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ENERGY, TECHNOLOGY AND COVID-19: A THIRD WORLD PERSPECTIVE FROM KENYA

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Abstract

The world is still grappling with the COVID-19 pandemic whose impacts are being felt across the globe, though to different magnitudes. Developing countries have struggled to “stay afloat” as they navigate the “new normal” brought about by the coronavirus. The virus has exposed the wide chasm between the rich North, and the poor South that is manifested in the different ways through which the two parts of the globe are responding to the pandemic that caught the world community virtually flat-footed.

COVID-19 is likely to be with us for a long time, and its impacts would be felt even by future generations. This paper looks at how energy poverty and technological challenges exacerbated the pain of COVID-19 on developing countries, and how these states tried to adopt to the virus and “move on” against all odds. Using Kenya as a case study, this discourse takes the position that energy and technology are critical in enabling countries navigate complexities of the COVID-19 landscape. With studies indicating that there could be even worse pandemics in future, developing countries, and notably Kenya, have no option except to up the ante regarding reduction of energy poverty and continuously modernizing their technological infrastructure so as to alleviate impacts of such plagues.

Key words: Kenya, developing countries, COVID-19, pandemic, coronavirus, energy, technology

Introduction

When COVID-19 struck the world having originated in China in November 2019, the international community was hardly prepared for what laid ahead. The magnitude of the pandemic was not clear, and many did not know how long it was going to last. One of the first measures countries took was to impose various restrictions with the hope that that would minimize the spread of the coronavirus that causes COVID-19. These included lock-downs,

closure of educational institutions, encouraging people to work from home, prohibition of public gatherings (including religious congregations), closure of borders, a ban on international flights, reduction of the number of passengers in public transport vehicles, social distancing, use of face masks and frequent washing of hands with soap and running water or using sanitizers. In fact, one of the most quoted phrases in the world at the time was “Please stay at home”, a clarion call by governments urging people to keep away from work, school and other routine activities that were usually performed away from home.

Initially, the general belief was that the pandemic would not last for a very long time, and that after a while, the restrictions would be lifted to allow life to go back to normal. However, as the virus continued spreading all over the world and the number of its fatalities increased, it became clear that COVID-19 would stay with us for a long time. Predictions of new waves of the virus emerging and that a vaccine for the same would take a minimum of 18 months to be developed worsened the situation. So far, the virus has continued to mutate; the fourth variant, named Delta proved to be more deadly than the first three, as if it was a modified and upgraded version, while the fifth one, Omicron is said to be mild but spreads at a faster rate than its predecessors. There appears to be no end in sight regarding the “forward march” by this invisible, and seemingly invincible enemy. In January 2022, a study by Danish scientists indicated that there was a sub-variant of Omicron known as BA.2 which was more transmissible than its predecessor, BA.1. But perhaps what was more worrying about BA.2 is that it had “immune-evasive properties” that gave it the capacity to infect not just vaccinated people, but even those who had received booster jabs.

With this realization in mind, it was evident in many countries that strategies had to be put in place to enable people to have a semblance of normalcy despite the pandemic. It became necessary to acknowledge that adopting to impacts of the coronavirus had become the new normal. Hence work and businesses had to continue, teaching and learning was to resume, among other activities that keep nations going. The big question was how to ensure that this is done without compromising the protocols that had been put in place to tame the spread of COVID-19. Similarly, whatever strategy was to be adopted was likely to have an impact on a country’s energy sector and its level of technological development.

Globally, COVID-19 has caused widespread damage to social, economic and political systems. The most devastating impact of the coronavirus has been the large number of deaths across the world. In some cases, it triggered unprecedented pain while in others it exacerbated existing precarious situations. The COVID-triggered economic slump resulted into *inter alia*, massive job losses. Many people were out of work yet they were supposed to meet financial obligations such as facilitating online learning for their children.

More demand for energy to cater for on-line services put more strain on developing countries’ energy systems which, even during the pre-COVID days, were struggling to meet the power needs of their clientele. Increased demand and use of electricity put more pressure on power

generating systems that were already operating under very challenging regimes such as obsolete technology and lack of a maintenance culture.

