enugu 20%, and Imo 25%. The daily number of hours of electricity made available to each constituent state of EEDC is shown in Table 2.

The results show that EEDC is only able to supply 42.06%, 41.71%, 41.62%, 41.81%, and 42.6 % of the power demand required by Abia, Anambra, Ebonyi, Enugu, and Imo States respectively. This resulted in EEDC being able to supply only 10 hours of electricity to its constituent states for every given day in July 2020. The effect of technical losses on EEDC's ability to distribute electricity to its assigned states was also analyzed. The results are presented in Figure 4. Without any distribution losses, EEDC is currently able to provide 23.4 ± 1.3 hours of electricity to each of its constituent states on any given day.

Currently, no known formula or method is being implemented to determine when to disburse available electricity to a particular region in Nigeria [2]. As such, there is no algorithm currently being employed by EEDC to determine the exact hours in a single day in which it will disburse the available 10 hours of electricity to each of its constituent states. The result of this indicates that although EEDC can presently guarantee 10 hours of electricity every day to Abia, Anambra, Ebonyi, Enugu, and Imo States, citizens of the South-East geopolitical zone requiring electricity either for residential, commercial, or industrial purposes are unable to predict when electrical power from the national grid will be available to them for consumption [15].

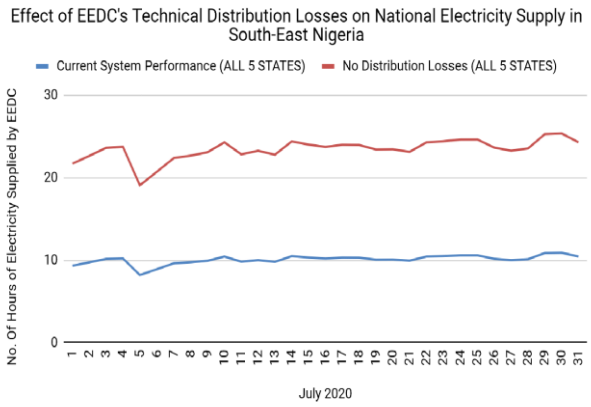


Figure 4. EEDC's Daily Supply of Electricity to its Constituent States with and without Technical Distribution Losses

IV. DISCUSSION

Analysis of EEDC's ability to perform national electricity distribution in South-East geopolitical zone of Nigeria shows that the distribution company is currently only capable of providing 41.7% of the electricity required by its constituent states. This means that residents of Abia, Anambra, Ebonyi, Enugu, and Imo States can expect to receive electricity from the National Grid for only 10 hours on any given day. The first proffered solution to this current challenge would be to request an increase in the grid allocation percentage designated to EEDC, which currently stands at 9%. An

increase in EEDC's grid allocation would correspond to an increase in the amount of electricity EEDC receives, an in turn, would result in an increase in the quantity of electricity supplied to the constituent states. Another obvious solution would be for the nation to increase its power generation output of 90,233.85 MWH. It has been reported that generation subsector needs to send out a minimum of 470,000 MWH daily in order to provides constant 24-hr electricity to every state in Nigeria [2].

However, a closer analysis of EEDC's current operational efficiency shows that the technical losses incurred by the distribution company has a drastic effect on the amount of power made available to its constituent states. The company's current technical losses decrease the number of hours of electricity available to its constituent states from 23.4 ± 1.3 hours to 10.1 ± 0.5 hours. This shows that EEDC can distribute 24-hrs of electricity (constant supply) to Abia, Anambra, Ebonyi, Enugu, and Imo States each day, if it succeeded in eliminating its current technical distribution losses. Weak and inefficient electricity distribution systems result from old and decaying infrastructure still being operated without technological improvements, major rehabilitation, retrofit or upgrades [11, 16-18]. Requesting for an increase in national grid allocation would have a negative effect on the electricity availability in order regions of the country, and may not be readily granted because of this. Increasing the power output of the generation subsector to the National Electricity Grid is a viable solution, but is not within the jurisdiction of the EEDC and cannot be executed by the distribution company. The most effective means of improving the performance of EEDC in electricity distribution therefore remains the targeted minimization of its technical losses, which is within the company's responsibility and field of operation. This solution would not only ensure that EEDC can provide constant supply of electricity to its constituent states, but would also potentially enable EEDC reduce the electricity charges being paid by consumers, as it has been reported that the product of power in EEDC has become unaffordable to Nigerians in the South-East region [11].

There is no current formula or algorithm currently being implemented by EEDC in disbursement of the available 10 hours of electricity to its constituent states. This means that not only is EEDC's power supply insufficient, it is also erratic and unpredictable. The result of this is that residents and companies in its constituent states requiring electricity cannot predict when this electric power from the national grid will be available for their consumption. In most situations erratic power supply can be equated to no power supply as the work the power is needed for, might have been done before the supply is made available or the power is interrupted before what it is to be used for, is gotten ready. Erratic power supply can also be equated to negative power in situations where the flip-flop nature of the supply causes damage to the equipment being powered [15]. In order to optimize EEDC's electricity distribution to its constituent states, automated electricity disbursement using regional classification is proposed as a solution.

Regional Classification involves classifying each Local Government Area (LGA) in a state as either a "COMMERCIAL REGION" or a "RESIDENTIAL REGION." A region is determined to be commercial if it has a large resident population and/or if it contains large scale industrial companies that signify a high level of industrial development within the LGA. A region is determined to be residential if it has a small resident population and/or no significant industrial companies or activities [19]. Electricity is then automatically distributed to commercial and residential regions using a priority chart shown in Table 3. The lower the value given to an hour within each day, the higher the priority it is given when it comes to electricity distribution. Commercial regions or LGAs would receive electricity during the day time to enhance and promote industrial and economic activities in the region, while residential regions or LGAs would be given electricity at night to enable residents rest well and enjoy the comforts of their homes [19].

TABLE III. PRIORITY CHART FOR HOURLY ELECTRICITY DISTRIBUTION FOR COMMERCIAL REGIONS AND RESIDENTIAL REGIONS USING REGIONAL CLASSIFICATION

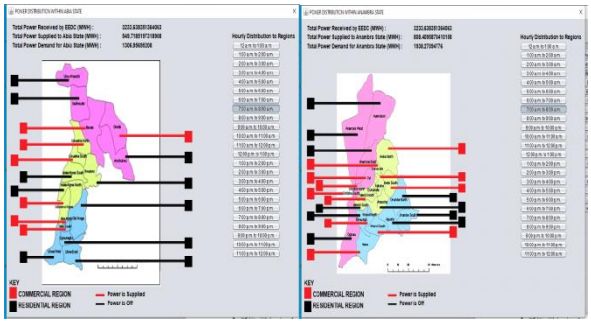
	Priority Chart for Hourly Electricity Allocation	
Hour	**Commercial Regions**	**Residential Regions**
12 a.m. - 1:00 a.m.	18	7
1:00 a.m. - 2:00 a.m.	19	8
2:00 a.m. - 3:00 a.m.	20	9
3:00 a.m. - 4:00 a.m.	21	10
4:00 a.m. - 5:00 a.m.	22	11
5:00 a.m. - 6:00 a.m.	23	12
6:00 a.m. - 7:00 a.m.	24	13
7:00 a.m. - 8:00 a.m.	1	14
8:00 a.m. - 9:00 a.m.	2	15
9:00 a.m. - 10:00 a.m.	3	16
10:00 a.m. - 11:00 a.m.	4	17
11:00 a.m. - 12:00 p.m.	5	18
12:00 p.m. - 1:00 p.m.	6	19
1:00 p.m. - 2:00 p.m.	7	20
2:00 p.m. - 3:00 p.m.	8	21
3:00 p.m. - 4:00 p.m.	9	22
4:00 p.m. - 5:00 p.m.	10	23
5:00 p.m. - 6:00 p.m.	11	24
6:00 p.m. - 7:00 p.m.	12	1
7:00 p m. - 8:00 p.m.	13	2
8:00 p.m. - 9:00 p.m.	14	3
9:00 p.m. - 10:00 p.m.	15	4
10:00 p.m. - 11:00 p.m.	16	5
11:00 p.m. - 12:00 a.m.	17	6

By classifying a region based on its pattern of electricity consumption, the electricity distribution system can be configured in such a way that the available power is disbursed during the hours when the users in that region require electricity.

Applying Regional Classification for the constituent states of EEDC, LGAs were classified as "COMMERCIAL REGIONS' if their population was greater than 250,000 people, and/or if they possessed major industrial companies or activities. Otherwise, the LGAs were classified as "RESIDENTIAL REGIONS." For Abia State with 17 LGAs, 7 (Aba North, Aba South, Bende, Ohafia, Osisioma Ngwa, Umuahia North, and