For the poor economies of developing countries, it meant that most of them could not provide stimulus packages to cushion those who had lost their sources of livelihood and other vulnerable members of the society so as to shield them against the biting pain of the coronavirus as was done in some of the rich nations. In the United States, the government provided \$1,400 per month to those who lost their jobs due to the pandemic, in the United Kingdom the government was providing 80% of income to those who were forced to stay away from their workplaces and businesses while in Russia President Vladimir Putin ordered a nation-wide paid holiday from 30th October to 7th November, 2021 in an attempt to tame the surge in infections.

However, it is important to acknowledge that some developing countries managed to institute humble interventions at the height of the pandemic to help those who were badly affected by impact of the coronavirus. These included providing water for free to disadvantaged communities, (Burundi), lowering the cost of electricity (Ghana), providing food packages (Uganda), initiation of 100% tax relief to people earning up to \$ 240 per month and increase in the amount of cash transfers to the elderly, orphans and other vulnerable members of the society (Kenya).

Materials and Methods

The researcher made reference to documents by the Government of Kenya, United Nations agencies, Non-Governmental Organisations, journals, media reports, the internet and visual observation.

Results and Discussion

Energy Poverty in Developing Countries

Developing countries face high levels of energy poverty which have subsequently contracted their social-economic trajectory. All aspects of human life have an energy component (Lloyd, 2017). Energy is so intertwined with human life, a situation that has existed since the time of creation; without energy, life on earth would be impossible. A secure and stable energy supply system is a key derivative to national progress (Kenya's Vision 2030). Indeed, energy is an irreplaceable ingredient in societal development (Bloyd and Bloyd, 2001; Toman and Jemelkova, 2003; Surendra, *et al*, 2014). Energy is a critical factor in human existence and this is clearly seen in today's world where many human functions that were hitherto manual have been automated, yet the same tasks cannot be realized in the absence of energy to power them.

The significance of energy was given more impetus by the United Nations when it included it among the 17 Sustainable Development Goals (SDGs). Goal Number 7 declares that the global community must "Ensure access to affordable, reliable, sustainable and modern energy for all" (UNDP, 2015). This therefore means that countries must have appropriate policies in place to

ensure uninterrupted supplies of affordable and reliable energy to enable their populations enjoy sustainable livelihoods (KIPPRA, 2018; IEA, 2020; EU, 2020). The performance of the energy sector is a great determinant of a government's development strategies (Kenya's Sessional Paper Number 4 on Energy, 2004) Countries that have reliable energy supplies enjoy a corresponding high level of social-economic advancement, and hence the ability to realize their strategic objectives (Stern and Cleveland, 2004; Asghar, 2008; Sharnma, 2010).

Limited availability of modern forms of energy mean that many developing countries fare badly in comparison to other regions as far as human development indicators are concerned (Greenstone, 2014). These countries experience a low percentage of Gross Domestic Product (GDP), alarmingly high levels of infant mortality rates, illiteracy, short life expectancy, death from preventable diseases, and millions of others who die prematurely due to exposure to heavily polluted air, courtesy of dirty fuels (WHO, 2022).

Despite these negatives, developing countries have huge amounts of resources from which non-renewable and renewable energy can be generated. From large reserves of crude oil, gas and coal to inexhaustible supplies of solar, geothermal, hydro, wind and tidal energy, these countries should not be experiencing some of the challenges that have become synonymous with the Global South (UNEP, 2017). And the repercussions of these challenges have been exacerbated by COVID-19.

The Digital Divide

There is a wide berth in technological advancement between developed and developing countries, with the former enjoying the latest tech systems as the latter toddles with what, in many circumstances, was discarded by the West and is considered obsolete. The coming of COVID-19 exposed and perhaps even accelerated this divide, because as the developing countries were trying to find their way on how to fit in the virtual world, the rich nations were making further steps ahead. This scenario became clearer in different ecosystems of the technological landscape following the outbreak of the pandemic. For instance, low levels of medical technology in developing countries meant that their response to COVID-19 was wanting.

As the rich nations talked of developing vaccines to counter this deadly disease, the Global South was waiting for their northern counterparts to provide the medical remedy, hence perpetuating the dependence mentality syndrome. Corruption and misplaced national priorities partly explain why the health sector in a number of developing countries is ailing. For example, it is not uncommon for African leaders to seek treatment in developed countries when they fall sick rather than being attended to at home. President Muhammadu Buhari of Nigeria has made several trips to Britain for treatment, until a section of the media in his country termed him "a medical tourist". Between February 2016 and August 2021, President Buhari had spent close to 200 days in Britain on treatment for an unspecified ailment. As the retired Major-General sought treatment in Britain in April 2021, back home Nigerian doctors were on strike demanding for,

among other things, payment of outstanding salary arrears. While the strike dragged on, people could not access medical care in public hospitals and unfortunately, some of them died. On 1st March, 2022 media reports indicated that President Buhari was yet again scheduled to travel to London for two weeks for “routine medical checks”.

The United States, Russia, Germany and China were the first countries to announce that they had developed anti-coronavirus vaccines, and as a matter of fact, they had to manage the situation in their own countries first, before assisting the less endowed members of the international community. This is despite the fact that COVID-19 is a transboundary disease that does not respect territorial boundaries. It is in this spirit that the World Health Organization (WHO) has continuously cautioned that “No one is safe from COVID-19 until everyone is safe,” and has even gone ahead to accuse rich countries of vaccine hoarding.

The Kenyan Scenario

The first case of coronavirus infection in Kenya was reported on 15th March, 2020. The government moved swiftly and instituted a raft of measures to control the spread of the virus. During his first address to the nation regarding COVID-19 on 15th March, 2020, Kenya’s President Uhuru Kenyatta announced the indefinite closure of all educational institutions, imposed a night time curfew, urged people to work from home (where possible), and encouraged the use mobile money transfer platforms when conducting financial transactions, among other guidelines and protocols. Emergency lines were also established for people to report suspected cases of COVID-19 infection, or any matter related to the virus over which assistance was required.

These measures abruptly disrupted the normal routine and negatively affected the lives and livelihoods of many Kenyans. Parents had to receive their children back home yet some, such as those who had been admitted to Form One in February 2020 had hardly tested life in secondary school. With millions of school-going youngsters forced to “board” at home and not in school meant an additional burden as far as their upkeep was concerned, yet in some situations, parents were barely making ends meet. The economy was also affected, and to date it is still struggling to get back on its feet, amid the ebb and flow in COVID-19 cases.

Surge in Energy Demand

There was a surge in demand for energy because the youngsters, who were now at home, are wont to using electronic appliances that require energy for their functionality. In addition, there was the issue of further use of energy to prepare meals for children who, in normal circumstances, would have been in school. The demand went a notch higher when educational institutions commenced on-line teaching and learning, and other institutions adopted the concept of working from home, thereby stretching an already struggling power generation, distribution and supply system.

It is important to note that a number of homes and institutions in Kenya, especially those in far-flung remote areas are not connected to the national grid, and even where connectivity is available, reliability of electricity has remained a matter of guess work. Cases of power “disappearing” without notice, even in a supposedly secure location like Nairobi are not uncommon. To mitigate such challenges and ensure that they deliver on their strategic objectives, some institutions opt for power generators to fill the void left by Kenya Power, the sole power distributor in the country. However, the shortfall of this measure is that it runs contrary to Kenya’s avowed commitment to transit from the use of fossil fuels and embrace a carbon-neutral economy. Diesel and petrol-powered generators emit poisonous greenhouse gases (GHGs) that are a major contributor to climate change. Generators are also an additional cost to users apart from equally contributing to noise pollution. Kenya being the home of the United Nations Environment Programme (UNEP) would have been expected to scale down the use of hydrocarbons instead of enhancing their usage.

Kenya’s Commitment to Going Green

On 26th December 2016, Kenya ratified the Paris Agreement and two days later the country submitted its first Nationally Determined Contributions in which it targeted to reduce its GHG emissions by 30% by the year 2030. In 2020, the commitment was adjusted to 32% reduction by 2030. Besides this, there have been several policy pronouncements through which Kenya has promised the international community of its determination to follow the green path and substantially reduce its reliance on hydrocarbons. The most ambitious of these declarations was made by President Kenyatta on 12th December 2017 when he announced that Kenya would go green by 2020. The idea behind Kenya’s green strategy is to ensure that the country enjoys energy security in the sense that the population will have access to clean, affordable, reliable and sustainable forms of energy. This would lighten some of the challenges related to COVID-19 that Kenya found challenging to cope with due to energy poverty. For instance: many students missed their classes and even examinations; medical appointments could not proceed and a multitude of other opportunities were lost due to power failure. These incidents are still being experienced, and as a result, the country is losing a lot.