Umuahia South) are classified as commercial regions, while 10 (Arochukwu, Ikwuano, Isiala Ngwa North, Isiala Ngwa South, Isiukwuato, Obi Ngwa, Ugwunagbo, Ukwa East, Ukwa West, and Umunneochi) are regarded as residential. For Anambra with 21 LGAs, 11 (Awka North, Awka South, Dunukofia, Ekwusigo, Idemili North, Ihiala, Njikoka, Nnewi South, Onitsha North, Onitsha South, and Oyi) are commercial, while 10 (Aguata, Anambra East, Anambra West, Anaocha, Ayamelum, Idemili South, Nnewi North, Ogbaru, Orumba North, and Orumba South) are residential. For Ebonyi with 13 LGAs, 5 (Abakaliki, Ikwo, Izzi, Ohaukwu, and Onicha) are commercial, while 8 (Afikpo North, Afikpo South, Ebonyi, Ezza North, Ezza South, Ishielu, Ivo, and Ohaozora) are residential. For Enugu with 17 LGAs, 8 (Nsukka, Udenu, Uzo Uwani, Udi, Enugu North, Enugu South, Nkanu West and Oji River) are commercial, while 9 (Igbo Eze North, Igbo Eze South, Isi Uzo, Igbo Etiti, Enugu East, Nkanu East, Ezeagu, Awgu and Aninri) are residential. For Imo State with 27 LGAs, 7 (boh Mbaise, Isiala Mbano, Mbaitoli, Ohaji, Owerri Muncipal, Owerri North, and Owerri West) are commercial, while 20 (Ahiazu Mbaise, Ehime Mbano, Ezinihitte Mbaise, Ideato North, Ideato South, Ihitte, Ikeduru, Isu, Ngor Okpala, Njaba, Nkwere, Nwangele, Obowo, Oguta, Okigwe, Onuimo, Orlu, Orsu, Oru East, and Oru West) are residential.

Figure 5 shows the automatic disbursement of electricity by EEDC to the commercial regions of its constituent states using the regional classification algorithm. All the commercial regions in EEDC would receive electricity from 7 a.m. - 5 p.m. each day in July 2020. The advantages of automated electricity distribution and load shedding using regional classification is readily observed. EEDC is able to provide grid electricity for Commercial Regions in its constituent states between the working hours of 7 a.m. and 5 p.m. This means that if this algorithm is implemented by EEDC in electricity disbursement, business owners in South-East Nigeria will not need to secure alternative sources of electricity (e.g. diesel-powered generators) to run their businesses, and will be able to solely and confidently depend on EEDC and the National Grid to provide electrical power to run their businesses. The effect of this outcome will have a positive impact on Nigeria's economy. It will mean that businesses operating in South-East geopolitical zone of Nigeria will be able to receive sufficient electricity from the national grid to function optimally, without needing to incur additional costs to provide electricity for themselves, their products would no longer need to be more expensive than imported products, and this would make them globally competitive [20].



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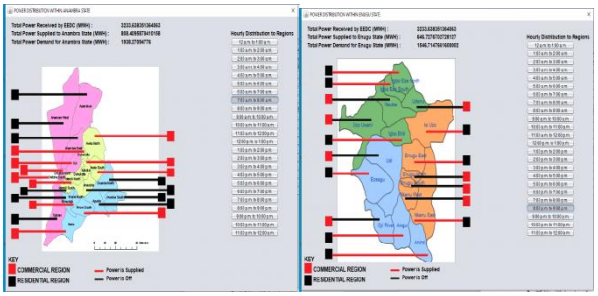

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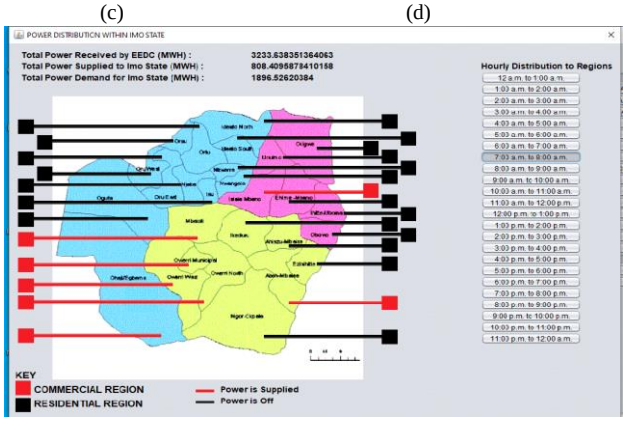

(e)

Figure 5. Daily Automated Electricity Disbursement by EEDC using Regional Classification for Commercial Regions from 7 a.m. - 5 p.m. (a) Abia State (b) Anambra State (c) Ebonyi State (d) Enugu State (e) Imo State

All this can be achieved, not simply by increasing the country's electricity output of the generation subsector, but by EEDC implementing proper automated rationing and electricity distribution using region classification. It is significant that this can be achieved even without eliminating EEDC's technical distribution losses.