Kenya has enviable resources from which clean, affordable, reliable and sustainable sources of energy could have been generated over the years, but this potential has not been fully realised largely due to adoption of inappropriate policies that have been deployed in the energy sector and corruption.

The table below gives a glimpse of clean energy resources in Kenya, which if fully exploited, would wean the country from “the dark”.

S/NO	RESOURCE	POTENTIAL	INSTALLED CAPACITY
1.	Geothermal	10,000	600 MW
2.	HEP	6,000 MW	816 MW

3.	Wind	3,000 MW	315 MW
4.	Biogas	1,000 MW	131 MW
5.	Co-generation	193 MW	26 MW
6.	Solar	Unlimited	< 100 MW

Source: Ministry of Energy and Petroleum, Strategic Plan (2013 – 2017)

A task force appointed by President Kenyatta to investigate the energy sector released its findings on 29th September, 2021. The report revealed monumental levels of corruption in the country's energy sector, a situation that has arrested the country's would-be meteoric rise to a prosperous nation since independence.

Water and Sanitation

A good example of where Kenya's development has been held back by corruption is in the provision of water and sanitation services, both of which are significant in managing the pandemic. In 2018, Kenya received \$178 million from the Italian Bank, Intesa San Paolo for construction of two dams in Elgeyo-Marakwet County in the country's Rift Valley region. Regrettably, this turned out to be one of Kenya's well-calculated mega scandals as no dam was ever put up. One of the key ways of controlling the spread of COVID-19 is regular washing of hands with running water and soap. For this to happen, a sustainable supply of water must be assured. The water must be pumped from the source to the user point, and this requires energy. This proved to be a challenge in Kenya at the height of the pandemic, especially in the far-flung parts of the country that are not served with electricity that is critical in pumping water. It is partly due to this that only 59% of Kenya's population has access to safe drinking water (UNICEF, 2020), yet this number should have been much higher given the significance of clean water in sustainable livelihoods.

On the brighter side, COVID-19 proved to be a boost to the plumbing industry as the installation of hydro infrastructure was one of the key strategies in combating the pandemic.

On-line Services

The starting point, and what appeared to be one of the best options in many countries to minimize the spread of the coronavirus was to use on-line services. In Kenya, the government encouraged people to make financial transactions via mobile money transfer platforms rather than cash payments. In an effort to endear this proposal to the people, the government zero-rated the cost of mobile money transfer to encourage use of cashless systems. It was noted that

touching money was one of the ways through which the coronavirus is transmitted. Where possible, Kenyans were urged to work from home so as to minimize movement and mingling of people, while educational institutions resumed teaching and learning through on-line media. Faith-based institutions also started conducting their business on-line.

By encouraging adoption of on-line services, the Kenyan government wanted to ensure that the country would still make strenuous efforts to move forward despite the pandemic. However, it meant that there was to be an increased utilization of energy, especially electric power, which in normal circumstances in Kenya is a big challenge. Kenya faces severe energy challenges characterized by: high cost of energy; frequent, unexplained and prolonged blackouts; power surges that, at times, destroy electrical appliances; low voltage; limited connectivity and poor customer care by the service provider, Kenya Power.

To add on this is the issue of internet connectivity. Kenya is said to be well ahead of her peers with regard to the world wide web, but the situation on the ground can be frustrating. Cases of internet failure or slow speed are common, and have proved to be a major drawback especially at a time when there is emphasis on conducting many activities on-line.

Against this background, the country was expected to function seamlessly and sail through the turbulent storms brought about by COVID-19. Those facing energy poverty have been hard hit because even in the best of times, for them to access modern energy services has remained a pipe dream. On the opposite side of the spectrum, those with adequate energy have maximized on it, and with increased creativity and innovation, this has seen widening of the digital divide.

Long Closure of Schools

Because technology is now used in all sectors more than ever before, this means that the difference in the level of development between the rich and poor countries has become even more pronounced. This divide is also experienced at the national level. In Kenya, while public schools were experiencing challenges in transiting to on-line teaching and learning, this was not the case for private ones. As students in public institutions whiled away time, idling at home due to the 9 months “COVID-19 holiday” from March to November 2020, their counterparts in private institutions were going on with their studies. This contributed to widening the literacy gap in the country as students from well-off families continued learning in private schools through Google meet, Microsoft Teams, Zoom and other digital platforms while their poor counterparts were waiting for the situation to improve. A bad situation was being made worse.

Laptops for All

The state of affairs was further complicated by the fact that many students from poor families lacked devices like laptops and smart phones that are critical in on-line learning. Those caught up in this scenario were not able to take part in on-line learning, a situation that can be partly blamed on the government. When President Kenyatta was campaigning to become Kenya’s fourth Head of State, he promised to provide laptops to all pupils in primary schools. The

programme had been scheduled to commence in 2013, and as such by the time COVID-19 struck, parents would not have been pained by the extra burden of buying laptops for their school-going children. Unfortunately, the “Laptops for All” mantra appears to have been a campaign gimmick to win votes but not to provide the gadgets to learners.

Another dimension to this scenario was lack of an appropriate environment for on-line teaching and learning for both teachers/lecturers and learners. This meant that teaching and learning had to take place in unsuitable premises that evidently compromise the quality of the entire process. These included cyber cafes, public libraries, public transport vehicles and open spaces. Even where teaching and learning took place at home, there was every likelihood of distraction.

Despite one group progressing with learning through on-line platforms while the other had literally stagnated, both were subjected to the same national examinations. With millions of man-hours having been lost during the long closure of these institutions, it is difficult to comprehend how the poor will ever bridge the gap between them and the “haves”. Although teaching and learning had gone virtual, there were exceptions. For instance, subjects and programmes with practical components proved challenging to be offered through digital platforms, hence necessitating face-to-face interactions. Where this was the case, all the concerned persons were required to observe the strict COVID-19 protocols for fear that this would be a weak link in the fight against coronavirus.

Efficacy and Impact of On-line Services

Although on-line services have now become part and parcel of the new normal, they have elicited varying responses. Most Kenyans had been used to face-to-face interactions and the immediate impact of virtual services was to remove the “human element”. Teachers and learners only interact through virtual services, and there are cases whereby students have cleared their courses without physically meeting their teachers and classmates.

Educational institutions were also faced with the tragedy of stranded assets on which they had spent huge sums of money. An example is the University of Nairobi which had invested heavily in ultra-modern infrastructure (hardware and software) to enhance service delivery, but when COVID-19 struck, the new lecture rooms, offices, laboratories, buses, computers, among other facilities were rendered idle.

On the positive side however, on-line services have brought convenience to users. Among other advantages, there is no need of travelling to access certain services that are available at the click of a button, thus saving time and money.

COVID-Inspired Revolution in the ICT Sector

The move to on-line service provision came rather unexpectedly to Kenya where many functions were hitherto conducted through the analogue module. It became obvious that for life to continue amid the pandemic, on-line services appeared to be the saviour. There was resistance from

various quarters based on factors ranging from cost implications, the time required to acclimatize to virtual reality and doubts about the efficacy of the whole notion of on-line services. When it became clear that “if you can’t beat them, join them” the doubters had no option but to comply.

In a relatively short time following the adoption of on-line services, many people became aware of the digital world and how the various on-line platforms could come in handy to facilitate provision of various services. To access and provide on-line services, one requires the relevant devices like laptops and smartphones, and despite the costs involved, these gadgets are the only way through which on-line services are conducted. This shock therapy was a bonanza for companies involved in the manufacture, distribution, sales and service of these devices. Demand for these products went up, bringing in enviable income to the providers at a time when many businesses were not doing well, while others had even closed down due to the pandemic. Internet service providers also recorded increased demand.

Working from home also fortified the concept of home delivery with the number and diversity of goods and services increasing from traditional ones like parcels, to foodstuffs and even hair care services, hence providing employment.