Figure 6 shows the automatic disbursement of electricity by EEDC to the residential regions of its constituent states using the regional classification algorithm. All the residential regions in EEDC would receive electricity from 12 a.m. - 4 a.m. and 6 p.m. - 12 a.m. each day in July 2020. This means that if this algorithm is implemented by EEDC in disbursing electricity to its constituent states, residents in residential regions are guaranteed to have electricity from the National Grid when they return home from work, and will be able to enjoy the comforts of their homes and have a good night's sleep-in electricity-powered residences homes (i.e. with operating air conditioners, fans, etc.) for most of the night. It would also mean that residents would not have to invest in alternative sources of electricity to power their homes during the night in order to prepare for work for the following day and to ensure they are well rested. Since alternative sources of electricity are costlier, the guarantee of Grid-powered electricity when they are at home will enable residents cut down on their income expenditure on electricity [19-20]. EEDC's Automated rationing and distribution of available grid electricity using region classification would enable South-East Nigerians know when exactly to expect power from the grid, and would guarantee that they receive grid electricity when they need it most. This would go a long way in optimizing the current operational performance and efficiency of EEEDC.

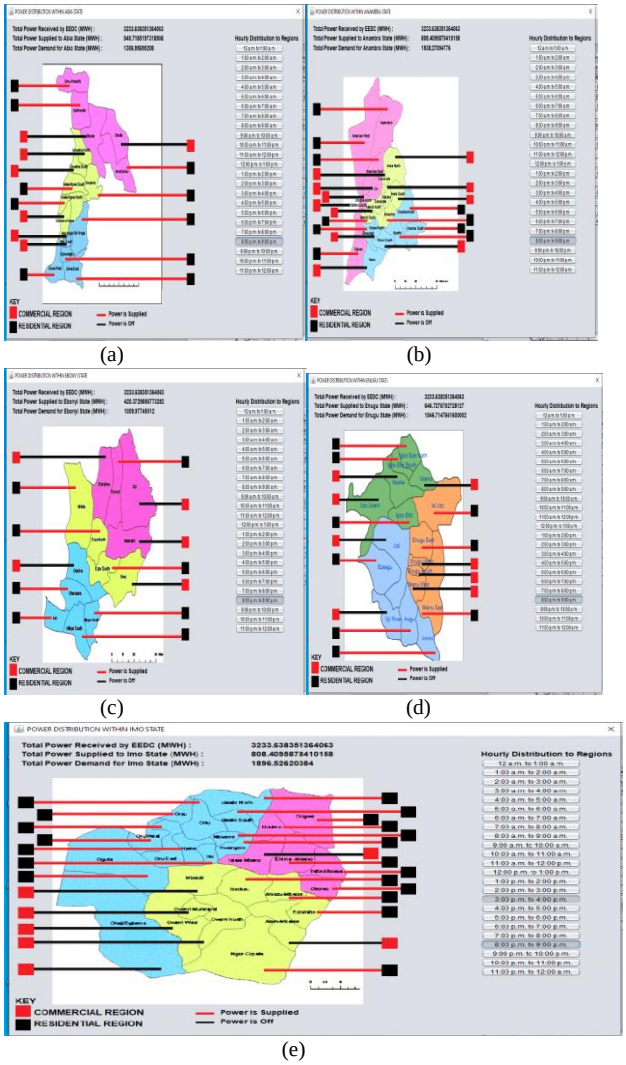

Figure 6. Daily Automated Electricity Disbursement by EEDC using Regional Classification for Residential Regions from 12 a.m. - 4 a.m. and 6 p.m. - 12 a.m. (a) Abia State (b) Anambra State (c) Ebonyi State (d) Enugu State (e) Imo State

If EEDC considers exploring increased power generation output as a solution to improving its operational performance, rather than requesting increased output from the existing National generating stations, the company should consider distribution generation using its own embedded generation (EG) units [21-22]. This would enable the new generating station to be physically located close to EEDC, thereby reducing technical losses [23]. The advantage of EEDC-owned EG units is that the electricity output of these stations would be disbursed only amongst the constituent states of EEDC, and not distributed to all the 36 states and Federal Capital Territory (FCT) of Nigeria. In other words, EEDC-owned EG units provide a targeted and local solution for power generation in South-East Nigeria.

EG Analysis for the South-East geopolitical zone of Nigeria shows that a 1135 MW hydro power plant in Anambra State, an 844 MW natural gas power plant in Abia State or Imo State, a 3,495 MW oil power plant in Abia or Imo State, or a 900 MW coal-fired plant in Abia, Anambra or Enugu State, would address the electricity shortage currently being experienced by EEDC [10]. These are shown in Figure 7. There are no recommended EG units for Ebonyi State [13]. There is currently a 1,050 MW Onitsha hydro power project for Anambra state that may prove suitable to improve the electricity supply to the region [10]. Since this is a federal power project, EEDC may lobby for the completion of this project to enhance its operational performance.

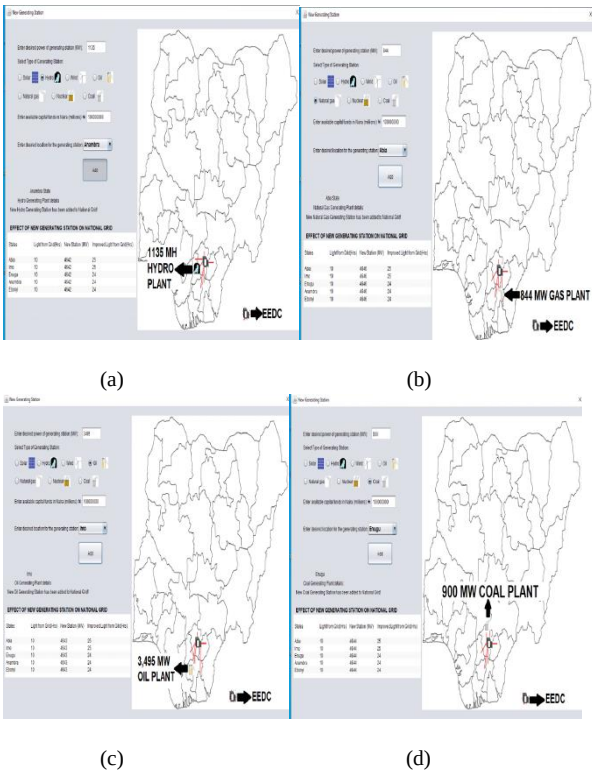

Figure 7. Embedded Generation (EG) Units for EEDC (a) 1,135 MW Hydro Power Plant in Anambra State (b) 844 Natural Gas Power Plant in Abia State (c) 3,495 MW Oil Power Plant in Imo State (d) 900 MW Coal Power Plant in Enugu.

However, since South-East Nigeria is rich in coal reserves, an EG 900 MW coal fired plant unit owned by EEDC could be a solution worth investing in, as this would expand the energy mix of the county's generation subsector, and would boost the economic and industrial development in the region. Since the EEDC is located in Enugu State, this 900 MW coal fired plant should ideally also be located in Enugu State to minimize electricity transmission and distribution losses.

Analysis of EEDC's current operational performance shows insufficient power distribution due to national power generation and EEDC distribution losses. EEDC currently provides 10 hours of electricity each day to Abia, Anambra, Ebony, Enugu, and Imo States. Daily electricity supply in the South-East region is insufficient, erratic, and unpredictable. The recommended solutions are investments in EEDC-owned EG units to boost regional power generation, reduction and elimination of EEDC technical distribution losses, and implementation of automated power disbursement using regional classification. These solutions would boost the overall operational efficiency of EEDC, enable the distribution company offer lower electricity tariffs to its users, have a positive impact on businesses operating in the region, and guarantee constant supply of national grid electricity in the South-East geopolitical zone of Nigeria.

CONCLUSION

Enugu Electricity Distribution Company (EEDC) is the Distribution Company responsible for electricity disbursement to the South-East geopolitical zone in Nigeria. The operational efficiency of EEDC in terms of its ability to effectively distribute electricity from the National Grid to its constituent states was assessed. Analysis of EEDC's ability to perform national electricity distribution in South-East geopolitical zone of Nigeria shows that the distribution company is currently only capable of providing 41.7% of the electricity required by its constituent states (Abia, Anambra, Ebonyi, Enugu, and Imo States), resulting in only 10 hours of electricity in the region on any given day. The company's current technical losses decrease the number of hours of electricity available to its constituent states from 23.4 ± 1.3 hours to 10.1 ± 0.5 hours. The current challenges of EEDC include insufficient power availability, excessive technical distribution losses, and erratic and unpredictable power supply throughout the region. The recommended solutions for EEDC are investments in EEDC-owned Embedded Generation (EG) units to boost regional power generation, reduction and elimination of EEDC technical distribution losses, and implementation of automated power disbursement using regional classification. These solutions would ensure, predictable and constant electricity supply in South-East Nigeria.

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