COVID-19 and Kenya’s Level of Technological Prowess

Kenya is usually touted as the technological giant in East and Central Africa as far as Information Communication and Technology (ICT) is concerned. Indeed, the country is acclaimed to be well ahead of many others on the continent as far internet connectivity is concerned. The country hit global headlines in 2007 when it pioneered money transfer service through the mobile phone known as M-PESA, with “M” standing for mobile and PESA being the Kiswahili word for money. This was a first for the world, and being the invention of a developing country caught many by surprise, and attracted interest from several countries that have now replicated it. It is convenient and enables users to carry out many financial transactions from wherever they are and at whatever time.

However, the coming of COVID-19 appears to have disputed the contention that Kenya is an ICT *supremo*, and exposed the country’s soft underbelly in this regard. Kenya was no doubt caught unprepared to shift from, for example, face-to-face teaching and learning to the on-line alternative. Across the board, there was no seamless transition from the former to the latter as would have been expected of a country that had been judged to be a tech giant in its own right. This seems to be confirmed by the *Government AI Readiness Index 2021*. This annual report that is prepared by Oxford Insights evaluates a country's preparedness with regard to adopting technology, data, and infrastructure. According to the report, Kenya ranked number 71 globally in 2020, but dropped to position 78 in 2021. In Africa, the top five countries were Mauritius, South Africa, Kenya, Ghana and Cape Verde.

Hence, whereas using on-line platforms proved to be convenient on one hand, it was utterly frustrating on the other, especially when faced with technological hiccups. It became common

for people in an on-line function not to be heard, the pictures to become blurred or “frozen”, participants dropping off, and in the worst case scenario for the entire session to come to an unscheduled end due to internet failure. Questions and comments like “Can you hear me? Is my presentation visible? Please mute, there is too much background noise” became part of the new normal that unfortunately disrupted the flow of the discourse. Incidents of people joining meetings then proceeding to conduct “any other business” became common, such that when one is asked to make a contribution, others realise he/she was not actually attentive to the deliberations.

Cases of people missing crucial engagements like examinations and interviews for job appointment due to technological challenges have been reported, the impacts of which are far-reaching.

Given that the world will, most likely, not go back to the *status quo ante* (the pre-COVID period), Kenya as a country should brace itself on how it is going to cope with a future where energy poverty will not be an option. If this country has to become a Middle Income State as envisioned in the Vision 2030 social-economic blue print, then serious efforts must be deployed in addressing the country’s energy challenges. The blue print was inaugurated on 10th June, 2008 and identifies energy as “...the key enabler” in transforming Kenya into a “modern, prosperous nation by 2030”. Kenya’s vast energy resources must be exploited for the benefit of the nation. To lack basic services that are offered by modern forms of energy in a country that has the potential of generating thousands of megawatts of clean energy is not a scenario that should be witnessed in the 21st century.

Equally significant is for Kenya to upgrade its ICT infrastructure if it has to be the *bona fide* tech giant that its peers consider it to be. Today technology is so intrinsic to human life, and with on-line services now becoming the norm in all sectors courtesy of COVID-19, the country must make continuous and deliberate efforts in elevating its technological landscape with state-of-the-art interventions. This is more so because technology is evolving so fast so that what is considered to be the latest innovation today may become obsolete tomorrow.

Conclusion

The experience of the COVID-19 pandemic offers an opportunity to developing countries to reflect more seriously on how they can improve their energy and technological ecosystems. It uncovered the real situation on the ground concerning poor countries like Kenya vis-à-vis the “well-cushioned” industrialized world with regard to energy and technological prowess.

Technology relies heavily on energy for its functionality. It does not matter the level of sophistication of an item, In the absence of energy to power it, even the most advanced smart phone cannot offer its services.

Developing countries face high levels of energy poverty that is partially attributed to low levels of technology. This is despite the fact that these countries are home to vast resources from which non-renewable and renewable energy can be generated.

As the world struggles to manage the COVID-19 pandemic, developing countries ought to refocus their energy on the energy and technological sectors, because the current pandemic is not likely to be the last one. Perhaps future pandemics might be harsher, and could put more pressure on the Global South if the *status quo* in the energy and technology realms will not have undergone radical transformation.

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